

## CHAPTER 9

### **FLAX CULTIVATION IN IRELAND: THE DEVELOPMENT AND DEMISE OF A REGIONAL STAPLE**

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Ah, it was a tedious old crop, flax, right enough, and it was a hungry greedy crop too, but the fields around the Cleggan were good flax fields, and there was money in it. I miss it, its beautiful blue colour. The fields were the colour of a summer sky, and when it was scutched it was so golden that it burned and glimmered as the sun and moon had mixed and fallen on it.<sup>1</sup>

Throughout much of his writings Tom Jones Hughes has returned again and again to the theme of Irish regionalism. Notwithstanding his acknowledgement of the role of cultural, and indeed ethnic, factors in the identification of patterns, he has most frequently employed economic variables in a search for regional indicators. His classic cartographic portrayal of the extend of eighteenth and nineteenth century landlord improvements was based on a detailed interpretation of the Griffith Valuation, and analyses of agricultural statistics provided him with the configuration of major regions of economic specialisation in post-Famine rural Ireland.<sup>2</sup> Even his more recent writings have placed considerable emphasis upon economic data, as witness his mapping of farms with a valuation of one hundred pounds or more.<sup>3</sup> While the ultimate goal of all this analysis has been to identify and measure the nature, scale and intensity of spatial differentiation within this island, and while he would probably recoil from being labelled an economic geographer, it is nonetheless apparent that Tom Jones Hughes's writings suggest a strong interest in regional economies, their landscapes and their socio-cultural manifestations. This essay seeks to identify the agricultural background of probably the most distinctive regional economy to have matured in nineteenth century Ireland, the linen industry of the northern half of the country. Specifically, this essay will explore the regional dimension of flax cultivation and its immediate proto-industrial offshoot, scutch milling. The secondary stages of textile production – the spinning, weaving and bleaching processes – do not form part of the present study.

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<sup>1</sup> P. Devlin, *The far side of the Lough* (London, 1983), p. 63.

<sup>2</sup> The use of economic indicators is most evident in the essay 'Society and settlement in nineteenth century Ireland' in *Ir. Geogr.*, 5, 2 (1965), pp 79-96.

<sup>3</sup> T. Jones Hughes 'The large farm in nineteenth century Ireland' in A. Gailey and D. Ó hÓgáin (ed.), *Gold under the furze* (Dublin, 1984), pp 93-101.

In pursuing this geographical investigation of Irish flax cultivation, the framework of a model of staple production is employed as an intellectual tool of considerable relevance. The staple theory, as it is sometimes called, was the distinctive creation of great Canadian economist, Harold Innis, whose life's work was devoted to analysing the dynamics of the economy of Canada, a country which throughout the nineteenth century was overly dependent upon a limited number of staple goods produced for export.<sup>4</sup> Throughout that century Canada remained heavily dependent upon primary production, industrialisation was severely impeded, and regional economies were intimately linked with export markets principally in the United States and Britain. Despite the very obvious differences which distinguish Ireland and Canada, the staple model does provide, nonetheless, a useful framework for analysing Irish regional and economic development. As with Canada, Ireland was heavily dependent upon the export of a few staples, largely agricultural in origin, and in both countries the nature of the staple and the character of the export demand had a profound internal regional impact. Inherent in this staple model is the identification of a basic commodity which 'sets the general pace, creates new activities and is itself strengthened or perhaps dethroned, by its own creation'.<sup>5</sup> The creation of new activities may be interpreted as economic multipliers acting within a system wherein production of a staple good may generate forward linkages in the form of processing industries, thus creating secondary growth. The extent to which such forward linkages may be created secondary growth may be created has an obvious impact upon the nature of the regional economy of the area of primary production. In the case of Ireland the linen industry represents the most successful example of an economic multiplier or forward linkage in that a sophisticated industry of world significance was generated, at least initially, by a local staple product, flax. Beyond the realm of the linen industry, however, the success of Irish forward linkages was markedly curtailed and there remained a disproportionate dependence on the export of largely unprocessed agricultural goods. Although south-east Ireland, for example, articulated a sophisticated agricultural economy based on arable farming, stock raising and dairying, its processing industries were limited in their long term impact. While this region occupied a significant niche in the Atlantic provisions trade of the eighteenth and early nineteenth centuries, and contained a series of forward linkages in the form of flour-milling, butter-making, meat-curing, coopering and even ship-building, the impact of these industries was spatially confined to the hinterlands of the major ports, and by 1830 the provisions trade was in decline.<sup>6</sup> Elsewhere,

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<sup>4</sup> A good discussion of staple theory is by one of Harold Innis's students, M.H. Watkins, 'A staple theory of economic growth' in W.T. Easterbrook and M.H. Watkins (ed.), *Approaches to Canadian economic history* (Toronto, 1967), pp 49-73.

<sup>5</sup> Easterbrook and Watkins, *op. cit.*, p. 54.

<sup>6</sup> J. Mannion, 'The Waterford merchants and the Irish-Newfoundland provisions trade' in D. Akenson, (ed.), *Canadian papers in rural history* (Ontario, 1982), iii, pp 178-204; also in L.M.

Irish agriculture generated local industries in the form of brewing, distilling, tanning, and woollen manufacture, but in terms of geographical extent, complexity of forward linkages, numbers employed, and length of survival these examples, while regionally important, did not match the success recorded by the linen industry and its basic staple ingredient, flax. The success of the flax staple and its attendant textile industry is clearly expressed by the fact that by 1780 the value of exported linen, yarn and flax was worth more than the combined values of exported cattle, meat, dairy products and grain.<sup>7</sup> Clearly, flax cultivation was of national significance but its regional dimensions and its immediate proto-industrial linkage, scutch milling, have received little attention from either historians or historical geographers.

### **The nature of the flax staple**

A domesticate of the Mediterranean basin, the flax plant (*linum usitatissimum*) was introduced into north-western Europe by the Romans. As an industrial crop it took its place in European agriculture alongside the cultivation of hemp, and dye plants such as madder and woad and from the Early Middle Ages onwards it was especially popular in France, Flanders, Germany, Britain and Ireland. In succeeding centuries it extended to the Baltic States, throughout much of European Russia and into the North American colonies. In its geography the plant demonstrated its great tolerance of a wide range of climatic and edaphic conditions. Its optimum requirements coincided with those of middle latitude temperate climates where a moist spring growing season was coupled with summer conditions which were neither too arid nor too hot. Too dry a summer tended to produce rough quality fibres. Reputed to be an exhaustive crop, flax grew best on the alluvial loams and moderately heavy clays supplemented by heavy manuring.<sup>8</sup> The plant was extremely versatile and could be grown for either its fibrous content or for its seeds, the inputs for a textile industry and a linseed oil industry respectively, and in those regions wherein the plant was grown for the provision of fibre it was sown in a broadcast fashion with the seedlings closely spaced, thereby encouraging the growth of tall stems of between twenty and forty inches. Much of the Irish, British and French flax was grown in this manner, whereas in Flanders, Holland and the Baltic States, the plant was planted less densely and was cultivated for both its seeds and fibre. In the North American colonies the plant was grown mainly for seed.

As in industrial crop, flax was at once the agricultural basis for a textile industry and also a crop that required considerable processing before it

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Cullen and P. Butel (ed.), *Négoce et industrie en France en Irlande aux XVIIIe et XIXe siècles* (Paris, 1978), pp 27-43.

<sup>7</sup> C. Gill, *The rise of the Irish linen industry* (Oxford, 1925), p. 178.

<sup>8</sup> See A.J. Warden, *The linen trade* (London, 1867), p. 14. The idea that flax was a very exhaustive crop is now disputed. Decline in the crop's yield under a system of continuous cultivation is now attributed to disease rather than soil exhaustion.

even left the agricultural sector. Planted in the manner of cereal crops in late April or early May,<sup>9</sup> flax required twelve to fourteen weeks to mature and during its growing season it demanded relatively little care for, since it was harvested by hand pulling, little attention was paid to weeding except during the early growing stages. A landscape of flax growing was, therefore, frequently untidy, abundant in weeds, and dissatisfying to eighteenth century agricultural reformers. Arthur Young in his tour of Ireland in the late 1780s exclaimed of the flax growing region in the north of Ireland

Agriculture is there in ruins; annihilated; the whole region is the disgrace of the kingdom; all the crops you see are contemptible; are nothing but filth and weeds. No other part of Ireland can exhibit the soil in such a state of poverty and desolation.<sup>10</sup>

From harvest time at mid-August onwards, however, the seemingly neglectful cultivators were thrust into a season of continuously heavy, back-breaking and frequently unpleasant work. The flax plant was not shorn by scythe, sickle or reaper, but was hand pulled and laboriously tied in sheaves. Although its short tap roots made pulling somewhat easier than might otherwise have been the case, it was nevertheless a demanding task made none the more pleasant by the presence of thistles, docks and the other weeds in whose midst the pullers worked.

After being pulled the sheaves of flax were stoked to ripen in the sun for one to two weeks and, where required, the seeds were at that stage separated from the stems by a process of rippling on iron combs made by the local blacksmith. The sheaves of flax were then placed, weighed down with stones, in a large pool of stagnant water known as a flax hole which was generally twelve to eighteen feet wide and three to four feet deep.<sup>11</sup> There the flax would remain for approximately two weeks during which time the smell and slimy nature of the water indicated the progress being made in the breaking down of the hard outer bark of the plant and the dissolution of the glutinous substances within. Following this retting process the sheaves were pulled out of the water by barefooted men standing knee high in the flax hole, and spread over the grass to dry or, less frequently, taken to drying kilns.<sup>12</sup> The final process, the scutching and hackling of the flax, was embarked upon when the retted sheaves had dried sufficiently. The scutching process consisted of smashing the outer shell of the stalks with a heavy roller and the through graded combs in

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<sup>9</sup> Much of the seed used in Irish and Scottish flax cultivation was imported from North America, Russia and Holland. A good description of the cultivation of the crop is to be found in J. Bell and M. Watson, *Irish farming 1750-1900* (Edinburgh, 1986), pp 156-78.

<sup>10</sup> A. Young, *A tour in Ireland* (Cambridge, 1925), p. 100.

<sup>11</sup> Warden, *op. cit.*, p. 32.

<sup>12</sup> W. Greig, *General report on the Gosford estates in County Armagh 1821* edited with an introduction by F.M.L. Thompson and D. Tierney (Belfast, 1976), p. 205.

order to separate fibres into bundles of equal length and quality. From the mid eighteenth century onwards, and especially from the early nineteenth century the scutching process was generally performed in a small mill<sup>13</sup> but prior to that flax was hand-scutched by the growers themselves. Towards the end of the nineteenth century flax in west Donegal was still scutched by spreading the sheaves along a road surface and crushing it with a large millstone drawn by a horse.<sup>14</sup>

Only after the harvesting, rippling, retting, scutching and hackling processes had been terminated was the agricultural side of the operation complete. The fibre was now ready for spinning by either the agriculturalist's wife, or for sale in a flax market. The intensive nature of the preparatory stages demanded much in terms of time, labour and skills, and flax cultivation was not therefore a pursuit that could be easily engaged in by agriculturalists unfamiliar with its demands. Flax growing for fibre was really only possible in densely-populated regions where family labour was cheap and abundant and throughout Europe there was a correlation between high population densities and cultivation of the crop. So demanding of labour was the crop that the French in the eighteenth century generally considered it to be part of *jardinage*, along with the cultivation of vegetables, fruit and flowers.<sup>15</sup> A corollary of the intensive nature of the processing of the crop was that flax was usually grown only in very small patches. In Flanders it was estimated that a family could be supported by the cultivation of as little as 0.65 hectares of the crop<sup>16</sup> and in the late eighteenth century Ulster Arthur found 'no flaxfarmers, scarce any but what is raised in patches by the cottars'.<sup>17</sup> By its nature the flax staple generated a demand for not only cheap seasonal labour but also a whole set of forward linkages in the form of retting and scutching facilities. In turn the provision of these forward linkages was to have a reciprocal effect upon the distinctive regional geography of flax cultivation in Ireland.

### **The distribution of flax cultivation**

Although present in Ireland long before the arrival of the Normans,<sup>18</sup> flax was not considered a crop of major significance until the eighteenth century. From the establishment of the Board of Trustees of the Linen and Hempen Manufactures in 1711 a concerted effort was made to encourage the development of a competitive Irish linen industry and as a means of underpinning the success of the industry the Board's Trustees sought to ensure a regular supply of the staple ingredient, local flax. In its

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<sup>13</sup> Gill, *op. cit.*, p. 264.

<sup>14</sup> An illustration of a mill wheel being used to crush flax is to be found in E. McCracken, *The Irish woods since Tudor times* (Newton-Abbot, 1971), p. 51.

<sup>15</sup> B.H. Slicher Von Bath, *The agrarian history of Western Europe A.D. 500-1850* (London, 1963), p. 124.

<sup>16</sup> Silcher von Bath, *op. cit.*, p. 271.

<sup>17</sup> Young, *op. cit.*, p. 10.

<sup>18</sup> Warden, *op. cit.*, p. 389 refers to descriptions of flax cultivation which appear in the Brehon laws.

very first year of operation the Board imported a cargo of high quality flax seed from Holland in order to improve the quality of the Irish crop and during the first quarter century of its existence (1711-36) the Board expended £3,300, or fifty-eight per cent of its total budget, on encouraging cultivation.<sup>19</sup> During the period 1738-57 the Trustees continued to expend more than forty per cent of their budget in encouraging flax cultivation<sup>20</sup> and these efforts continued right up until the demise of the Board in 1828. The task of the Board was twofold: to increase the total acreage of Irish flax and, secondly, to establish a strong basis for flax cultivation outside of Ulster. In the first of these tasks the Board was moderately successful and with encouragement the total acreage of flax increased steadily to 80,000 acres in 1800, and 140,000 acres by 1825.<sup>21</sup> Less success was achieved in the attainment of the second ideal. From the beginning of the eighteenth century Ulster had provide the main core of the Irish linen industry, and although this core extended during the course of the century from central Ulster into the southern margins of the province, and into north Leinster and north Connaught,<sup>22</sup> the main linen producing region remained north of a line running from Drogheda to Sligo. The efforts of the Linen Board, and the plantation of Protestant weavers in Munster by individual landlords did little to alter this basic geographical pattern. In 1784 it was estimated that of a total linen output of 48,700 yards, more than 80 per cent was manufactured in the northern province.<sup>23</sup> This pattern of regional concentration of manufacturing was largely a duplicate of regional specialisation in flax cultivation.

Evidence for the spatial extent of flax cultivation in the late eighteenth century is provided by an amazingly detailed document originating in the Linen Board in 1796. In that year the Trustees devised a new scheme for promoting the cultivation of flax.

To the person who should sow between the 10th day of March and the 1st day of June 1796, with a sufficient quantity of good sound flax seed, any quantity of land, well prepared and fit for the purpose not less than 1 acre – 4 spinning wheels, 3 roods – 3 ditto, 2 roods – 2 ditto, 1 rood – 1 ditto. And to the person who should sow in like manner any quantity of like land not less than 5 acres, a loom, or wheels, seeds or hatchells to the value of 50 shillings, and for every five acres over and above the first five a premium.<sup>24</sup>

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<sup>19</sup> Gill, *op. cit.*, p. 72.

<sup>20</sup> *Ibid.*, p. 194.

<sup>21</sup> Warden, *op. cit.*, p. 411.

<sup>22</sup> W.H. Crawford, *Domestic industry in Ireland* (Dublin, 1969).

<sup>23</sup> Gill, *op. cit.*, p. 162.

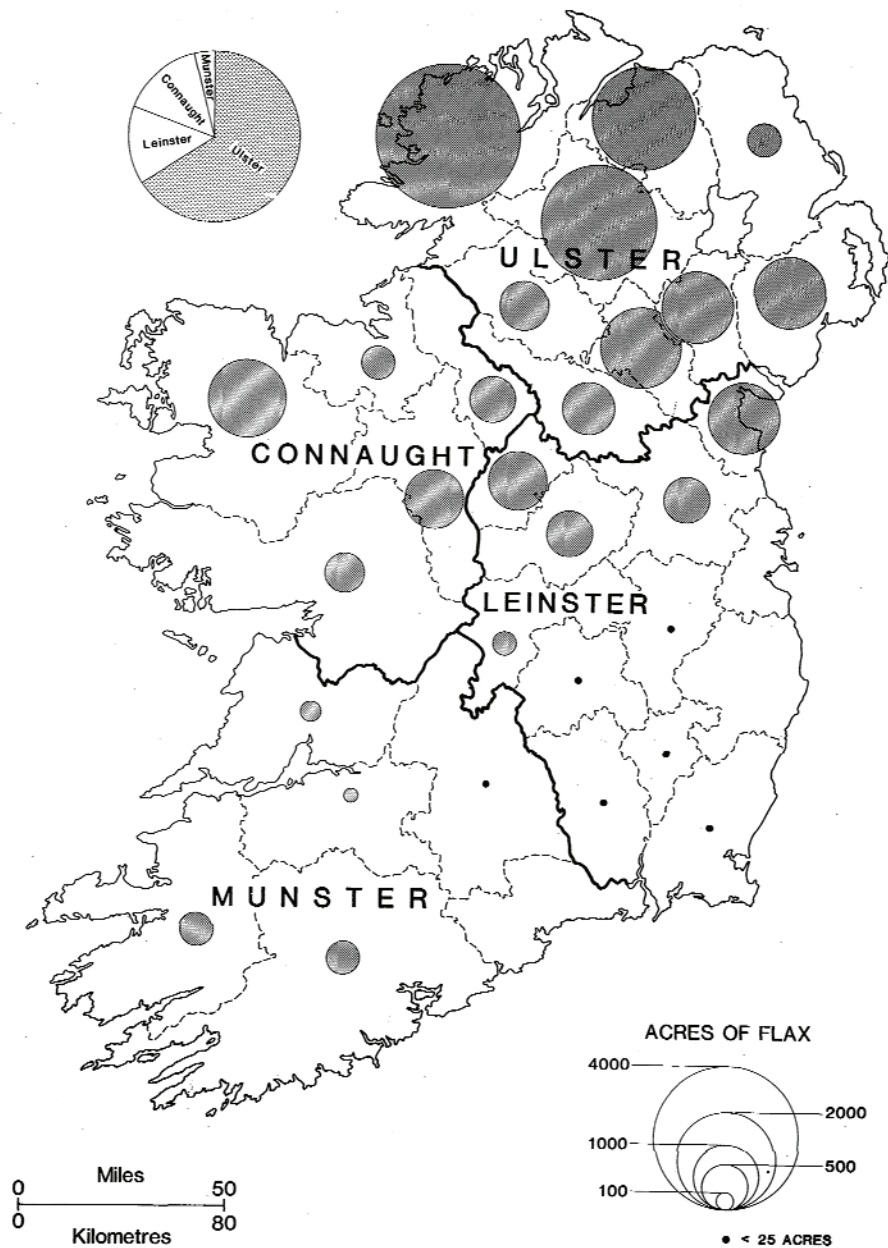
<sup>24</sup> Trustees of Linen and Hempen Manufacturers, *Premiums for growing flax* (Dublin, 1796).

The Trustees subsequently published a list of all recipients of these premiums giving the name, parish and county of origin, and nature of award. Almost 55,000 growers submitted claims to the Linen Board, seeking premiums on more than 22,000 acres of flax.<sup>25</sup> Strikingly, two-thirds of the claimants had grown only one rood of the crop, ninety percent had sown an acre and under and less than one per cent had sown a minimum of five acres. Clearly, it was a crop grown in small quantities, often supplying little more than the spinning capacity of the grower's family and although it as, by definition, a cash crops its role was that of supplement rather than a dominant element in the agricultural economy. As Figure 1 demonstrates the main core region of cultivation was to found in Ulster wherein two-thirds of the crop was grown; adjoining counties in north Leinster and north Connaught represented a contiguous extension of the Ulster core. Forty per cent of the national total was produced in counties Donegal, Tyrone and Derry and the importance of the crop in these three counties was matched by an equally striking lack of emphasis upon flax cultivation in the main textile producing counties, Antrim and Down. In its geographical distribution flax tended to attain greatest popularity on the heavier and wetter soils of the western counties where it gave rise to a local forward linkage, spinning. Additional forward linkages in the form of weaving and bleaching, while evident in the western region, tended to be more concentrated in central and eastern ulster, especially in the linen triangle linking Belfast, Dungannon and Armagh. Thus as the degree of complexity in technique of production increased, and with it a corresponding dependence upon capital investment, the regional expression of the economic linkages became more spatially confined. In order to extend the core region of the manufacturing stages of the linen industry the Linen Board had sought to first extend cultivation of the basic staple ingredient; hence, the premiums offered in 1796 linked the diffusion of spinning and weaving technology with encouragement of flax cultivation, and not with a view to weakening the importance of the industry in Ulster but rather with the ambition of extending throughout the whole country the prosperity seemingly accruing to the northern province.

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<sup>25</sup> A scheme to encourage flax growing in Scotland in 1780 had led to a total of 3,943 acres being sown by 1,569 claimants of a premium. See A.J. Curie, *The Scottish linen industry in the eighteenth century* (Edinburgh, 1979), p. 71. A good account of the regional dimension of flax growing in the eighteenth century Scotland is also to be found in W.H.K. Turner, 'Flax cultivation in Scotland: an historical geography' in *Trans. Inst. Brit. Geog.*, 55, (1972), pp 127-43. Turner indicates that the crop had virtually disappeared by the nineteenth century.

Figure 1. Flax cultivation 1796



The activities of the Linen Board were only partially successful and for the next century there remained unresolved the problem of diffusing a more intensive cultivation of flax into the southern provinces of Ireland. More significantly, it proved impossible to sustain a regular production of flax after the initial stimuli of the innovators waned. In 1816 Peter Besnard, a Linen Board inspector, acknowledged that there had been a considerable slippage in the production of flax in Munster: 'On the rich



grounds of Limerick, Tipperary, Clare etc. the high price of corn and cattle produced so much wealth, with such ease and so little trouble to the land occupier, that these pursuits, which gave useful employment to the numerous poor, were either neglected or totally abandoned.’<sup>26</sup> Munster, he pointed out, was producing only one-tenth as much flax as Ulster (Table 1).

Despite expansion in the national flax acreage to 140,000 acres by 1825, Ulster by the latter date still contributed two-thirds of the crop.<sup>27</sup> In 1828 the support premiums for the cultivation of flax were terminated upon the dissolution of the Linen Board and this, coupled with a growing agricultural recession, led by 1840 to a fifty per cent reduction of the 1825 flax acreage.<sup>28</sup> The decline of the crop in the years immediately before 1845 is difficult to explain, and hints at the crop’s extreme sensitivity to fluctuating yields, price changes, official subsidies and import competition. In short, the production of an industrial crop such as flax by thousands of Irish farmers in the pre-Famine era points to the staple’s keen price responsiveness to changing conditions within a market economy and raises questions about the extent to which many of even the smallest farmers of rural Ireland could be described as being engaged in a purely localised subsistence economy. As has been observed of flax growing in contemporary Europe: ‘It goes without saying that with an agriculture so adapted to growing for the market rather than the farmer’s own needs, a money economy prevailed.’<sup>29</sup> The market responsiveness of flax was further enhanced by the fact that the crop was regarded as a risky venture, subject to extreme harvest fluctuations, and hence most likely to be engaged in when prices were high, and correspondingly neglected in times of declining prices. The overriding control of market forces continued to direct the cultivation of flax and only in Ulster did the staple control of market forces maintained the status of a mainstream economic activity. In 1841 the Flax Improvement Society was formed to popularise the crop<sup>30</sup> and in 1866 the Flax Extension Society was constituted by northern industrialists with the object of promoting ‘the skilled growth and handling of the flax crop, and to give facilities for the purchase of seed and the sale of the fibre.’<sup>31</sup> The long term effects of both associations were negligible.

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<sup>26</sup> P. Besnard, *Observations on promoting the cultivation of hemp and flax and extending the linen and hempen manufacturers in the south of Ireland* (Dublin, 1816), p. 10.

<sup>27</sup> Gill, *op. cit.*, p. 294.

<sup>28</sup> W.G. Rimmer, *Marshalls of Leeds: flax spinners 1788-1886* (Cambridge, 1960), p. 243.

<sup>29</sup> Slicher Von Bath, *op. cit.*, p. 242.

<sup>30</sup> Bell and Watson, *op. cit.*, p. 156.

<sup>31</sup> *Annual report of the Flax Extension Association* (Belfast, 1870), p. 6.

Table 1. Flax acreage 1814

<i>Ulster</i>	<i>acres</i>	<i>Munster</i>	<i>acres</i>
Antrim S.	2,275	Tipperary	200
Antrim N.	5,575	Clare	100
Armagh	15,000	Kerry	800
Londonderry	15,166	Limerick	1,750
Tyrone E.	2,500	Cork N.	230
Tyrone W.	9,755	Cork S.	3,600
Donegal	5,400	Waterford	40
Down E.	3,760		6,720
Down W.	2,607		
Fermanagh	1,800		
Cavan	3,000		
Monaghan	5,425		
	<u>72,263</u>		

In the fifty years following the Famine the acreage under flax fluctuated wildly, growing from a base of 91,000 acres in 1850 to a peak of 301,000 acres in 1864, and declining to 35,000 acres at the close of the century as shown in Figure 2.<sup>32</sup> Undoubtedly the peak period of flax cultivation was the decade of the 1860s during which more than 200,000 acres were grown in most years. At no other time in Irish history, either before or since, did flax occupy such a major niche in the agricultural system. The peak of its popularity was largely due to the effect of the cotton famine of the 1860s and the corresponding rise in linen production as manufacturers strove to take advantage of the vacuum in the textile trade. Similarly the flax acreage increased by fifty per cent during the years 1878-81, another period of cotton slump. The economist Ó'Gráda has interpreted nineteenth century fluctuations in the supply of flax, wheat, oats, barley, mutton and poultry in terms of the continued responsiveness of those products to changing prices<sup>33</sup> and this conclusion supports that suggested by Barrington in 1926; 'there is not a scintilla of evidence to suggest that the Irish farmer has regulated his productive activities other than in accordance with the economic tendencies of his time.'<sup>34</sup> Contemporary observers were also aware of the rational economic tendencies of Irish farmers and in 1862 the Inspector of Factories noted that the supply variations were

...chiefly caused by the comparative price of grain. When grain brings a high price the breadth of crop under flax is

<sup>32</sup> Figures for the acreage under flax were compiled by the Flax Supply Association of Ireland, *Annual Reports*, especially 1879, 1895 and 1905.

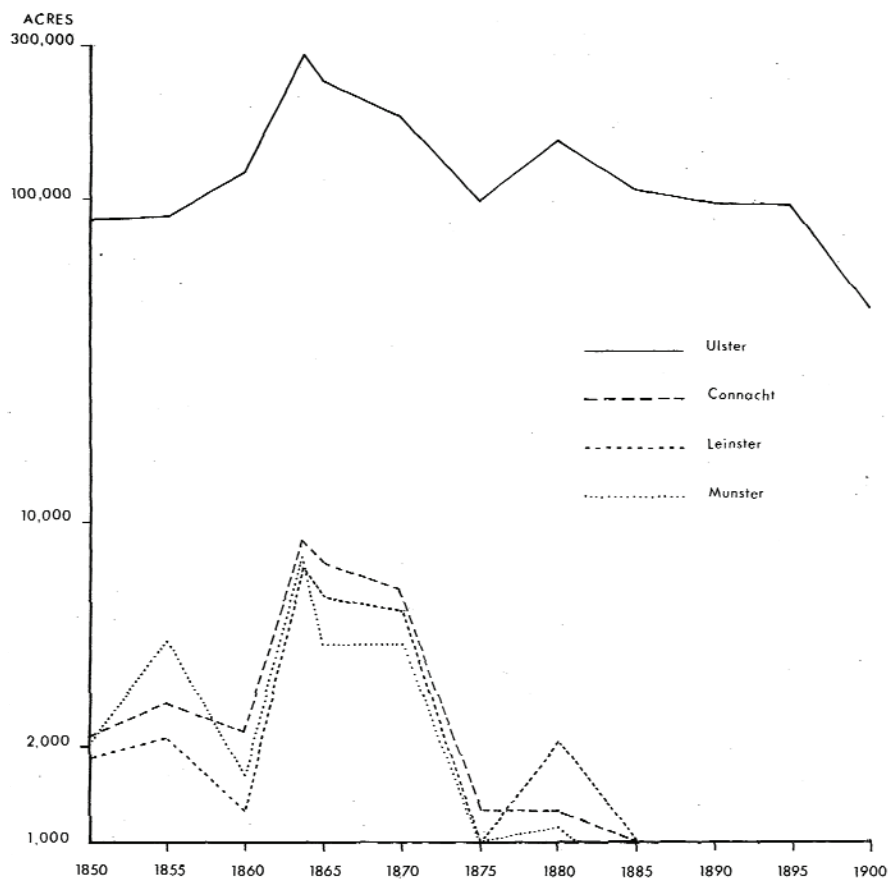
<sup>33</sup> C Ó'Gráda, 'Supply responsiveness in Irish agriculture during the nineteenth century' in *Econ. Hist. Rev.*, 28, 2 (1975) pp 312-17.

<sup>34</sup> T. Barrington, 'A review of Irish agricultural prices' in *Stat. Soc. Irv. Jn.* 15 (1926-7), p. 279.

diminished, while if it remains at a low rate, the farmer is naturally induced to sow more flax seed.<sup>35</sup>

The speculative nature of the crop is a satisfactory explanation for the rise in popularity of flax in the years indicated in Figure 2; but the long term trend of decline initiated during the last third of the nineteenth century, is also reflective of the nature of the staple and the changing structure of Irish farming. The harvesting and scutching of the flax crop was exceedingly labour intensive and best suited to cultivation in small plots.

Figure 2. Flax acreage 1850-1990 by province



But as rural outmigration became a feature of life in post-Famine Ireland and labour costs gradually increased, the crop could no longer be as profitably harvested by a family whose sons and daughters were now settled in Belfast, Liverpool, Toronto or Boston. This factor was compounded by the steady increase in farm sizes and the elimination of

<sup>35</sup> *Inspector of Factories: Reports with appendices for the half year ending 30 April 1862*, p. 114, H.C. 1862. [C3029] xxii.

many of the small holdings upon which flax had been traditionally grown, for as was observed in 1862

There is another influence working against an increase of flax cultivation in Ireland, namely the gradual introduction of the Scotch and English system of tillage farming on a large scale. As farms increase in size and the labour becomes dearer, it is probably that flax will be even less grown. It is essentially the small farmer's crop, sown by himself, and cleaned, pulled, steeped, and even scutched by his wife and children.<sup>36</sup>

This tradition of small patches of flax which in aggregate contributed a crop of major proportions had been the support of the cultivation of the staple since the early eighteenth century and that tradition persisted until the eventual disappearance of the crop. As late as 1904 the Flax Supply Association reported that three-quarters of all Irish flax was grown in plots of less than two acres (Table 2). It was the weakening of this tradition of micro-scale cultivation in Irish agriculture and growing competition from cheaper imported flax that inevitably spelled an end for the cultivation of Irish flax.

Table 2. Irish Flax Growers 1899 and 1904

<i>Size of flax plot</i>	<i>1899 (%)</i>	<i>1904 (%)</i>
0.25 - 1 acre	38.6	37.9
1.25 - 2 acres	36.6	39.7
2.25 - 3 acres	17.0	14.5
3.25 - 4 acres	5.8	4.9
4.50 acres and upwards	2.0	3.0

Fluctuations in the acreage of flax in the second half of the nineteenth century had marked regional implications. As Figure 2 indicates the major share of the crop was produced in Ulster. At no time in the period 1850-1900 did the northern province produce less than ninety per cent of the crop and indeed after 1885 the annual combined production of Leinster, Munster and Connaught amounted to less than one per cent of the national total: Ulster dominance had been replaced by an Ulster monopoly. The economic historian, Kennedy,<sup>37</sup> has recently noted that in the period 1850-1910 flax cultivation displayed a greater degree of regional specialisation than any other crop. Only during periods of exceptionally high prices was this degree of specialisation relaxed and

<sup>36</sup> *Idem.*

<sup>37</sup> L. Kennedy, 'Regional specialisation, railway development and Irish agriculture in the nineteenth century' in J.M. Goldstrom and L.A. Clarkson (ed.), *Irish population, economy and society* (Oxford, 1981), pp 173-93.

thus in the years 1862-66 when the national flax acreage increased by 75 per cent, the recorded provincial increases were: Ulster 67 per cent, Munster 227 per cent, Leinster 785 per cent and Connaught 352 per cent. It was the provinces outside of Ulster that most clearly demonstrated the speculative nature of the crop, while the northern region tended to remain a steadier core of production and at all times produced the bulk of the national acreage.

The regional implications of the data illustrated in Figure 2 are analysed in greater details in Figures 3, 4 and 5 which map the production of flax, on a Poor Law Union basis, for the years 1851, 1865 and 1900 respectively. At the time of the agricultural census of 1851 (Fig. 3) the dominance of central and north-western Ulster in flax cultivation was evident, but, strikingly, flax was also being cultivated in at least a limited manner in every one of the one hundred and sixty-three Poor Law Unions in the country, albeit in some unions the amount grown did not extend beyond ten acres.

Figure 3. Flax acreage as a percentage of arable land 1851 (Poor Law Unions)

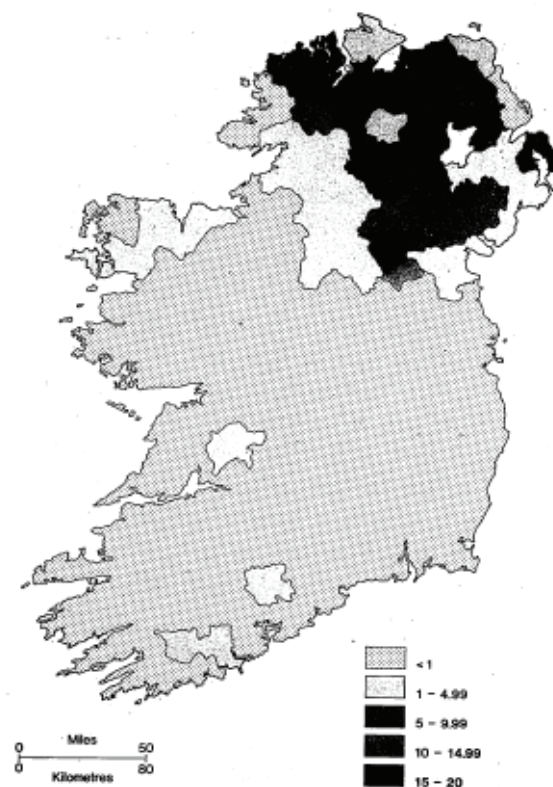
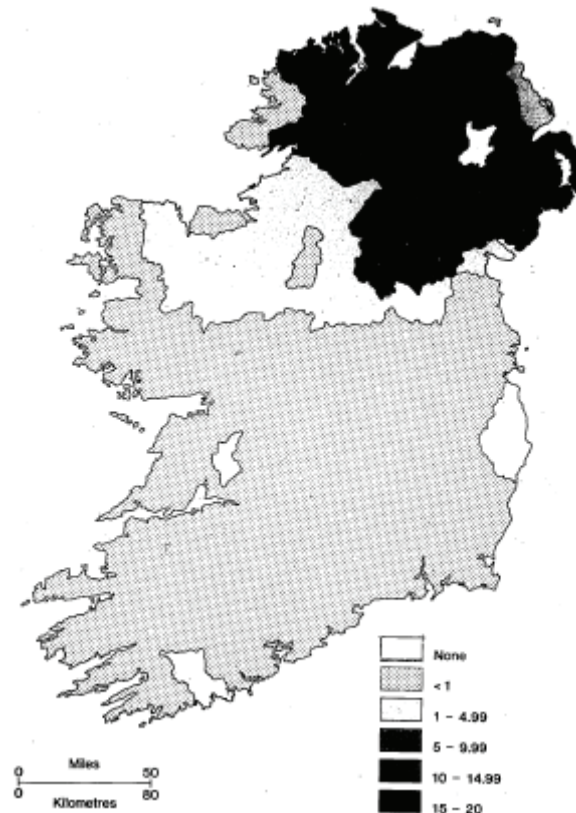


Figure 4. Flax acreage as a percentage of arable land 1865 (Poor Law Unions)



In more than two-thirds of the country less than one per cent of the arable acreage was devoted to flax and the locally important but isolated unions in Munster i.e., Scarriff in Clare, Fermoy and Dunmanway in Cork, were the legacy of eighteenth century landlord attempts to foster flax cultivation, sometimes through the introduction of Protestant weavers from Ulster.<sup>38</sup> On the borderlands of south-west Ulster, in Mohill Union in Leitrim, and Newport, Ballina, and Killala Unions in Mayo the linen industry had spilled over to create a periphery on which small scale flax cultivation and spinning were conjoined activities. But there, the additional forward linkage of weaving remained largely underdeveloped, the finished yarn being sold in fairs and markets to dealers from Ulster. A similar overspill was evident to the east in the Louth unions of Dundalk and Ardee, which served the formerly important spinning and weaving centre of Drogheda. Within Ulster the crop was not of uniform appearance. Throughout Inishowen and much of south-west Donegal, all of Fermanagh, south-west Cavan, east and north Down, north Armagh, south and east Antrim and mid-Tyrone the importance of flax was limited, being no greater than in the adjoining

<sup>38</sup> Gill, *op. cit.*, p. 84 details the promotional activities of a landlord, Cox, in Dunmanway, Co. Cork in the year 1735.

borderland areas of Connaught and Leinster. This zone of peripheral importance included Fermanagh where the linen manufacturing was negligible and the Laggan valley and Lurgan areas in the east of the province which constituted the cores of intense production of the linen fabric. It was in the economic shadow of this core zone of weaving that flax cultivation was important. Thus in the lower Bann valley of Antrim, mid-Armagh, north Monaghan and Cavan, east Tyrone and much of Derry the flax crop occupied between five and fifteen per cent of the arable land. But it was in the Lagan area of Strabane and Letterkenny Unions in east Donegal and Tyrone, and in the Cavan Union of Cootehill that flax growing was most intense, constituting almost one-fifth of the arable area. The core of specialised flax cultivation was thus to the south and west of the main manufacturing zone and in part the importance of the crop in these areas represented an attempt by the farmers of south and west Ulster to maximise their incomes in the face of the contraction of domestic manufacturing from the periphery to a factory belt centred on Belfast and its immediate hinterland.

In the mid-1860s when the acreage of flax reached its zenith there was a noticeable increase of cultivation in north Leinster and Connaught as farmers took advantage of the rising prices for the crop. But the most significant change took place in Ulster where the zone of most intense cultivation was extended to include a broad swathe running through the Lower Bann valley, along the western shore of Lough Neagh and the small farm areas of mid and south Armagh and north Monaghan.<sup>39</sup> Here again the economic shadow effect of the manufacturing zone was readily apparent, although throughout virtually all of east Ulster there was a significant increase in the acreage under flax. Overall, therefore, the regional pattern of flax cultivation, even at a time of unprecedented demand, continued to exhibit a distance-decay aspect, with the core area being located on the perimeter of the main weaving area and a steady decline in intensity of cultivation being evident as distance increased from that core zone. The core-periphery relationship was further emphasised in the concluding years of the century when the flax acreage fell to one-sixth of what it had been forty years earlier. From Figure 5 which illustrates the extent of the crop in 1900 it is evident that throughout two-thirds of the country flax no longer featured as an optional crop. The small acreages in Munster stood as relics of a former era, testimony to the failure of previous promotional schemes.<sup>40</sup> But even in its traditional heartland the crop had contracted more than five per cent of the arable land and in Ballymoney Union alone did it achieve a position of more than fifteen per cent. The lower Bann valley and the Laggan area to the west of the province constituted the last cores of the once dominant staple, and within a generation the blue flowers of maturing flax would become a memory even there and the landscape

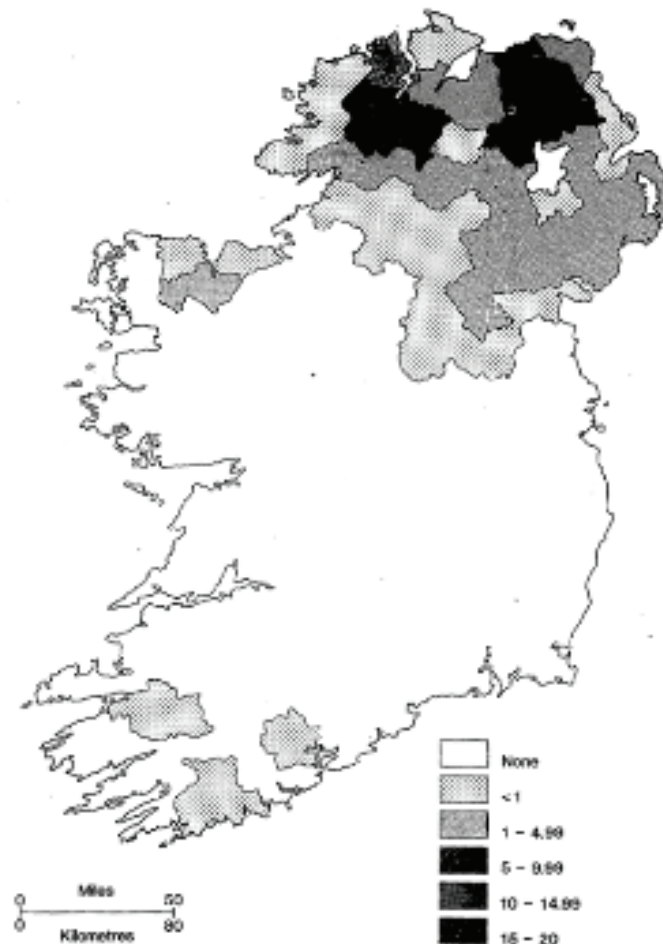
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<sup>39</sup> J. Johnston, 'Flax and linen in the Clogher valley' in *Clogher Rec.*, 11, 2 (1983), pp 287-94.

<sup>40</sup> Flax supply Association, Annual report (1887), p. 25 indicates that a total of £7,495 was spent in the years 1868-77 in order to encourage flax cultivation in the south of Ireland.

would be dotted with abandoned flax holes and ruined scutch mills. By the eve of the First World War 85 per cent of the flax used in the production of Irish linen was imported, coming mainly from Belgium, Holland and Russia. A century earlier the proportion of imported flax had stood at a mere 27 per cent of the linen industry's inputs. At the peak of its success the Irish linen industry had lost its organic link with the locally grown staple which had first stimulated textile production.<sup>41</sup>

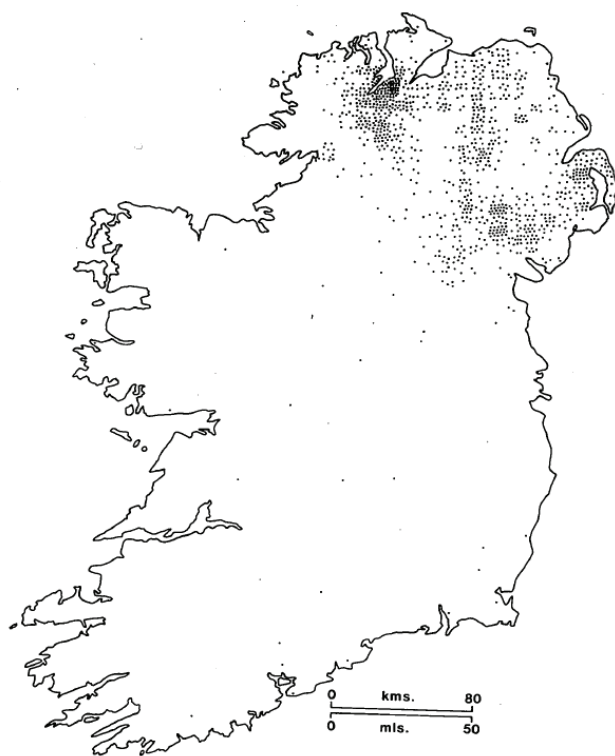
Figure 5. Flax acreage as a percentage of arable land 1900 (Poor Law Unions)



<sup>41</sup> Flax Supply Association, *Annual report* (1907), p. 8 claims that 85 per cent of the flax used in the manufacture of Irish linen was imported from Russia, Holland and Belgium. It is estimated that three-quarters of the flax used in Ireland in 1820 was produced domestically, Warden op. cit., p. 412.



Figure 6. Flax scutching mills 1860



### **Flax scutching**

The distribution is in part explained by its geographical relationship to the manufacturing core of the linen industry but it is also related to the provision of scutch mills, an inherent requirement for the preparatory processing of the crop. Scutching by water-driven mills had been first developed in Scotland<sup>42</sup> but by 1760 an Irish mill had been developed in Donegal and this prototype was later modified along Scottish lines. In 1795 the Linen Board specified a premium of £300 to encourage development of mills and by 1802 scutch mills were to be found in every parish in Co. Down and were equally popular throughout Ulster.<sup>43</sup> Some 600 mills were in operation by the eve of the Famine and over the next quarter of a century the number almost doubled. In 1860, at the commencement of the boom in flax cultivation, there were a total of 1,045 scutch mills operational in the country and of these, 1,017 were located in Ulster, 15 in Leinster, 8 in Munster, and 5 in Connaught.<sup>44</sup> The distribution of these mills has been mapped in Figure 6 and it can be seen that the locational pattern of these small water-powered operations may be directly correlated with the distribution of flax cultivation. The

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<sup>42</sup> Durie, *op. cit.*, p. 72 indicates that there were 253 scutch mills in Scotland in 1770 and 408 in 1800.

<sup>43</sup> H.B. Gribbon, *The history of water power in Ulster* (Newton-Abbot, 1969), p. 105.

<sup>44</sup> Return of mills in Ireland constructed for scutching flax, Agricultural census of Ireland (Dublin, 1860), pp 203-19.

greatest density of mills was to be found in east Donegal where especially in the baronies of Raphoe and Kilmacrenan virtually every townland had a mill. In the Lower Bann valley of Antrim, the Clogher valley in Tyrone, the Callan and Cushier valleys in Armagh, and the Upper Bann and Lagan valleys in Down, there was likewise a proliferation of small establishments.<sup>45</sup> Many of these valleys had mill races every few hundred yards serving scutching, spinning, weaving and bleaching mills and they constituted one of the most impressive densities of water-powered textile-related mills in Europe. In 1875 it was recorded that within a five mile radius of Cookstown there were thirty scutch mills in operation.

These are erected on various small streams in the neighbourhood, and are generally worked by farmers. The mills are of a very primitive kind, being a small house thatched by the straws from the flax after being scutched.<sup>46</sup>

Factory Inspectors decried these simple technological extensions of the agricultural process of flax cultivation and pointed out that many of them were 'located in out of the way places, difficult of access, conveyances uncertain.'<sup>47</sup> Such mills, in their scale, locations, and density clearly articulated the nature of the local farming system and were for the most part owned by farmers.

The flax is stacked in the farmyard, and when a portion or the whole is sold, is scutched with expedition. The farmer who has a scutch mill, not only scutches his own flax but lets out the use of it to other farmers...the farmer who sends his flax to his neighbour's mill sends the person to be employed in scutching it.<sup>48</sup>

The small scale and remote location of many flax mills emphasised their agricultural identity and for the most part the seasonal rhythm of scutching complemented that of farming. No conflict of time or interest was implied. As Figure 7 indicates, the majority of mills (65 per cent) worked between three and six months of the year, and only twenty mills were in operation for longer than nine months of the year. For most farmers-cum-mills owners, therefore, the scutching season fell between October and March, at a time when agricultural activity was in a lull between harvest and spring planting. Furthermore this seasonal rhythm coincided with the period when stream flow would have been greatest, thereby enabling mills to be located on minor streams which would have

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<sup>45</sup> W.J. Smyth, A social and economic geography of nineteenth century County Armagh, unpublished Ph.D. thesis, N.U.I., 1973.

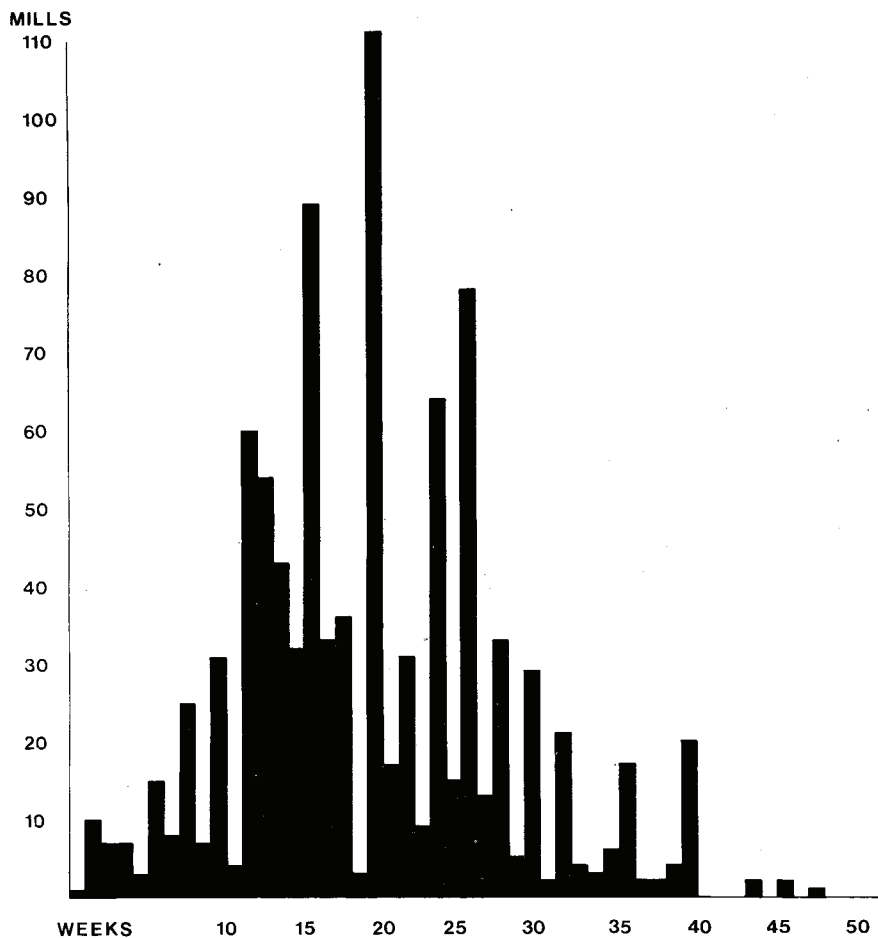
<sup>46</sup> Inspector of Factories, *op. cit.*, p. 82, 1876 [C 1434] xvi.

<sup>47</sup> *Ibid.*, p. 67, 1877 [C 1794] xxiii.

<sup>48</sup> *Ibid.*, p. 69.

lacked sufficient flow to turn the mill machinery in summer.<sup>49</sup> The scale of the mills and their period of operation was sufficient to cater for the flax produced, and indeed there was considerable overcapacity, but the local provision of a mill, at a scale of one per townland in the zone of greatest production, was warranted by the bulky nature of the unscutched crop and the difficulty of transporting it over long distances. The scutch mills were but a fixed and larger version of the grain threshing mills that appeared in the closing decades of the nineteenth century.

Figure 7. Number of weeks worked by flax scutching mills 1860



The cost of erecting a simple scutch mill in the mid nineteenth century was approximately £200<sup>50</sup> and the modest investment was worthwhile only if a guaranteed supply of flax could be expected. For this reason, the bulk of the investment in scutch mills was concentrated in Ulster but the virtual absence of mills outside of the northern province proved to be

<sup>49</sup> W.J. Smyth, 'Locational patterns and trends in the Irish linen industry' in *Ir. Geogr.*, 8 (1975), pp 97-112.

<sup>50</sup> Gibbon, *op. cit.*, p. 106.

at once a cause and effect of the more speculative and less intense cultivation of flax. The acreage of flax grown in Leinster, Munster and Connaught scarcely justified a network of mills similar to that of Ulster, but the absence of mills was in itself a disincentive for cultivation. Imperfect marketing structures and transport costs to mills implied a smaller margin of profit in those regions. It was a self-reinforcing weakness which was frequently referred to by the Flax Supply Association, but the dilemma was never solved and thus the locational pattern of scutch mills must be seen as a partial explanatory factor in any analysis of the distribution of flax cultivation in Ireland.

Table 3. Number of scutch mills and acreage under flax 1865-1910

<i>Year</i>	<i>No. mills in Ulster</i>	<i>No. mills in Ireland</i>	<i>Acreage of flax</i>
1865	1314 (92%)	1426	251,000
1870	1409 (93%)	1518	194,000
1875	1258 (94%)	1330	101,000
1880	1140 (96%)	1182	157,000
1885	1075 (97%)	1103	108,000
1890	1045 (98%)	1059	96,000
1895	933 (98%)	952	95,000
1900	804 (98%)	815	47,000
1905	721 (98%)	733	46,000
1910	597 (99%)	601	45,000

As the flax acreage waned in the last third of the nineteenth century there was a corresponding diminution in the number of scutch mills (Table 3). However, as the data indicate, the rate of attrition in the provision of scutching facilities was significantly less than the rate of decline in the flax acreage. In the period 1865-1910 the number of mills declined by fifty-five per cent, while the flax acreage dropped by a massive eighty-two per cent. Throughout the period, therefore, there remained a growing surplus capacity in scutching facilities and while outside of Ulster the absence of mills may have been a factor in discouraging flax cultivation, such was not the case in the northern province. In that core region of cultivation the average decline was a function of ongoing structural changes in both the Irish agricultural system and within the textile manufacturing process itself. In combination these forces led to an increased dependence upon important Belgium and Russian flax. A government report on the state of the flax industry recognised the perilous state of the industry in 1911 and its words of warning proved to be a prophetic description of the demise of the staple crop.

The crop seems to be affected by a process of gradual deterioration, only occasional and temporary improvements being experienced ... It is evident that if deterioration continues it must in a few years result in the almost total extinction of the industry in Ireland, which

would be a serious matter for the farmers of Ulster ... It seems a rather serious thing to allow to go out of cultivation a crop, for the successful production of which this country has many advantages over most others, and to have to confine our entire energies to those crops which can be grown successfully in almost all countries and in the production of which we have no exceptional facilities or advantages.<sup>51</sup>

By the end of the Second World War the process of extinction was virtually complete.

### **Conclusion**

On the eve of the First World War, Belfast was firmly established as the linen capital of the world and in international markets Irish linen was unrivalled in terms of quality and design. The regional craft industry of the eighteenth century had come to full fruition. In the course of the previous two centuries a locally produced staple, flax, had generated an increasingly sophisticated set of forward linkages in the form of scutching, spinning, weaving and bleaching activities but from the mid-nineteenth century onwards it was apparent that the usefulness of the domestic staple was being transcended. Paradoxically, as Irish linen manufacturing attained a position of world dominance it assumed the characteristics of an industry in which the bulk of the raw material was imported and the majority of its production was destined for export. Far from being extended successfully beyond Ulster the industry was increasingly confined to a zone within a radius of twenty-five miles of Belfast and the originating link with the agricultural sector was virtually severed. In the midst of the linen success, domestic flax had become a redundant staple. Through its success Irish flax had, in the terms of staple theory, 'become dethroned by its own creation'.

*Acknowledgement.* The assistance of Dr. W.H. Crawford in providing statistical data is gratefully acknowledged.

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<sup>51</sup> Department of Agriculture and Technical Instruction for Ireland, *Report of the departmental committee on the Irish flax growing industry* (Dublin, 1911), p. 449.