



The design and location of industrial buildings in the greater Dublin area

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Marc was one of the students who graduated from the BSc (Hons) Property Studies degree course on St. Valentine's Day. This edited version of his dissertation is an interesting history of the evolution of industrial buildings and developments in the Dublin area.

Industrial buildings have changed dramatically in Dublin over the past 40 years. This article examines the factors that have affected their design and location. It also examines the evolution of the purpose built industrial unit in the Greater Dublin Area and its changing uses.

Location

The development of modern location theories^{1,2,3} for the industrial sector of the property market began in the 1920s with Weber¹, and was continued by Losch² and Isard³. These location theories were developed from broader spatial theories especially those of Sir Ebenezer Howard⁴ who developed the idea of the 'garden city'. Weber¹ considered that the most cost efficient site was the one that would most likely lead to profit maximisation. Whereas Losch² considered that location where demand was greatest was the main driver for industrial location. Isard³ adopted a more pragmatic approach and considered that other variables should influence the decision making process. Isard's theories were broadened by Smith⁵. Smith⁵ considered that locations on the periphery of the decision making area were also considered by businesses, he called these locations "suboptimal points". Smith⁵ theorised that businesses would be prepared to locate in 'suboptimal' locations because forces other than geography and market trends affected the locator's making process, thus supporting Isard's³ view.

Industrial design

The evolution of the design of industrial premises mirrored the geographic development of each industrial sector. The inner city warehouses along the docks and in the port area were functional, brick buildings with low eaves. Their design had not altered for many years. A new 'international' style of design was introduced with the development of purpose built industrial estates.

In the 1960's a popular form of design for industrial buildings was the 'portal frame'. In this system industrial units were constructed in "a continuous or rigid frame"⁶ and it was reasoned that the 'portal frame' would eliminate "the need for a lattice of struts and ties with the roof space giving greater useable volume to the structure...". Portal frame buildings were a common feature of the early Dublin industrial estates. New 'modern' materials such as asbestos and design features such as north facing lights complemented this. Asbestos, trumpeted for its fire repelling properties,

became an increasingly popular roofing material although health and safety issues later dispelled its original merits. The design of industrial buildings has continued to evolve. Industrial buildings are now associated with changes in materials (cladding), construction innovation (off site production), advances in specification (provision of broadband and IT services) and the promotion of cubic capacity considerations⁷. The high bay logistic distribution centres of today with large loading capabilities and volume capacity; built of steel with double skinned metal deck cladding are a marked contrast from the four metre eaves, asbestos roofed, block walled units of the 1960s.

Planning for industrial development

The evolution of the domestic economy throughout the 1960s from agriculture to manufacturing was one of the principal drivers of early industrial development. Industrial development and its planning operated within the wider policy objective of increasing employment. The creation of a dedicated state agency (the Industrial Development Authority, (IDA)) for the promotion of industrial development after World War II, illustrated the importance of industrial and manufacturing activity.

The development of Dublin's early industrial estates occurred after the enactment of the first Planning Act⁸ in 1963 and almost five years before the adoption of the first city development plan in 1971⁹. The early development of the sector within the periphery of the City preceded land use zoning policy, however the 1971 City Development Plan set out clear objectives with regards to industrial development.

Location theory relating to Dublin

The principal location of industrial activity in the City of Dublin from the late 1700s onwards centred on the port and related to import and export activity. Port related activity ensured that industrial warehousing was as much a city centre phenomenon as commercial and residential buildings. The canals were the precursors to today's motorways and orbital routes. The Royal Canal on the north side of the City was developed between 1790 and 1817, and the Grand Canal (on the south side), devised in 1715 and commenced in 1757, connected the Capital with the west of the country. Within the City the canals proved to be a focal point for industrial and commercial development.



The Canals were superseded by the Railways, which terminated on the Northside at the Midland and Point depots and on the Southside at Heuston Station.

The River Liffey was also important to companies such as Guinness who had their own fleet of barges plying the river from Victoria Quay at Usher's Island to meet their own ships in the Port.

Dockside and Port industries included large timber merchants such as Brooks Thomas and Dockrells. Coal merchants, Heiton, McCormack and Tedcastles. Industries such as Hammond iron founders were located at Pearse Street whilst the Dublin Alliance Gas Co was at the South Docks.

Warehousing companies thus occupied the dockside properties, as would be predicted by the theory¹ of the least cost approach to location. In an age before mechanised freight handling, goods were handled manually so proximity to the docks was vital.

Industrial development in the city from the turn of the 20th century onwards principally focused on manufacturing activity. The basis for industrial location was proximity to labour. In the early part of the twentieth century the majority of Dubliners lived within the canals. Suburban expansion occurred after World War II in a way similar to but unrelated to the expansion of industrial activity in the suburbs at the expense of the city centre.

The Industrial Development Authority (IDA)

The IDA was first established in 1949 under the control of the Minister for Industry and Commerce. It was set up in order to promote industrial development. It is a self governing body funded through government grants and is supported by EU programmes. The IDA operates under legislation collectively known as the Industrial Development Acts 1986 to 1993.

The objective of the IDA is-

“to contribute to Ireland's economic development by encouraging the expansion of the existence base of overseas companies in Ireland, by convincing new overseas companies of the value of investing in Ireland, in manufacturing and international traded services, and by fostering the national objective of regional industrial development”

The promotion of economic development resulted in a non-traditional manufacturing sector that was not based on the processing of raw materials. Cars were assembled in Dublin in the 1960s at plants located at Shanowen Road in Santry (Crysler Hillman), Kylemore Road (Fiat), Naas Road (Morris) and the Long Mile Road (Volkswagen). Radios and television sets, a relatively modern, 'high tech' industry at the time, were assembled in Dublin and plants were located in Dundrum (Pye), Santry (Bush) and Clonskeagh (Phillips). These activities were the precursor to modern suburban purpose built industrial complexes. However, they were not based on international competitiveness but were a response to high import tariffs.

The development of industrial related activity in the Dublin city mirrored the economic development of the country as a whole. moving away from an isolationist policy paralleled (but was not the cause of) the demise of port related activity while the removal of Control of Manufactures Act 1932 and the creation of industrial agencies (e.g. IDA) brought new industries to the city.

The growth of the city in the years after World War II caused the city authorities to consider the structured growth of the greater Dublin area. A number of reports advised on the development and expansion of the city. Abercrombie's 'Dublin of the Future' of 1922¹⁰ formed the precursor to his 1941 'Sketch Development Plan'¹¹ of the City. The preamble to Abercrombie's 1941 Sketch Plan observed that the 'City Council at its meeting on the 6th January, 1936, adopted a resolution to prepare a planning scheme for the whole municipal area. Section 29 of the Town and Regional Planning Act, 1934, prescribes that where a planning authority has decided under this Act to make a planning scheme, such authority shall, "with all convenient speed," give effect to such decision and make a planning scheme in accordance therewith and shall submit such scheme to the Minister for his approval. The making and submission of a planning scheme under this Section of the Act is a reserved function of the City Council. The services of three Consultants, Professor Abercrombie, F.R.I.B.A., Messrs. S. A. Kelly, F.S.I., and Manning Robertson, M.R.I.A.I., were engaged to prepare the plan.'

The Plan, under a 'Zoning' reference, segregated the city into five areas. It said that "at the two extremes are the Central Shopping and Special Business Zone, which represents the core of Dublin, the capital and regional centre; as opposed to this we have the General Industrial Zone, near the Docks, where practically unrestricted freedom to industrial enterprise is to be permitted; consequently residential use would be granted only by special consent (for those workers who must be located in actual touch with these industries)."

Conclusions

Three principal factors affect industrial development in cities. These are Central government policy, local government land use policy and spatial location theories. Each compliments the other.

Central government policy was not focused on industrial development in the pre-war years. The 1920s and 1930s were bleak in terms of industrial expansion. The country was in an embryonic stage and economic output was agriculturally dependent. Free trade policies globally in the 1930s suffered as a result of the economic depression with protectionism becoming a principle element of countries' economies. At a national level the Economic War of the early 1930's and the Control of Manufacturers Acts 1932 solidified the country's protectionism policies and obstructed economic growth until after the 1940s and 1950s.

The 1950s saw a move away from isolationist policy at Central Government level. The programme for Economic Development¹² set the blueprint for the country's development. The isolationist policies of the pre-war years were abandoned, EEC membership was sought (in 1961) and a sustainable economy was prioritised.

The establishment of the IDA and other state agencies played a central role in the development of the industrial sector, both physically by providing advance factories and by the attraction of firms to occupy them. State agencies focused on both regional and capital development.

The preparation of a statutory development plan for Dublin city in 1971¹⁰ had given a sense of purpose to peripheral industrial development. Such development, driven by market forces, had already occurred before the adoption of the 1971 Plan, in locations such as Glasnevin, Harold's Cross and Drimnagh. The 1971 Plan and subsequent plans gave a sense of direction, through zoning policy, to industrial development.

The improving road network which resulted from both central and local government actions, also contributed to the further expansion of industrial activity beyond the 'outer' locations. It stimulated development in the late 1950s and 1960s in locations such as those along the canals. The opening of the Naas Dual Carriageway in 1968 opened up large swaths of land to the south west of the city for industrial and other development. The importance of transportation and the road network remains a major factor stimulating the development of industrial property.

The development of the economy after the Second World War was also central to the development of the industrial sector within the city of Dublin. Although manufacturing was a core element of the industrial sector, the diversity of occupiers and a burgeoning business class brought a demand for industrial properties in purpose built estates. The occupiers on industrial premises in the city ranged from small workshops to large factories. The sector catered for all segments of the new economy.

Even though they were based on international models of the early 1900s, Weber's principles¹ (see Box 1) remain as relevant today as they were in the Irish economy of the late 1950s and 1960s.

WEBER'S SIX PRINCIPLES FOR INDUSTRIAL LOCATION

- 1. Least-Cost Approach i.e. economic considerations**
- 2. Market Area Analysis i.e. location factors**
- 3. Profit maximisation i.e. economic consideration relating to clustering effects**
- 4. Behavioural approach i.e. the individual priorities of an end user**
- 5. Pull Factors i.e. location and/or relocation because of business contraction**
- 6. Push Factors i.e. location and/or relocation because of business expansion**

The core principles have remained constant. Location factors were critical, as Weber had suggested. Just as the Naas dual carriageway spurred development in the late 1960s and early 1970s the M50 motorway was the major influence on the development of industrial property around Dublin throughout the "Celtic Tiger" era from about 1994 to 2007. Large sections of previously undeveloped land in north west County Dublin and other peripheral areas were opened up. Logistics replaced manufacturing and the sector entered a new phase. The threats to the sector also remained constant. Pressure from other use classes was one of the reasons why industrial premises moved out of the city centre in the 1950s. Pressure from uses with higher end values, significantly reduced industrial presence in the south eastern quarter of Dublin in the early part of this (21st), century. History had repeated itself.

The changing nature of industrial design has mirrored the evolution of the sector from manufacturing to logistics. The early industrial units prioritised floor area without giving much consideration to volume. Natural lighting was prioritised in order to provide a better working environment as roofs with north facing lights allow light into a warehouse without the distracting glare of the sun. 'New' materials such as asbestos, with its fire resistant properties, were used. The layout of estates paid little attention to circulation and transportation. Goods vehicles in the early phase of the development of industrial buildings and estates, so turning circles and loading bays were not high priorities. In the 1970s and 1980s much more transportation was being done by articulated lorries, thus accommodating such vehicles became a design priority.

The emergence of logistics and distribution as a major component of the industrial buildings sector from the mid 1990s onwards introduced new design features.

Steel frame rather than concrete and metal deck cladding rather than brick in-fill walls allowed the industrial buildings to be built more quickly and more cheaply than before. In the rapidly growing Irish economy of the 1990s and 2000s, the ability for developers to provide buildings and facilities which matched market demands became critical. High bay warehousing, flexible office contents and dock levellers became core features of the modern 'industrial' unit. In more recent years an emphasis on estate design became important. Occupiers became more sophisticated and no longer satisfied with the specification of a particular unit developers turned to the finishes of estates. Landscaping and the use of high quality building materials contributed to the growth and change of 'industrial estates' to 'logistics parks'.

The market for industrial buildings has grown and altered substantially in the last 50 years. The future of the market will be referenced against Weber's principles. The importance of transportation will remain critical. The sector may develop in clusters nature, perhaps focusing on developments in the eastern seaboard area of Ireland around focal points of transport. The development of Bremore Port in Balbriggan over the next ten to fifteen years may herald a new phase in the industrial development of the Dublin area and bring a focus on the land mass between Swords and Balbriggan. Should this occur Weber's theory relating to cluster effects will also allow analysis of industrial development and location. ■

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