Industrial Location Policy: False Premises, False Conclusions

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Conventional location theory – rooted in the neo-classical tradition – does not reveal the true nature of industrial behaviour, nor the effect of government policies and actions. How can the dynamics of industrial development and its spatial consequences be better understood?

The industrial landscape has been undergoing dramatic changes over the last fifteen years in Great Britain and the United States. As so often, theory has not caught up with reality. The interest sparked by events 'on the ground' has, however, led to a reappraisal of the basic tenets of industrial location analysis. This has given birth, in turn, to a new school of thought that sees 'restructuring' of industry as the key to regional shifts in economic activity and formation of a new 'spatial division of labour'. This new group is sceptical of the role of traditional regional policy in industrial relocation, given that it rests squarely on the dubious assumptions of classic location theory about the nature of the economy and of regions. If they are correct, industrial policy analysis must similarly be recast in a new theoretical mould.

The new scepticism comes, ironically, at the zenith of British regional policy's apparent success in decentralizing industry from the great urban conurbations of the South-East and Midlands. That policy, begun in 1947 (but only instituted with vigour since the mid-1960s), combines the negative power of the certificate denial for any planned factory construction or expansion with positive incentives in the form of grants and tax breaks for companies locating plants in designated 'development areas' in outlying regions.

The United States has no direct location policy, though decentralization was strongly urged as a defence measure during and after World War II. The Carter Administration recently considered a National Urban Policy based on targeting of tax incentives and low-cost loans to areas of high unemployment. In both countries, of course, a variety of national policies, such as highway construction, tax depreciation allowances and military spending, have *indirect* locational impacts. A good deal of ink has been spilt recently over alleged regional biases in federal spending, but very little has been resolved as to the what and where of the matter, let alone the why. In the United States, the principal form of direct locational inducement is by state and local governments, which offer varying schemes of taxation, spending programmes, labour laws and business regulations in order to attract industry.

If regional planners have no real control over the policy instruments of the state – if indeed, policy that affects regional development is effectively made behind their backs – then a discussion such as this one is rendered rather moot. The problem then would be to study the theory of the state, which is

also in considerable upheaval today, rather than the theory of industrial location. For present purposes we will give regional planning the benefit of the doubt. This means that the discussion will be addressed chiefly to consciously-implemented policy of the British sort.

In the past, assessments of British regional policy focused on whether it was doing the *right* thing. Policy analysts spoke of the wrong kinds of employment being generated in the development zones, such as female jobs in 'light' industry replacing male jobs in heavy industry; of overly capital-intensive production in areas of high unemployment; of the minimal growth-generating impacts of many new plants given income leakages outside targeted areas; or of the 'discouragement effect' of government red tape. Their conclusions usually affirm the possibility of governments having a substantial impact on the organization of the space-economy and urge renewed efforts via planning, expenditures, and other policy instruments.

The newer critics, by contrast, wonder whether regional policy is really affecting location decisions at all. Perhaps it has merely been paying companies for what they would have done anyway. A certain statistical correlation unquestionably exists between the policies and regional shifts in jobs, as has been demonstrated by David Keeble and others. Nonetheless, such correlations by no means establish casual relations. One can also point to a number of empirical data that run counter to the optimists' case. First, the United States, with no identifiable regional policy, has nonetheless experienced a shift in job location equally as striking as that of the United Kingdom. Second, the temporal correlation is imperfect. There was rapid decentralization in the immediate post-war years despite relatively lax enforcement of regional policy in Britain. Moreover, the last few years are not unprecedented. In the United States, industrial decentralization from both big cities and from the northeast industrial belt has been taking place since the middle of the nineteenth century. Third, as Keeble himself has pointed out, much of the manufacturing located in British development zones does not originate in the southern conurbations but in nearby urban centres; that is, it represents *intra*-regional rather than *inter*-regional decentralization. Fourth, most studies other than those politically associated with British regional policy have concluded that of the factors involved in private location decisions, public policies, especially tax incentives, have a minimal impact.

Finally, recent disaggregative research into specific industries has found that companies are altering their spatial investment patterns in response to more fundamental economic pressures than government incentives and penalities. Massey and Meegan's investigation of the British electronics industry shows locational movements to be motivated in the first instance by international competition and a sagging world economy. These conditions spurred varying reactions depending on the internal situations of different sectors and firms, such as buoyancy of demand, capacity utilization rates, technical innovation, and financial solvency. With the help of the government (but *not* the branch administering location policy), the firms engaged in various forms of 'restructuring' – meaning changing production processes, opening new plants and closing obsolete ones, and mergers. The financial restructuring was generally a prerequisite to production restructuring, but it was the latter that led directly to changes in the industrial landscape. In particular, introduction of greater mechanization and automation tends to involve a deskilling of the labour force that makes it feasible to replace workers from the big city labour force with outlying female labour – which is notoriously lower paid, less unionized and more tractable.

Conventional locational policy analysis,

instructed by conventional theory, cannot deal with the sorts of causal forces uncovered by Massey and Meegan. Traditional regional policy theory is in a similar bind. It therefore behoves anyone concerned about regional growth and the impacts of government actions to consider afresh the theoretical foundations of industrial location analysis and policy. This requires a brief plunge into the chilly waters of theory, which may intimidate at first but should prove invigorating in the end.

The Evolution of Location Theory: A Refresher

Traditional location theory traces its origins to Alfred Weber, with additional inspiration from Marshall and Von Thunen. Weber's chief English-speaking apostle was Edgar Hoover. Weberian analysis is 'partial' in nature, focusing on the location of the individual firm. It pays attention to whether the firm is resource-, labour- or market-oriented, and to the structure of transportation costs for inputs and outputs. It also allows for 'agglomeration effects', where the sum of individual location decisions is mutually reinforcing. Most concrete studies of cities and industries have been Weberian in inspiration.

Another strain of location theory, developed by Christaller and Losch, grew up alongside the Weberian tradition: general equilibrium analysis, also known as central place theory. In this the problem of simultaneous location decisions is given top priority, but at the expense of greatly simplified assumptions about the nature of each firm. The results are elegant, but empirically rather arid. Walter Isard succeeded in wedding the two traditions into one elegant model. This 'apotheosis of method', as Holland refers to it, came at the expense of the element of realism in the Weberian school.

A third strand of spatial economics is inter-regional trade theory as developed by Ohlin. It spawned the so-called 'export base' models of regional and urban growth, following North, in which external trade is the leading force in local development. This could be married to Weberian location models to explain regional industrial specialization.

All three approaches are rooted in neoclassical economics. This school of thought stands as the principal adversary of the new economic geography. Frustration with neo-classical theory has been a long time building. Students of location and regional development have been forced to draw on other traditions, inside and outside economics, in search of explanations for patterns on the ground that do not fit neoclassical prescriptions.

In the 1950s a group of regional development theorists, led by Perroux, Myrdal and Hirschman, tried to account for regional imbalance by combining Weberian 'agglomeration economies' with Keynesian multiplier analysis and the effects of labour and capital migration from stagnant to growing regions. Cumulative imbalance would occur because of the advantages of growth itself, with success breeding success in prosperous regions and failure breeding failure in backward regions. This line of thought has been revived recently by Stuart Holland.

Several other new lines of thought have been added since the late 1960s. Behaviouralists pointed to the imperfect rationality of location decisions and emphasized the need to study the 'decision-making process' of the firm, particularly the investment decision that precedes choice of plant location. Another group discovered that large corporations, particularly multinationals, do not behave quite like the small firm of old. 'Linkage' analysis arose as still others observed that transportation of goods was not the only important form of spatial connection among plants. Technology also began to receive its due. Innovation diffusion models first tried to introduce technical

change into space. Later 'product cycle' theory was recast in spatial terms to account for geographic specialization between 'seedbed' areas that give rise to a large number of new product (and process) innovations and outlying areas in which more mature, standardized products and processes are located. Many investigators took up the long-neglected question of the location of offices and of R & D, which had become spatially segmented parts of the large corporation. Finally, Massey and others addressed the last great hiatus of neo-classical theory – economic crisis – straight on. Given the situation in Great Britain in the 1970s, it could no longer be avoided. The concept of 'restructuring' was meant to capture the pressures for change that periodically build up to crisis proportions, forcing corporations on to new paths that break significantly with the past and dramatically reshape the economic geography of nations.

Back to Basics

This quick summary of lines of thought, like frozen juice concentrate, needs to be thinned out a bit to be palatable. Let us now consider each of the principal objections to neo-classical orthodoxy, suggesting the obvious contradictions between theory and reality and some implications of this disjuncture for regional/industrial policy.

1. *The Basic Model: Factors of Production and Markets*

Neo-classical location theory begins with the presumption that firms choose sites based on access to factors of production (land, materials, labour, capital) and output markets. If there are spatial differentials in costs or revenues, firms respond by locating at the most advantageous position. The distribution of industry is, therefore, a *result* of the prior distribution of factors and markets. Regional policy acts chiefly by trying to alter cost-revenue differentials through financial incentives. The many objections to this view of the location process will be treated separately below.

2. *An Archaic Notion of the Firm*

Neo-classical theorists speak of 'the firm' in terms of a small, competitive, single-plant entity. These 'points' of economic activity are distributed across landscape according to the pull and haul of input and output markets. Yet the characteristic firm of today is the large, multi-functional, multi-locational corporation. These companies distort the old model of *market* determination of location. First, as noted fifty years ago by Chamberlain and others modelling 'monopolistic competition', perfect competition almost never holds in space. More important, corporations *internalize* many of the functions once performed by market exchanges by linking together plants, offices and labs directly under one organizational system. The effects of this are many. For example a factory requiring special technical services might once have had to locate in a big city; now it can be put in the underdeveloped hinterlands and the company technician brought in periodically. Or a factory receiving government subsidies to locate in a special zone may be transferring its profits back to London, where they create new office jobs. In both cases, regional policy may appear to be causing locational shifts when it is actually having little effect.

3. *The Black Boxes of Production*

Neo-classical theory focuses on exchange, not production. As a result, industrial plants are commonly treated as 'black boxes' into which enter factors of production and out of which come final goods. Production is represented by the simplest kinds of 'production functions' that allow for smooth substitution of one input for

another according to marginal cost differences. One firm looks pretty much like another in this scheme. But real factories in fact contain very specific technologies, differing widely among industries, in which the room for substitution is rather limited. Weberian locational analysts had some sense of the specific factor requirements of different industries, but this insight was largely lost during the period of mathematical elegance in the 1950s and 1960s. Technical change is similarly treated in terms of smooth substitutions of new techniques and equipment over time. But in reality technical advances frequently come in the form of technological breakthroughs that spawn waves of new investment in plants and equipment.

If industries are quite different, then generalized financial incentives will not have the same effect on each; indeed, they may not have any effect at all. For example, the differences between worker skills or between lead and copper are qualitative: unskilled workers cannot produce a fine piano no matter how much one pays and factory sites near lead mines will never be attractive to wire-makers, regardless of the financial inducement.

Even more important, the course of technical change – or the restructuring of production – can alter factor demands and locational preferences independent of or in spite of regional policy. For example, the discovery of a new technique for copper recovery from low-grade ore may revive a long stagnant regional economy. More generally, as modern industry increases the level of mechanization, standardization and automation in the production of some product, one can observe a corresponding shift in location from skilled labour areas, usually big cities, to areas of cheaper, unskilled labour, usually economic backwaters. The long-standing transfer of U.S. textiles manufacturing from New York City to North Carolina is a case in point. A widespread revolution in technique in order to raise industrial productivity may, therefore, be the cause of investment in 'development areas' in Britain, rather than the inducements of government policy.

4. *Investment and Aggregate Dynamics*

Neo-classical models of location describe essentially static patterns of the allocation of a given stock of industrial plants around a country. But a nation's geography is not a chess-board, on which a set number of pieces are to be arranged. It evolves historically through a process of investment of past profits in new plants and equipment. Government policy cannot hope to rearrange the stock of factories, only redirect the flow of investment so that a new pattern emerges over time.

The rate and character of investment depend, however, on many things other than locational advantages and disadvantages (factor differentials). The focus of industrial corporations is commodity production. In making an investment, most attention goes to the kind of product, its production costs, and its marketing future. Location of plant is something of an afterthought, more a result of the pattern of industrial production than an independent decision. The locational incentives of government policy-makers are therefore manipulations of secondary variables in the process of locational change. Furthermore, the rate and nature of investment is strongly shaped by competition and economic cycles, or the ebb and flow of general economic opportunity and pressure. The shifting sands of growth and competitive advantage cannot be understood using models which posit equilibrium conditions (or even temporary disequilibrium) and which deal with the individual firm only, oblivious of the aggregate or macrodynamics of the economy. Similarly with policy: many of the apparent achievements of British decentralization efforts have been wiped out by plant closures due

to economic crisis and the macro-policies of the Thatcher government.

Alas, traditional location policy avoids these problems almost entirely. It ignores the important product and process choices in order to tinker with locational incentives. It flatters itself that a few taxes, grants and licences can compare with the economic revolution presently taking place because of international competition, a world-wide slump, corporate mergers and technological breakthroughs. Waves of rationalization and new investment are washing over the United Kingdom and the United States, remaking their industrial landscapes.

5. Transport Determination

Transportation, as means of access to factors and markets, has always been a staple of neo-classical location models. While transport is undoubtedly important in siting decisions, transport-determination models are seriously misleading. As the 'linkage analysis' school has argued, one also has to look at communications and the flow of information; at the technical interconnections of related production processes at different sites; at access to direct labour 'services'; at financial flows; and at the organizational channels of the corporation that serve all these purposes. Great highways may not induce companies to decentralize if specialized services are available only in big cities. Conversely, with the general improvement in *all* dimensions of 'circulation' in space, decentralization and locational flexibility may well increase, regardless of government policy; this would appear to be the case today.

In addition, one cannot ascribe location changes directly to 'transport-communication revolutions' as is so commonly done. Improvements in the means of circulation only give the *possibility* of locational change; they are insufficient to specify *why* it takes place, apart from the other causal forces such as new products, production restructuring, or corporate labour strategies.

6. Factor Supply Endowments

Neo-classical theory takes regional factor endowments as given. This overlooks what may be called 'the shaping power' of industry over regions. Natural resources may be fixed in the ground, but labour, transportation systems, and capital are not. The mere existence of a factory or industrial complex will draw labour. It may also create around it a working-class community that serves as a formative context for future generations of workers; for example, a tradition of following one's father into the mines. It may attract other investment, as in the building of a modern railroad line into the coal-stripping areas of Montana and Wyoming. Some companies, if they have enough leverage, may be able to alter the whole wage and union structure of towns in a fashion suitable to their needs. What, then, is cause and what is effect? Industry works at both ends of the process, factor demand and factor supply.

If one takes the idea of the shaping power of industry seriously, then it must extend to the realm of government action. In the United States, states and localities competing for growth are induced to relax pollution control laws, introduce anti-labour legislation, build roads, grant tax breaks, and the like. Such inducements rarely attract industry that is not otherwise interested; at best they shift industry from one jurisdiction to another. Looking at regional policy in the United Kingdom or federal spending patterns in the United States, then, what we take to be a causal force may in fact be a political effect of tidal changes in the economy that are laying new patterns over old.

7. The Labour Factor

Neo-classical theory treats labour like any

other input, which it manifestly is not. Not only does labour come with different price tags and in varying qualities, workers are, unlike machines and materials, alive, conscious and capable of resistance. Wage rates, work intensity, frequency of stoppages and ease of management all depend on labour militancy. Worker resistance to production restructuring is often a barrier to technical change. Employers therefore pay close attention to labour control, often choosing factory locations in places where workers are less organized, more pliant, and politically inexperienced. They are well aware that worker combativeness and solidarity have a strongly geographic basis, thanks to distinctive community cultures, work experience and traditions of unionism and cooperation.

The geographic factor is no less important where costs of living (wage rates) and pools of labour skills are concerned. As a result, the labour 'factor' is significantly differentiated by place. This contrasts with the bulk of industrial inputs, such as lathes and microprocessors, which have become increasingly universalized through product standardization and reduced transportation costs. Despite the success of MacDonald's hamburgers in feeding the masses, the workers are the least industrially reproduced, least homogenized, factory input. Therefore, competitive advantage within most industries will rest (in so far as location is a significant consideration) on an accurate assessment of labour conditions, even where capital- and materials-intensive plants are concerned.

Study after study in the neo-classical tradition has underestimated the locational force of labour by measuring labour 'costs' strictly in terms of wage rates and unionization rates. They conclude instead that 'markets' or 'natural resources' are the principal factors in site selection. The former is quite absurd since most factory output is sold either to other businesses or to their employees acting as final consumers. Now that natural resource inputs are diminishing in most sectors, and transport costs have fallen, a widespread conclusion is that industry has become 'footloose'. Nonetheless, a wider arena of geographic choice does not mean that location does not matter; indeed, it makes site selection according to labour differences between towns, regions and even countries more compelling than ever. The truly staggering internationalization of production going on today among multinational corporations cannot be understood apart from this restless search for appropriate labour.

An industrial policy blind to the importance of labour, and especially labour conflict, will commit many mistakes and play a definite political role. It may help undermine union strength (even Labour Party strength) by drawing industry away from traditional urban strongholds to socially and politically conservative development zones. Or it may confuse the virtues of Newcastle's coal with those of its ex-miner's low-paid, unorganized wives. Or it may ruin low-wage industries in a rural area by attracting a company that pays more and alters the whole standard of living and community tradition in an area.

8. *The Focus on Regions*

It follows from the basic axioms concerning production and given factor endowments that neo-classical location theory and traditional regional policy put most of their emphasis on the characteristics of 'regions' as the cause of growth or stagnation. Scarcity or abundance of factors of production and markets provide the key to diagnosing regional ecomonic health, rather than demands for factors emanating from particular production processes, organization and corporate strategy, the product mix, investment flows, economic cycles, the state of technical development, or just poor locational decisions. Governments can, by following such false lights, waste a great

deal of money training workers in hopes of making them employable or building infrastructure for industrial parks, when the area is currently of no reasonable use to industry. Conversely, backward areas may suddenly become attractive to industry precisely because of events taking place far from the affected area and far from the purview of regional planning agencies. Perhaps the most disagreeable aspect of the focus on regions is that it spawns local competition and 'boosterism' – the current favourite is 'free trade zones' – wherein local workers and other citizens are encouraged to sell their birthrights for a mess of pottage in the belief that only an extra cost differential will ever assure jobs.

9. Equalization of Profit Rates

The ultimate measure of a good location is profits and company growth, weighing a number of variables from marketing success to strike-days lost. Unfortunately, the refinement of company calculations concerning location's impact on profits is not very good, either before or after the decisions, contrary to the assumptions of neo-classical theory. As a result, the allocation of workplaces around the country is never as economically rational as the textbooks would have it. One must never overlook the element of historical accident, the idiosyncracies of company decisions, or the locational inertia of the system. There is a lot of locational 'fat' in some plants, which could be moved elsewhere without loss of efficiency. Conversely, there are locationally 'lean' plants that are poorly situated but getting by. It usually takes a crisis such as the prolonged economic doldrums of the 1970s to force companies to look critically at their situation and either retrench or shift investment to a better place. Government policy may have more freedon than some imagine to pressure locationally 'fat' firms to shift investments to poor regions. Conversely, it may see its achievements dissolve as relocated plants prove marginal in a pinch and close down. The problem comes in knowing the difference between the two, when industries often do not know it themselves.

10. The Focus on Manufacturing

The final illusion of traditional theory is that the chief subject matter of economic geography and 'industrial' planning is manufacturing plants. Administration, finance research, sales, service and government workers now exceed in numbers those employed in traditional factories in both the United Kingdom and the United States and the location of their workplaces has enormous impact on regional development. Yet both theory and policy pay remarkably little attention to office and other white-collar employment. In Great Britain the claim is made that regional policy is 'working' because a certain number of factories employing blue-collar labour have located in the development areas. Even if this were entirely due to government policy and entirely beneficial, it begs the greater question of how regional inequalities are being maintained thanks to the increased concentration of office and R & D activities in the prosperous London area and a handful of other cities. As Massey puts it, what appears to be an evening up of regional employment is actually a shift from one 'spatial division of labour' based on regional specialization by industry (e.g. coal, textiles or shipbuilding) to another based on regional specialization by function (e.g. administration, R & D, or production).

Conclusion

The issues raised here point out a seriously flawed theoretical basis for industrial location policy and policy analysis in the neoclassical tradition. Most of what has been said does not go beyond criticisms that have been made time and again by geographers

and planners; location research has made great strides in the last decade away from the arid modelling of the Losch–Isard–Mills school. But the theoretical edifice has become a patchwork. One integrative mode of thought that has been suggested is 'systems theory', which has at least brought together under the same conceptual umbrella advances in linkage analysis, innovation diffusion, and corporate decision-making. But systems theory, while focusing on the structure of the industrial system as a whole, has either no analysis of the *necessary* forces at work or a heavily technically-determinist view. Faced with the need for a different sort of integrative approach, many students of industrial geography are turning to marxist theory as a comprehensive alternative to the neo-classical and systems schemes.

If national governments are to forge creative and effective regional policies, they must change their thinking. Unfortunately, the forces of industrial change that alter geographic patterns are more complex – and hence less amenable to public manipulation – than was once thought. Therefore, they need to consider a true *industrial* policy instead of a strictly locational one. This means moving beyond tinkering at the margin of the problem with taxes, licences and the ordinary paraphenalia of government regulation to a real social planning system that gives public officials some measure of power over the critical variables of investment, production, innovation and employment in the so-called private sector.

Similarly, if one is to carry out meaningful industrial policy impact analysis *before* resources are committed, one needs a better model of industrial dynamics than is currently available. As Glickman has pointed out, 'spatial policy impacts are complex and hard to track', and the reason this is so is that location policies are filtered and transformed by the logic of technical change, labour relations, corporate organization, and business cycles. One cannot understand the former without understanding the latter. Conventional impact models are helpless before such questions of the logic of social relations and social change. Either they are, like input-output, largely empiricist constructs with little theoretical insight into the nature of the relations described; or they are, like multiple regressions on locational factors, based on the principles of neo-classical economics. Because that theoretical system mis-specifies the basic elements of the economy in terms of one-dimensional firms, black boxes of production, autonomous regions, aggregate equilibria, passive industrialists and workers, and the like, it cannot reveal the dynamics of industrial development and its spatial consequences.