E H Chamberlin: Oligopoly, and Oligopolistic Interdependence: The Issue of Space

I

INTRODUCTION

The late 1920s and early 1930s saw considerable activity amongst economists concerned with competitive structures and the "firm". Much of this work may be interpreted as an attack on Marshall's treatment of the subject with a view to replacing it by a more "rigorous" and formal analysis. But E H Chamberlin to a very large extent stands apart from these developments, as he makes plain in the "Origin and Early Development of Monopolistic Competition Theory" (1961). Serious work on his thesis apparently began in 1924, was largely completed in 1926, and the study filed in the following year. This means, for example, that Chamberlin's "discovery" of the curves of marginal cost and marginal revenue was made quite independently of his English and German colleagues. Further, as Chamberlin himself made clear, "Nor did the Book itself attack Marshall...on any of the issues involved" (ibid, p 532). Indeed, he always insisted that his work was an attack "not on Marshall but on the theory of perfect competition" (ibid, p 540). He might have added that **Monopolistic Competition** is essentially Marshallian both in its style of reasoning and in the pre-occupation with realism; a pre-occupation which led Chamberlin to play down the operational significance of the marginal curves while recognising their importance in a technical sense (1957, p 274-6).

In contrast to the origins of Joan Robinson's **Imperfect Competition**, Chamberlin cited three empirical sources of inspiration. First, the "Taussig-Pigou controversy as to whether charging what the market will bear in railway rates was to be explained in terms of monopolistic discrimination or in terms of joint costs" (1961, p 517). Secondly, he drew attention to the "literature of business" and especially to the stimulus provided by Allyn Young. As Chamberlin recalled, Young had given particular attention to trade marks and

patents in so far as they conferred a monopoly power which is also consistent with competition:

"Each makes a product unique in certain respects; this is its monopolistic aspect. Each leaves room for other commodities almost but not quite like it; this is its competitive aspect" (quoted by Chamberlin, ibid, p 525).

For Chamberlin, this perspective "became the key to the whole analysis" (ibid, p 526); a new "way of looking at the economic process" (1948, p 204).

A third source of stimulus was located in "business economics" with special reference to advertising and the operation of retail markets (1961, p 529). Here Chamberlin drew attention to Pigou's perception that advertising was **peculiar** to what was in effect monopolistic competition, and to Marshall's distinction between "constructive" and "combative" advertising.

II

Chamberlin's main interest was in that situation where the pairing of buyers and sellers was no longer random: that is, where goods are differentiated in the mind of the consumer. Here the firm may control price, product specification and selling costs where the latter are "incurred to alter the position or shape of the demand curve" (1948, p 117). The problems which are exposed by such a perspective are wide ranging so that it is important to note that Chamberlin concerned himself **at the outset** almost solely with **intra** rather **inter**-industry competition and that he retained something very like the Marshallian industry in so doing. As he put it:

"The group contemplated initially is one which has **ordinarily** been regarded as composing one imperfectly competitive market: a number of automobile manufacturers, or producers of pots and pans, magazine publishers, or of retail shoe dealers" (ibid, p 81).

Even this restricted perspective, however, meant that the technical apparatus had to be altered as compared to the treatment of pure competition. The firm now has a choice of cost curve arising from the capacity to alter product specification (ibid, pp 94-100) while in addition selling costs have to be added to costs of production. Chamberlin thought that it would be difficult to generalise about the curve of selling costs since its shape would be affected by the nature of the product, the level of planned expenditure, and the choice of media, but gave it a "U" shape in both short and long run (ibid, pp 133-5, 138).

Perhaps the most important innovation resulted from Chamberlin's appreciation of the point that:

"A monopoly of Lucky Strikes does not constitute a monopoly of cigarettes, for there is no degree of control whatever over the supply of other substitute brands" (ibid, p 65).

He thus introduced **two** revenue curves. The DD curve is defined as the fractional part of the Market Demand curve (eg, for cigarettes) and "shows the demand for the product of any one seller at various prices on the assumption that his competitors' prices are always identical with his" (ibid, p 90).

In contrast, the dd curve provides "a rough index of buyers' preferences for the product of one seller over that of another" (ibid, p 93) and indicates the "increase in sales which he could realise by cutting his price **provided** others did not also cut theirs" (ibid, p 90). In the context of the large group, the relatively elastic (as compared to DD) dd curve is relevant since it is legitimate to assume that any adjustment "by a single producer spreads its

influence over so many of his competitors that the impact felt by any one of them is negligible" (ibid, p 83) – ie the **diffusion** effect.

To ease the task of exposition, Chamberlin proceeded under the "heroic" assumption that both demand and cost curves for all products " are uniform throughout the group" (ibid, p 82) thus permitting the use of a single set of revenue and cost functions - and further heightening the misleading impression that the reader confronts a minor variation of the earlier treatment of pure competition.

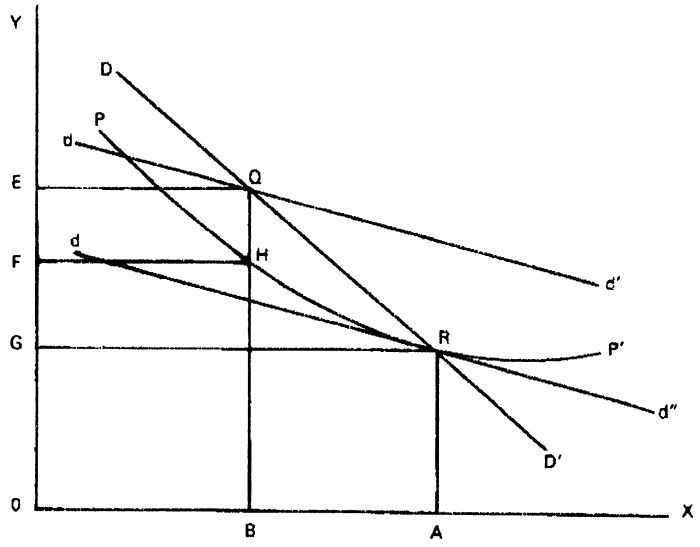
But methodologically, the technique is classically Marshallian in that Chamberlin assumed price and product, product and selling costs, selling costs and price to be given, before allowing the third element in each case to vary (ibid, chapters 5 and 7). In fact, Chamberlin spent a great deal of time in discussing product variation and selling costs although there is little doubt that the analysis of price adjustment **attracted** most attention from later commentators. But the procedure is familiar: if the typical seller faces a dd curve which is consistent with excess profits, new entry will force the curve to a position of tangency with the cost curve (PP) thus yielding an equilibrium under conditions of decreasing costs – a variant of the Sraffa solution (1953). While Chamberlin makes allowance for changes in the position of the cost curve in consequence of new entry, an interesting example is where numbers are assumed constant and excess profits obtain. In this case, the (unintended) consequences for **each** seller seeking to cut price with a view to maximising profit, is a **general** reduction in the market price so that dd "slides" down DD until the position of tangency is reached. Equilibrium is defined by two conditions:

"(a) dd' must be tangent to PP', and

(b) DD' must intersect both dd' and PP' at the point of tangency" (ibid, p 93).

However, the emphasis on tangency obscures the real purpose, and one must sympathise with Chamberlin's repeated complaint that this solution had come to be regarded as "the central principle involved" *(*ibid, p 195). In fact, Chamberlin recognised that decisions on cost, price, and selling outlay were closely linked, and therefore that the cost and revenue functions facing the firm were interdependent. The reader is, in fact, presented with a market situation where change is endogenous, in part the result of firms seeking positions of advantage for themselves, so that in practice the "result is heterogeneity of prices, and variation over a wide range of outputs (scales of production) and in profits" *(*ibid*,* p 81) which are unlikely to be completely eliminated even in a competitive environment.

Figure 1 (1948, p91)



III

DUOPOLY

However, to the modern reader as for Chamberlin himself, the third chapter on "Duopoly and Oligopoly" (which also figured in the thesis, pp 63-96) should be among the most interesting. The material was first published in the **Quarterly Journal** for 1929. Chamberlin was obliged

to strike out the reference to "oligopoly" at the insistence of F W Taussig, the then editor, who "thought the term a monstrosity" (1957, p33); a decision which must have cost the author some pain since he was unaware at that time of any prior use of the term in print.

Chamberlin fared better at the hands of later generations. Romney Robinson, for example, insisted that the introduction of the analysis of oligopoly was to be regarded as the most important contribution of a writer who "almost single-handedly introduced the concept …and forced it to the attention of economists" (1971, p 63). Bain concurred (1964, p 29).

It would be inappropriate here to review the extensive history of **duopoly** theory or even the treatment which Chamberlin accorded to the subject in his third chapter (and Appendix A which deals with "Mathematical Theories of Duopoly and Oligopoly"). However, it **is** appropriate to note that the Cournot model (1838) of two sellers offering an identical product is arguably the most important at least for didactic purposes.

Basically, Chamberlin reviewed a case where the sellers were interdependent but pursued policies with regard to price or output on the assumption that their rival's reaction would remain unchanged - the case of **mutual dependence ignored**. In both cases (price and output), Chamberlin confirmed that the outcome would be determinate and accord with the situation which would have obtained under competitive conditions. The case of **mutual dependence recognised** was the more interesting to Chamberlin, and here he drew attention to the use of the chess analogy as used by Pigou (1957, p 38) and earlier by Irving Fisher, in "Cournot and Mathematical Economics", in the **Quarterly Journal** for 1898 (1948, p 46n). The dependence recognised case, as Chamberlin reports the matter, was also consistent with a determinate result, namely the monopoly solution, and was associated with Young in his review of Bowley's **Mathematical Groundwork of Economics** published in the **Journal of the American Statistical Association** for 1925 (1948, p 47 and n).

Writing in 1957 Chamberlin was to argue that:

"Everyone sought the solution, and I can recall no hint of my own general position that the problem is a manifold one with a large number of different answers depending on which of many possible assumptions are made" (1957, p 36).

Chamberlin's own results were usefully summarised on pp 53-4 of the original publication and were stated in this form:

1. Duopoly is not one problem, but several. The solution varies, depending upon the conditions assumed. Putting to one side the factor of uncertainty, it is (with minor exceptions) determinate for each set of assumptions made.
2. If sellers have regard to their **total** influence upon price, the price will be the monopoly one.
3. If sellers neglect their indirect influence upon price, each determining his policy as though his competitors were uninfluenced by what he did, the results vary...
4. If sellers neglect both their indirect and direct influence upon price, the outcome will be the purely competitive price, **regardless of numbers**.
5. Uncertainty, where present, as to (a) whether other competitors will hold their amounts or their prices constant, (b) whether they are far sighted, (c) the extent of the possible incursions upon their markets, and (d), in the case of a time lag, its length, renders the outcome indeterminate."

In Chamberlin's view, the "real problem" was the development of the dependence recognised case and the exploration of the consequences of uncertainty (1957, p 38).

IV

Oligopoly

Seen against this background, Chamberlin's treatment of the small group case of monopolistic competition was no less dramatic at the time of writing, particularly since the argument brought to the fore a problem which is implicit in the large group case (with its interdependent functions) – that of determinancy. Building on the analysis of chapter 3 Chamberlin argued that the particular outcome would depend on the behavioural assumptions made. The **monopoly** (Figure 1) solution will obtain if each seller "sought to maximise his profit with regard to his full influence, direct and indirect, upon the situation" (1948, p 100), ie, at point Q in the figure. The **competitive** solution will obtain "if sellers neglect their indirect influence upon the price, each assuming the others to be unaffected by his own actions" but forcing a **reaction** which results in each firm arriving at the point R. The most **probable** solution (dependence recognised) might be expected within these extremes (with dd lying at a point intermediate between Q and R) but with its stability affected by uncertainty:

"The same elements of uncertainty are present here as under the simpler hypothesis of a standardised product… Each seller may be in doubt as to his rival's policy, and therefore as to his own, because he does not know (a) whether, if his rival's present policy continues, it will continue with respect to his price or with respect to his output, (b) how intelligent and far-seeing his rival is, and (c) how large would be the incursions made upon him by his own price cut. This last factor is augmented by a new unknown – the extent of the buyer's preferences for his own product over others, expressed by the shape of the demand curves for individual products" (ibid, p 101).

But concentration on an **identifiable** range within which a solution may be found (such as RQ in the figure) is itself misleading, depending as it does on the "heroic" assumptions which

are not a necessary feature of the model. The material point is that there are as many solutions as there are behavioural assumptions to be made – all in the context of a situation where the demand curves in question are essentially "imagined" ones (since their anticipated shape depends upon judgments as to the future reaction of rivals) and where the cost curves may differ in both location and shape (cf Sweezy).

However, Chamberlin did offer a number of general conclusions in the context of this market type. He clearly believed that "dependence recognised" was the probable case and that this would tend to be supported by tacit or formal agreements especially as regards price (ibid, p 106). He also considered that price would be relatively stable and based upon an approximation of the full cost principle:

"business men may set their prices with reference to costs rather than to demand, aiming at ordinary rather than at maximum profits, and more or less taking it for granted that they will continue to enjoy about their usual share of the total business. They take whatever business comes their way and expect others to do likewise - to live and let live" (ibid, p 105).

Further, Chamberlin drew attention in this context to "disguised" price cuts and to non-price competition generally (ibid, pp 107ff). Two additional points are deserving of attention.

First, Chamberlin noted that the situation was consistent with conflict; with the attempt by firms to drive rivals from the market. This example makes, in effect, the important point that price-cutting is not always the "irrational" behaviour that the **dependence ignored** case, taken in isolation, might at first sight suggest (1948, pp 92-3).

Secondly, he argued that dependence recognised does not of itself involve collusion (ibid, p 106). As he noted elsewhere, "this is a **legitimate** solution of **oligopoly**, consistent with

complete independence of the sellers"; a point which carried with it some important policy implications.

"If a chess player decides against a particular move because the response to it which his rival would make would be damaging to him, he cannot be accused of 'spontaneous co-operation'; and he should hardly be **required** by the rules to make the move on the ground that otherwise he would be entering into a 'conspiracy in restraint of chess'; or into an agreement with his rival. Why, then, should a businessman who acts with equal (and rather ordinary) intelligence in deciding not to make a price cut, be accused (either by economists or by attorneys general) of collusion, or of **tacitly** co-operating with someone? The point is that the idea of co-operation in **any** sense is **unnecessary** to the result" (1957, p 39).

Oligopoly, as a small group case, was one thing: oligopolistic interdependence another.

V

Oligopolistic Interdependence: Space

Chamberlin always recognised, as Wicksell had done (Schneider, in Kuenne, 1967, pp 139-40) that the issue of location "has been held in undue isolation from the rest of economics" and that "spatial differentiation is the general rule" (1957, p 6). The problem of spatial competition was in fact central to the analysis contained in Chamberlin's thesis, as submitted to Harvard, featuring as it does (in chapter 4, section 2) "Spatial Differentiation" pp 105-9, and again in chapter 5, sections 2 and 3 ("Pure Spatial Competition", pp 167-84; "Spatial Monopoly and Urban Rent", pp 289-301). But in the published version, the bulk of this material was relegated to two appendices. Appendix C is based upon the second section of chapter 4, but updated to include a critique of Hotelling's article "Stability in Competition" as published in the **Economic Journal** (31, 1929). Appendix D is an edited version of section 6 of chapter 5.

Chamberlin later admitted that the issue of spatial competition had been more marked as a feature of the **thesis** as compared to the **book**, and announced his intention to give the matter more prominence in his "Monopolistic Competition Revisited" (1951, reprinted 1957), and in the article on "The Product as an Economic Variable" (1953; 1957). But the material was not returned to the main text.

Yet Chamberlin did confront the problem which is presented by spatially distributed firms, which may be members of a **large group** operating under conditions of monopolistic competition. For example, retail stores or filling stations, may form a network of interwoven markets. A (retail) seller of petrol may cut price to a limited extent, forcing adjacent rivals to make **some** response. A more extensive cut, on the other hand, could force a like response from rivals within the relevant area and hence from those who are on the boundary of **neighbouring areas** - the "chain linking effect", which suggests that even if the numbers selling physically similar (or, indeed, identical) products are large, consideration of indirect influence may enter in when account is taken of location.

To clarify the point, Chamberlin later commented on the phenomenon of the "isolated monopolist" who is not subject to repercussions in that when he cuts price "he makes his gains from a large number of others, so that no **one** of them is appreciably affected by what he does" (1957, p 54) - a condition (isolation) which can also be extended to pure competition *(*ibid*,* p 56). This case was contrasted with **the non-isolated seller** (ibid*,* p 57), covering "the problem commonly known as oligopoly" and also the **relationships** between firms which are likely to obtain when allowance is made for spatial distribution.

But the specific problem in which Chamberlin became increasingly interested was the one posed by Kaldor who was concerned with the problem of competition between **quite different** products sold in different places. Kaldor cited the case of demand for cigarettes in

a given location being more affected by the price of beer in the same location than by the price of cigarettes in a distant place - thus rendering the demand curves indeterminate (1934, p 340; 1953, p 40). In noting the problems involved, Chamberlin recognised the possible applications of the model of price discrimination (which had been mentioned in the thesis but not the book (1961, p 519; cf, Phlips, 1983). At the same time, he also came to believe that the "subject needs to be re-written in terms of that extremely useful concept which originated, I believe, with Mr Kaldor, of cross elasticity of demand, rather than in terms of the number of sellers in a market" (1957 , p 61).

The full implications of this perspective are best summarised by Chamberlin himself. As compared to the original version:

"The present formulation is much simpler. It begins with the individual seller and uses the spatial example to illustrate how the entire economic system may be viewed as an elaborate network of inter-related firms, each one being able to adjust from the beginning either its price, product, or selling outlay. The uniformity assumption is used only momentarily, and diversity appears at once in the form of concentration of buyers. The individual firm is either isolated or related oligopolistically to others. The group has disappeared from the formulation here given, and with it the concept of large numbers, since the individual seller in this latter instance is again correctly described as isolated, even in the special case of pure competition" *(*Ibid, p 68).

Little of the **formal** structure of **Monopolistic Competition** would appear to survive, even if there had been no change in Chamberlin's understanding of the characteristics of the market as a type.

However, Chamberlin had no compelling reason to drop the concept of the group ("if it had meant an industry, the word industry would have been used", 1957, p 68n) or sub-group

(1948, pp 102-3) in the context of small numbers. There are as a matter of fact "industries" as the term is ordinarily understood (1948, p 81) composed of a small number of identifiable firms, such as automobiles, and which provide classic examples of oligopoly as Chamberlin originally defined the term. What Chamberlin did was to generalise the model along the lines suggested in the first edition. He also added a concern with the **oligopolistic relationship** which emerges as soon as the diffusion assumption is dropped; a point which is particularly relevant when spatial considerations are introduced and other forms of differentiation are present.

What Chamberlin had done was gradually to widen his understanding of "sources of influence" notably as a result of introducing the problem of spatial distribution both of customers and firms. This in turn led to an appreciation not just of oligopoly but of the phenomenon of **oligopolistic interdependence***,* thus giving a new meaning to the original claim:

...it seems evident to me that oligopolistic elements are very general in the economic system and that economic study must be increasingly concerned with their influence upon prices and other economic categories (1948, p 61).

In short, we face an economic **system** (not just a single model) which is characterised by interdependence and thereby by uncertainty and conjecture. The "imagined curves" confronting the oligopolistic firm have implications for the treatment of input analysis (1948, chapter 8; cf, Skinner, 1981) while the situation is further complicated by Chamberlin's belief that in the labour market the characteristic relationship was that of bilateral monopoly (1957, chapter 12).

In such situations there is no clearly definable path to equilibrium; indeed, as Brian Loasby has noted, "in this fog of ignorance, there is no equilibrium" (1976, p 189). Writing in 1961 Chamberlin noted that he could:

...see no escape (and no reason to try to escape) from the conclusion that the ubiquitous forces of oligopoly and of non-price competition (to name only these) must be responsible for many loose ends, multiple optima and indeterminateness in one sense or another in "groups" and in the system (1961, p 539).

What we have to avoid is the temptation "of formulating problems with the **objective** of assuring a determinate result" (1957, p 62).

VI

Conclusion

Chamberlin spent a great deal of time in the 30-plus years after his book was first published in seeking to differentiate his "product" from that of Mrs Robinson and for good reason. Yet in a sense, his effort was misdirected. It is quite clear from the thesis, from the book, from the appendices which were gradually added, and from the articles published in collected form in 1957, that his thinking in this field had progressively developed in a positive way. The "manifesto" of 1951 and the retrospective review of 1961 amply testify to his intentions. Yet the book was never re-written in a way which would have reflected the evolving plan with the result that the reader was left to re-interpret the original, in the light of later developments, and to alter the weighting to be attached to its component parts.

In retrospect it is now clear that Chamberlin intended his readers to attach different meanings to his treatment of oligopoly and of oligopolistic interdependence as compared to those which might have been ascribed to them when first perusing the **Theory**.

Chamberlin used the phrase "a re-orientation of the theory of value, when describing the purpose behind his work but in practice the implications were more profound. In the world described by Chamberlin we confront a situation where firms effectively compete by changing the conditions which confront their rivals; they compete through the introduction of new products or the manipulation of demand conditions to create positions of advantage for themselves (1948, p 213) against a background of imperfect knowledge. Here the causes of change are endogenous so that in a sense the argument invites attention to the problem of disequilibrium as a special and essential feature of the economic process. It is hardly surprising that Chamberlin should have likened his own position to that of Schumpeter (1957, pp 62-63). Elsewhere he observed that "certain features of monopolistic competition would indicate that it is necessarily a theory of change to be associated with dynamics rather than with circular flows" *(*op cit, p 225).

The result was not so much the re-orientation, as the wreckage, of the **theory** of value in the sense that we can no longer work in terms of unambiguous relationships between demand, supply and price or even identify equilibrium positions (Shackle, 1967, p 27). Shackle added:

"When economic theory elects to bring in imperfect competition and to recognise uncertainty, there is an end to the meaning of general equilibrium. Economics thereafter is the description, piece by piece, of a collection of fragments. These fragments may fit together into a brilliant, arrestingly suggestive mosaic, but they do not compose a pattern of unique, inevitable order" *(*op cit, p 295).

Yet as Shackle recognised, generalisation is still possible when based on a study of the market type of the kind offered, for example, by Rothschild (1947) who based his argument on analogies drawn from Clausewitz, rather than of Newton. In a notable article,

Rothschild was able to conclude, **inter alia**, that "**price rigidity is an essential aspect of normal oligopolistic price strategy**" (1953, p. 455) and that "**oligopolistic circumstances lead to a multitude of conditions surrounding the quoted price**" (**op cit**, p 456).

This is the direction in which Chamberlin wished to move the discussion so that Georgescu-Roegen was surely correct in emphasising his concern with "the analysis of the actual" (in Kuenne, 1967, p 38). The point has been widely made in the literature, notably by Galbraith (1948, pp 104, 107) and J S Bain (in Kuenne, 1967, pp 152ff). In an interesting monograph on Chamberlin, Romney Robinson noted that he had "pushed the whole of price analysis a major step towards that descriptive realism which had been so sadly lacking in post-Marshallian theory" (1971, p 42). He added that: "Chamberlin's monopolistic competition theory can fairly be described as an attempt to interpret more fully the world which Marshall discussed" *(*op cit, p 10). In the same vein, Dennis O'Brien has drawn attention to the Marshallian **style** of the work, notably in connection with Chamberlin's reliance on average, rather than on marginal, curves (1982, pp 14, 18). In Chamberlin's own words, his book "contains not a technique, but a way of looking at the economic system" (1948, p 204); in effect, a return to the perspective supplied by Marshall's **Industry and Trade** but by a circuitous and demanding route. The response, in short, is a reminder of the value of the "institutionalist" approach: and of the importance of **space**.

*The argument of this paper is based upon, but does not replace, analyses contained in previous attempts to deal with Chamberlin's **Monopolistic Competition**. They include "Oligopoly and the Theory of the Firm" (with M C Maclennan) in **Economic Analysis in Historical Perspective**, ed D P O'Brien and J Creedy (London, Butterworths, 1984). "The Origins and Development of Monopolistic Competition" and "Edward Chamberlin: the Theory of Monopolistic Competition: A Re-orientation of the Theory of Value", both in the **Journal of Economic Studies**, ed F H Stephen, vol 10, pp 52-67 (1983) and vol 13, (1986), pp 27-44. The present version of the argument is prompted by a reading of Chamberlin's

original thesis, and by an invitation to contribute to a volume in honour of a notable "institutionalist".

The chapter contains an abridgement and re-arrangement of the materials published in the **Journal of Economic Studies** with a view to emphasising Chamberlin's interest in the issue of the spatial distribution of customers and firms, while also serving as an introduction to a section of the original thesis, here reproduced as an appendix.

"Pure Spatial Competition" formed part of the text of Chamberlin's thesis, as recorded at pages 167-84. This material was the basis of appendix C of the published work but is reprinted here in its original form.

Many years ago, when I hoped to visit the Chamberlin archive, his daughter, Mrs Oakes Spaulding (Monique Chamberlin), gave me permission to use his papers. The appendix is published, courtesy of the Harvard University Press. The numbering of the notes, and the pagination, has been altered.

PURE SPATIAL COMPETITION

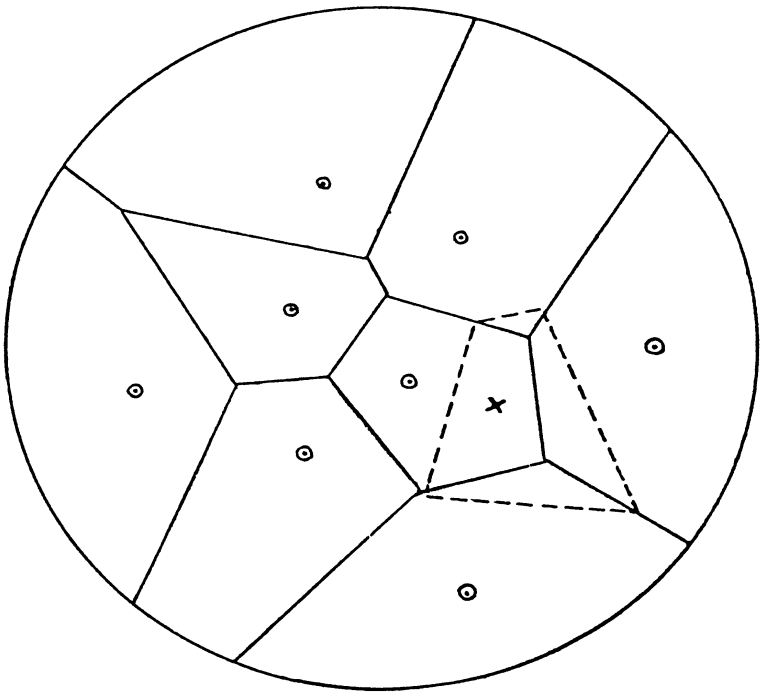
The problem of pure spatial competition is defined very simply, although the full implications of the hypothesis which is required may not be appreciated until actual development of the theory is undertaken. Just as a seller's market is large or small depending on the price he sets, so it varies with the location he chooses. People not only buy where prices are cheapest; they also trade at the store which is most conveniently located. The analysis of prices ordinarily assumes that other bases of competition than that of price "remain equal"; it is now proposed to assume that prices and everything else but location "remain equal", while merchants attempt to secure a market for themselves solely by the wise selection of their place of business. The problem is to ascertain by isolating this single factor, its significance in helping to explain the whole complex competitive process.

Spatial competition is a vital type, but one whose effects are worked out slowly. Merchants already in business do not ordinarily (although they do sometimes) shift their locations; as they change their prices or the quality of their goods, in competing with one another. But old stores go out of business and new ones become established. In this way the arrangement of the selling area is gradually changed and we can determine the norm by asking what arrangement would result if the mobility were perfect and frictionless.

The moving force in establishing any arrangement will clearly be the attempt on the part of the sellers to find the location which promises the largest market – the greatest volume of sales. But before examining the outcome of a struggle of this kind, in which locations may be constantly **changing**, let us see how the trade of the entire area would be divided among the sellers at any one time or for any **given** arrangement of stores. The market for any one seller would be perfectly determinate. Those to whom he was most convenient would trade with him, either through deliberate, rational calculation and comparison between the advantages of purchasing there and elsewhere, or simply through their naturally entering the

nearest shop without giving any thought to the matter. If two or three stores were of exactly the same convenience for a buyer, he would presumably divide his custom between them, for, under our assumptions, he is uninfluenced by habit, and would not feel its cumulative force in compelling him to continue a customer of the one he happened to patronize first. Even if we permit habit to enter in here, each store would have an equal chance at securing his initial and hence his later business.

The division of the whole area into separate markets is illustrated by Figure 11, a map in which the dots represent stores and the lines delimit the market of each.[1] "X" indicates the location of a new store and the dotted lines the market which it would take away from those already established. The diagram must be taken as symbolic only, for the vagaries



[1] Cf Fetter's analysis of the spatial factor. (**Economic Principles**, p 392 ff)

of streets make it impossible to measure distance from residence to store in a straight line.[2] Again, strictly speaking, the map allocates buyers to a particular market on the assumption that each buyer can be represented by a dot at one place on the area. This is accurate only where a buyer starts out from his residence for the sole purpose of making purchases. As he goes to and from his work, his amusement or any other pursuits, his "location" changes and many of his purchases may be made at stores more convenient to his travels than to his residence. The diagram is incapable of showing accurately such forces as these. But it is helpful in indicating that the buyers within the whole area do not patronise sellers at random, but with reference to their proximity.[3]

Now, if the distribution of population and of stores were given, this would be the end of the analysis. Since, other things being equal, buyers will patronise the most convenient seller, it follows at once that for any given arrangement of buyers and sellers every merchant will have a determinate market. But what determines the arrangement? We have still to inquire to what degree and according to what principles there is adaptation of this part of the economic system to the wants of the people – their wants for convenience. If a merchant can increase his sales by changing his location, he will do so. Is there any tendency towards a stable equilibrium in the sense of an arrangement where no one would be able to better his position by a change? How are tendencies towards concentration and towards dispersion to be explained and what is their effect on site rents? In general, the more stores there are, the smaller the volume of business for each one. How many will there be, and is there any tendency for the "most efficient size" or for any other size to be established?

[2] In this connection, it is often true that certain streets are devoted exclusively to business purposes, others to residential purposes. In a large city, for instance, the north and south streets may contain stores, those running east and west, residences or apartment houses.

[3] Wherever the phrase "distribution of population" is used hereafter, it will refer not simply to the distribution of residences, but to the distribution of routes as well, and will take into account all the complex forces here implied. For instance, there is a "concentration of population" in this sense in the "shopping district".

The central problem lies in the adaptation of the distribution of stores and the distribution of population to each other. Little or nothing can be done with the question of size under our assumptions, for it depends on the relation between cost and the uniform price assumed to be charged by all producers. This price depends on the degree of importance buyers attach to convenience - the more they are willing to pay for it, the smaller will be the stores and the more dense will be their distribution. The forces affecting size will be considered below (Sections 3 and 4), where it will be shown that the scale of production is inevitably smaller than that which is most efficient. For the time being, then, we must accept provisionally the idea of a kind of normal size, leaving the question of what determines it until later.

The distribution of buyers to which the location of stores would roughly conform would be quite different if convenience were the **only** factor buyers had to consider in making their purchases. The striking concentration of population in the "shopping district" (not in the sense that people **live** there, of course, but in the sense that they **come** there in large numbers) would not be present, for there would be no shopping district. "Shopping" - inspecting the wares and prices of several stores before purchasing - is necessary only because there are other differences between goods than those pertaining to their accessibility, and because these differences have to be investigated. The existence of a district where "shopping goods" are sold economises the shoppers' time. But such a district would not exist if standardisation made inspection and comparison unnecessary. More conveniently located stores would drive those in the shopping district out of business.

Although due, fundamentally, to the fact that goods are not standardised, this concentration of buyers, once begun, is cumulative for other reasons. To those who go to the district to purchase must be added those who go there to work. Goods which are habitually purchased at the nearest store without "shopping", may be sold in the shopping district or on

the way to and from it because the people are there, and once there, want to buy other things conveniently.

If all goods were standardised, buyers would be loathe to visit a distant shopping district to secure them. The "population" would then be more dispersed. and stores dealing in all kinds of goods would adapt their locations accordingly. Any big department store now located in the shopping district could secure for itself a larger market as well as a saving in rent by moving to a spot more remote from its competitors. Here it would be assured of all the business of the surrounding territory to which it was more convenient. The tendency would be towards dispersion rather than concentration. And just as the concentration of population in the shopping district is cumulative, so its dispersion would be cumulative. As stores became more scattered the routes of the people trading with them and working in them would be more evenly distributed. This would lead in its turn to a still more even distribution of stores.

It is not meant to imply that stores of all kinds would be sprinkled here and there with no concentration whatever. Stores of different types would be grouped, for it would suit the convenience of purchasers if, on one buying trip, they could make all of their purchases in the same vicinity. If we apply the reasoning to a kind of "general merchandise store" which would sell almost everything (and which might easily develop under such conditions), the general conclusion is that such stores would be fairly evenly dispersed. If we apply it to stores dealing in a certain type or class of goods as book stores, or shoe stores, the conclusion is that stores of any type would be fairly evenly dispersed and that stores of different types would tend to be gathered into groups which would be roughly equi-distant from each other.

Let us examine the adaptation of stores to population more carefully. For a given distribution of population would there be a determinate distribution of stores? With perfect mobility the

answer is no. There would exist no arrangement at which it would not be to the advantage of some one to change his location (corresponding to the equilibrium under pure competition where it is to the advantage of no one to change his output).

The indeterminateness of location can be Illustrated in a simple case. Suppose the selling area to be as in Fig. 12, and divided equally among seven sellers. Any of the six outer sellers could enlarge his market by moving towards the centre and forcing the unfortunate one in that position to share with him. Let us suppose that they were all to follow this policy.

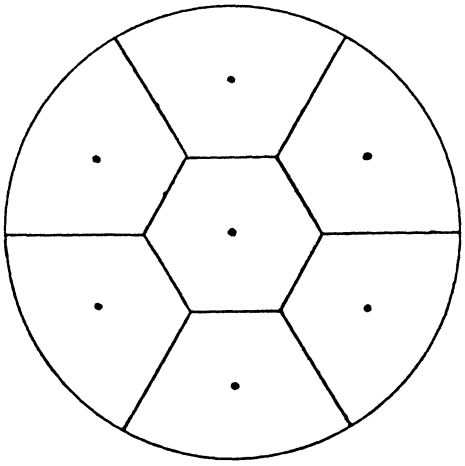


Fig 12

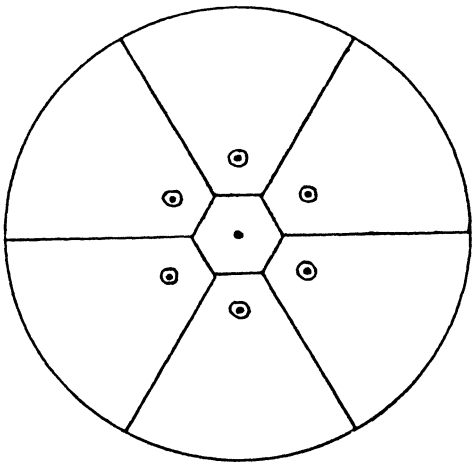


Fig 13

When they had each moved half way, the markets would be arranged as in Fig 13, the encircled dot in each case showing the new location. Each one except the middle one would have his old market plus a part of the middle area. But the movement could not stop until they had all reached the centre, whereupon the seven of them would share the entire area equally as before. There would be no separate markets, to be sure, but the total business would be divided about equally, since there would be no reason for buyers selecting one seller over another. Here, however, any one of them could secure more than one-seventh by moving away from the centre again. And so the oscillation would continue. The sellers might combine at the centre and set up one large store, but ,with competition on the basis of location alone this would be useless. Competitors would appear at once to share in the

gains and they could secure markets by simply setting themselves up in appropriate locations.

Of course, the actual stability of store locations, because of the immobility of capital, makes the very idea of continuous oscillation seem absurd. The actual arrangement is highly stable, since the problem of location imposes itself on a merchant, broadly speaking, only when he first sets himself up in business and at rare intervals thereafter. The fundamental instability of the system, however, is insignificant. It reveals itself in differences of rent and profits (due also, of course, to many other causes) rather than in constant movement which would wipe out these differences as soon as they appeared.

The conclusion of ultimate instability involves that at any one time, although stores as a whole are scattered, they may be scattered very unevenly. The forces pictured in the example by which we have illustrated instability might make for concentration in small groups or for an even distribution or for something in between. There could be no very considerable concentration because of its great inconvenience to buyers compared to a number of smaller scattered centres.

But immobility not only makes the actual situation **stable,** no matter how **arranged**. It also makes for even dispersion where population is fairly evenly distributed. If several sellers are gathered together, any one is in a particularly vulnerable position. In Fig 12, if all seven sellers are in the centre, six newcomers, taking the outer positions, can force them to fail or incur the expense and loss of moving. If seven sellers is the number which can most advantageously serve the district, the newcomers are now in a better position to survive than the original seven. If they had chosen the scattered locations in the first place, there would have been nothing to attract others to compete with them. Immobility will thus lead merchants to seek the locations in the first place which give the greatest protection to the

spatial monopoly they seek, and each seller is best protected when they are evenly distributed.

The reaction of other bases of competition on spatial monopoly is another factor making for dispersion. The closer are two competitors, the more nearly are they on a par, and the less secure is the market of each from the encroachments of the other by price cuts or other methods. The slight spatial advantage over a larger number of purchasers, gained, perhaps, by locating closer to a competitor, may be less desirable than a more secure advantage over a smaller number which is to be had by isolating oneself. To be isolated is to be protected to a degree from other means of competition, of course, the final decision as to location must turn on the nature of the good, the various ways in which it can be and is differentiated from others, and the relative importance of convenience as a factor in its purchase. But in general, whereas the arrangement might be indeterminate if location were absolutely the only basis for competition, the introduction of other bases makes it more likely that sellers will be dispersed. For the market of any one is as large in either case, and better protected from other types of competition if spatial differentiation is carried as far as possible.

By contrast, there seem to be no forces making for concentration, under our assumptions, unless there be also a concentration of population. This is especially significant where population is more dense in the sense that particular streets or street intersections are travelled by people in large numbers in their daily goings and comings (other than for purposes of buying). Here the outcome depends on the degree of concentration. If there is room enough, the result will simply be more stores of the same size and rate of profits, and paying the same rent. Any merchant securing a larger volume of business and larger profits would be forced to share his market with competitors who would locate nearby. This competition would force the same volume of business as was secured in less densely populated districts, and there could be no rent above that which the land would yield for

residential or other purposes, since the location would yield no greater market than any other.

But the concentration may be very great in an area so small that there is not room for all the competitors who would naturally be attracted. The levelling effect of competition on profits and the resulting tendency towards a uniform scale of production is then restricted by the impossibility of piling stores on top of each other. Competitors would be unable to make incursions upon the larger markets afforded to those who secured locations in the district. But they could prevent them from enjoying the increased profits arising from a larger scale of production and diminished unit costs-profits which are ordinarily eliminated by an increase in the number of stores. Their competitive bidding for the sites would force these gains into the hands of the landowners In the form of rent. It seems unlikely, however, that this tendency would be very important under purely spatial competition because of the fairly even distribution of population.

There would be variations in size, in rents, and in profits from another cause, which is closely allied to concentration - unevenness in the distribution of population, not in the sense of the existence of certain areas where it is on the whole more dense but in the sense that the markets fit into each other in a highly irregular fashion. It has already been remarked that the arrangement of Fig 11 (page 00) is symbolic only. The vagaries of streets and the fact that a retail store does not occupy an infinitesimally small space characteristically make it impossible to divide a selling area into equal markets. This irregularity reveals itself in several ways. If a particular corner is passed by 8,000 people a day, it gives a better market than the nearest possible location (next door, but not on the corner) where 5,000 people pass daily. **Other things being equal**, its sales will be greater in the proportion of 8 to 5 and profits will be larger. Since competitors will not have the alternative of sharing in this market by setting up for themselves next door or nearby, they will bid for the occupancy of the better site and thus put into the hands of the landowner all of the extra profits it affords.

Competition here levels profits by converting a portion of them into rent. And the tendency towards a uniform size is modified by the fact that markets are to a degree concentrated at one spot and not spread over an area which can be divided.

Again, it might seem that if a seller's nearest competitor were at a considerable distance, it would be almost a matter of indifference which one of a dozen adjacent sites he chose. And so it might be, if his trade came entirely from those whose **residences** were in the vicinity of his store. But many of those living nearest to him pass other stores in their daily travels. He must choose a site which will be convenient to the goings and comings of as many as possible, and there may be one or two which are markedly superior in this respect. Also a particular location within the district at a street intersection may bring him a large volume of business from people passing through which he would otherwise miss entirely. Such factors as these give varying importance to different sites, even though they be adjacent, the differences in the advantages they afford being exacted by the owner of the superior site in every case. It is obvious that any location giving an unusually large market will have that market cut into by a competitor if there exists an available site which will allow sufficient incursions to pay the ordinary rate of profits, so that, except in very congested districts, there is a definite limit to the volume of business secured by any single seller. The more "smooth" the distribution of population – that is, the more alike are the opportunities afforded by a number of contiguous sites, the smaller will be the variations from the "normal" site.

These irregularities in markets may bring variations in profits instead of in rents. If a market is so large as to yield exceptional profits to one merchant and yet not large enough to give the ordinary rate to two, the seller who happens to get there first may succeed in keeping the extra profit, providing there are several sites which are about equally attractive. There could be no rent in this case beyond that given to the land for other uses, say residential purposes, for the competition of landowners would reduce to that level. The higher rate of profits could not be diminished by a new competitor, for he, as well as the first seller, would lose by his

entrance. The forces tending to give surpluses resulting from irregularities of this kind to landlord or entrepreneur are probably mixed in most cases so that there may be variations in both rent and profits throughout the area on this account. Since those negotiating in regard to a site are characteristically few, there is considerable room for bargaining, and this may divide the gain or throw it one way or the other.

This concludes our analysis of the spatial factor in complete isolation. Some of the tendencies discovered may be observed in real life; others are buried from view by the more powerful forces which have, of necessity, been ignored in order to isolate this one factor. Yet, even though buried, they must be of some significance, if it be granted that location is even a small part of the whole complex competitive process. If the results seems abstract and unreal, they will serve the purpose, at least, of suggesting that the exclusive attention commonly given to **price** competition gives conclusions which may be criticised on the same score. Where product is differentiated, the theory of prices inevitably tells only a part of the story – in some cases perhaps only a small part. The theory of "pure spatial competition" is indicative of the other forces which are at work.

References and Authorities

Andrews, P W S, **On Competition in Economic Theory**, London, Macmillan, 1964.

Bain, J S, "The Impact on Industrial Organisation", **American Economic Association Papers and Proceedings**, vol 74, 1964, no 28-32.

Bain, J S, "Chamberlin's Impact on Microeconomic Theory", in Kuenne (1967), chapter 7.

Bishop, R L, "The Impact on General Theory", **American Economic Association Papers and Proceedings**, vol 54, 1964, pp 33-43.

Blitch, C P, "Allan A Young: A Curious Case of Professional Neglect", **History of Political Economy**, vol 15, 1983, pp 1-24.

Boulding, K, "The Theory of the Firm in the Last Ten Years", **American Economic Review**, vol 32, 1942, pp 791-802.

Boulding, K and Stigler, G J (eds), **Readings in Price Theory**, London, George Allen & Unwin, 1953.

Chamberlin, E H, **The Theory of Monopolistic Competition**, Cambridge, Massachusetts, Harvard University Press, 1948.

Chamberlin, E H, **Towards a More General Theory of Value**, Oxford, The University Press, 1957.

Chamberlin, E H, "The Origin and Early Development of Monopolistic Competition Theory", **Quarterly Journal of Economics**, vol 75, 1961, pp 515-43.

Clapham, J H, "Of Empty Boxes", **Economic Journal**, reprinted in Boulding and Stigler (1953), chapter 5.

Cournot, A, **Recherches sur les Principles Mathematiques de la Theorie les Richesses**, Paris, 1838.

Ellis, H S (ed), **A Survey of Contemporary Economics**, Homewood, Richard D Irwin, 1948.

Fellner, W, **Competition Among the Few**, New York, Alfred Knopf, 1949.

Galbraith, J K, "Monopoly and the Concentration of Economic Power", in Ellis (1948).

Georgescu-Roegen, N, "Chamberlin's New Economics and the Unit of Production", in Kuenne (1967), chapter 2.

Hall, R L, and Hitch, C J, "Price Theory and Business Behaviour", **Oxford Economic Papers**, 2, 1939.

Hotelling, H, "Stability in Competition", reprinted in Boulding and Stigler (1953), chapter 23.

Hutcheson, T W, **A Review of Economic Doctrines 1878-1929**, Oxford, The University Press, 1953.

Kaldor, N, "Mrs Robinson's **Economics of Imperfect Competition**", **Econometrica**, vol 1, 1934, pp 335-341.

Kaldor, N, "Market Imperfection and Excess Capacity", **Economica**, vol 2, 1935, pp 33-50.

Keynes, J M, **Essays in Biography**, London, Rupert Hart-Davis, 1951.

Kuenne, R E, **Monopolistic Competition Theory: Studies in Impact**, London, John Wiley, 1967.

Loasby, B J, **Choice, Complexity and Ignorance**, Cambridge, The University Press, 1976.

Marshall, A, **Industry and Trade**, London, Macmillan, 1920.

Marshall, A, **Principles of Economics**, 8th edition, London, Macmillan, 1956.

O'Brien, D P, "A Marshall, 194201924", in O'Brien, D P and Presley, J R (eds), **Pioneers of Modern Economics in Britain**, London, Macmillan, 1981.

O'Brien, D P, "The Evolution of the Theory of the Firm", in Stephen, E H (ed), **Firms, Organization and Labour**, London, Macmillan, 1984.

Pigou, A C, **The Economics of Welfare**, London, Macmillan, 1924.

Philips, L, **The Economics of Price Discrimination**, Cambridge, The University Press, 1983.

Reid, S, **The Kinked Demand Curve Analysis of Oliogopoly**, Edinburgh University Press, 1981.

Rheinwald, T P, "The Genesis of Chamberlinian Monopolistic Competition Theory", **History of Political Economy**, vol 9, 1977, pp 522-34.

Robinson, J, **The Economics of Imperfect Competition**, London, Macmillan, 1933.

Robinson, R, **Edward H Chamberlin**, New York, Columbia University Press, 1971.

Rothschild, K, "Price Theory and Oligopoly", **Economic Journal**, vol 57, 1947, pp 299-320. Reprinted in Boulding and Stigler (1953).

Rothschild, K, "Chamberlin and German Economics", in Kuenne (1967), chapter 13.

Samuelson, P A, "The Monopolistic Competition Revolution", in Kuenne (1967), chapter 5.

Schneider, E, "Milestones on the Way to Theory of Monopolistic Competition", in Kuenne (1967), chapter 6.

Schumpeter, J A, **History of Economic Analysis**, London, George Allen and Unwin, 1954.

Shackle, G L S, **The Years of High Theory**, Cambridge, University Press, 1967.

Skinner, A S, "Of Factor and Commodity Markets: A Note on E H Chamberlin", **Oxford Economic Papers**, vol 33, 1981, pp 122-34.

Skinner, A S, "The Origins and Development of Monopolistic Competition", **Journal of Economic Studies**, vol 10, 1983(a), pp 52-67.

Skinner, A S, "Oligopoly and the Theory of the Firm" (with M C Maclennan) in **Economic Analysis in Historical Perspective**, Creedy, J and O'Brien, D P (eds), London, Butterworths, 1984.

Skinner, A S (with F G Hay and C Oughton), **A Perspective on Intermediate Price Theory** (NUP, 1996).

Sraffa, P, "The Laws of Returns under Competitive Conditions", **Economic Journal**. Reprinted in Boulding and Stigler (1953), chapter 9.

Stigler, G J, "Capitalism and Monopolistic Competition", **American Economic Review Papers and Proceedings**, vol 40, 1950, p 63.

Stigler, G J, "Monopolistic Competition in Retrospect", in **Five Lectures on Economic Problems**, New York, Macmillan, 1949.

Sweezy, P M, "Demand Under Conditions of Oligopoly", reprinted in Boulding and Stigler (1953), chapter 20.

Triffin, R, **Monopolistic Competition and General Equilibrium Theory**, Cambridge, Harvard University Press, 1956.