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THE THEORY OF CONSUMER'S DEMAND

PUBLISHED FOR VASSAR COLLEGE

THE THEORY OF CONSUMER'S DEMAND

By

RUBY TURNER NORRIS, PH.D.

*Assistant Professor of Economics and Sociology
at Vassar College*

NEW HAVEN

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*The Publication of This Book Was Made Possible by
the Lucy Maynard Salmon Fund, Established at
Vassar College, June, 1926.*

To my teachers in economic theory:

BERNARD HALEY

MABEL NEWCOMER

JACOB VINER

EDWARD CHAMBERLIN

EDWARD MASON

PREFACE

THE most hopeful development in economic theory for decades I believe to be the theory of monopolistic competition. It has come about largely through changed assumptions as to the elasticity of the demand schedule which confronts the individual producer. Yet the development which has resulted has been concerned almost wholly with supply factors. We still think of market, normal, total, or sellers' demand schedules being integrated from individual demand schedules which reveal the various quantities of *identical undifferentiated commodities* a person would take at various possible prices.

The present book aims to develop a theory of *demand* on the basis of much the same assumptions as those used by Professor Chamberlin and Mrs. Robinson. They have rewritten supply theory in terms of a limited number of close competitors who sell differentiated products. A theory of demand also needs to be developed in terms of related goods. In my attempt to do so I employ primarily the method of deduction long familiar to economic theorists. Also, wherever possible, I have attempted to interview businessmen and consumers on specific points which admit of inductive verification.

Professor Mason has said recently that "the theory of oligopoly has been aptly described as a ticket of admission to institutional economics." The recent work of such persons as Mason himself, his colleague Wallace, and Willard Thorp presages vast changes in our conceptions of monopolistic competition. The theory of price is being displaced by the theory of price policies; and the theory of price policies, almost as soon as the problem is seen in these terms, gives way to the study of the practice of price (and nonprice) policy in individual businesses. As economic theory approaches more realistically every day the market on the supply side of the analysis, it is incumbent upon us to analyze demand in terms which are roughly at the same level of concreteness. At the moment demand theory is indubitably one of the most backward elements in the economist's equipment.

It is probable that the level of complexity and adequacy of

demand theory will always be low. Human nature—that infinitely complex and anarchic thing—is always lurking in the background. Demand theory can never be very fully treated, so it will probably always be simply treated.

Helpful criticism has been given the writer by various economists and sociologists, none of whom, of course, is responsible for the final form of the analysis. For advice on particular problems I should like to thank Professor Oscar Lange of the University of Chicago, Professor Edward Chamberlin and Dr. Paul Sweezy of Harvard University, Professors Emily Brown, Margaret Myers, and Mabel Newcomer of Vassar College, Professors Walter Rautenstrauch and J. M. Clark of Columbia University, Dr. Gladys Meyer of the New York School of Social Work, Dr. Q. Forrest Walker of Macy and Company, and Professor Fritz Machlup of the University of Buffalo. I am further much indebted for moral support and forbearance during composition to Mr. and Mrs. Henry Korson and my relatives, Mr. Frederick J. Sibley and Mrs. Martha S. Turner.

My work in the field of economic theory owes much to the detailed training in the deductive method and in the history of economic thought which I received from Professor Bernard Haley of Stanford University during the years 1929–33. Professor Haley has given valued advice on several chapters of the text.

Some of the material in Chapters IV, VI, and VII has been taken from my article, "The Analysis of Demand," which appeared in the *Quarterly Journal of Economics* in 1939. I wish to thank the editors of that journal for permission to republish.

Finally I wish to express my gratitude to Vassar College for providing me with a Faculty Fellowship for the purpose of carrying on this investigation, and to the Lucy Maynard Salmon Fund for Research for defraying the publication costs.

RUBY TURNER NORRIS

Vassar College.
June 1, 1941.

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PART I

ORIGINS AND ALTERNATIVES

CHAPTER I

THE POINT OF DEPARTURE

DURING most of the evolution of economic theory demand has been a relatively neglected element in economic analysis.¹ As a point of departure we may suitably review, briefly and in the broadest terms, the thought of the major schools on this subject.²

The classical school was concerned primarily with the determination of normal value and the main stress was placed upon various formulations of cost of production. The very sparse references to demand in the writings of Smith and Ricardo (Marshall's excuses for Ricardo notwithstanding)³ reveal a crude quantitative concept—demand is the quantity wanted—with very little evidence of any flexibility or relativity to price or income.⁴ By the time of John Stuart Mill

1. An outstanding brief review of the history of the theory of demand is Jacob Viner, "The Utility Concept in Value Theory and Its Critics," *Journal of Political Economy*, XXXIII (1925), 369-387. Many citations of historically important works are given there which are omitted in the text.

2. I do not consider the Marxian school as a "major" school in this particular aspect of economic theory, but rather an unimportant appendage to the classical school.

3. Alfred Marshall, *Principles of Economics* (8th ed., London, 1927), Appendix I.

4. See, for instance, Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (Everyman's ed., London, 1910), pp. 49-50: "When the quantity of any commodity which is brought to market falls short of the effectual demand, all those who are willing to pay the whole value of the rent, wages, and profit . . . cannot be supplied with the quantity which they want. Rather than want it altogether, some of them will be willing to give more. A competition will immediately begin among them, and the market price will rise more or less above the natural price. . . ."

David Ricardo, *The Principles of Political Economy and Taxation* (Everyman's ed., London, 1911), p. 42: "With the same population, and no more, there can be no demand for any additional quantity of corn"; pp. 43-44, "But with such an increase of produce, without an increase of demand, there could be no motive for employing so much capital on the land; one portion would be withdrawn, and consequently the last portion of capital would yield 105 instead of 95, and rent would fall . . . the demand being only for 340 quarters."

4 THE THEORY OF CONSUMER'S DEMAND

the law of demand and the concept of elasticity of demand were clearly present, but the logical role of demand in the analysis was still that of a subordinate.⁵ Mill's position on the relationship of demand and supply is set forth by him as follows:⁶

It is, therefore, strictly correct to say, that the value of things which can be increased in quantity at pleasure does not depend (except accidentally, and during the time necessary for production to adjust itself) upon demand and supply; on the contrary, demand and supply depend upon it. There is a demand for a certain quantity of the commodity at its natural or cost value, and to that the supply in the long run endeavours to conform. . . . The permanent tendency of supply is to conform itself to the demand which is found by experience to exist for the commodity when selling at its natural value. . . . In all things which admit of indefinite multiplication, demand and supply only determine the perturbations of value, during a period which cannot exceed the length of time necessary for altering the supply. While thus ruling the oscillations of value, they themselves obey a superior force, which makes value gravitate toward Cost of Production.

Mill does write at some length about "utility" symbolized by "U" and difficulty of attainment "D," but this utility is merely a synonym for the highest price a buyer would be willing to pay rather than forego a single unit of a good.⁷ There is much groping in Mill toward the concept of want-satisfying power behind demand, as there was in the discussion of the "paradox of value" which runs through all of the writings of the classical school. On the whole, however, Mill's analysis starts with the individual demand schedule—the concept of quantity taken in response to various prices. Psychological quanta are wholly absent from his basic treatment. In light of the contemporary dilemma concerning marginal utility, it is of interest that historically demand theory pro-

5. John Stuart Mill, *The Principles of Political Economy* (Ashley ed., London, 1909), pp. 446–450.

6. *Ibid.*, pp. 455–456.

7. *Ibid.*, pp. 442–443.

ceeded from demand schedules backward and later to utility schedules.

The work of the Austrian school is the only important group of theories which assign to demand the major role in the familiar dichotomy, demand and supply. The concept of utility, taken from the utilitarians or as Viner believes developed independently by economists, was put to work in economic theory.⁸ It was assumed that utility is cardinally measurable, and buyers' preferences were conceived to be worked out in a highly rationalistic and mechanistic way by means of utility schedules. Lloyd⁹ and Gossen¹⁰ earlier had developed the law of diminishing marginal utility, and this the Austrians proceeded to develop. It was made of paramount importance in the analysis of the prices of both commodities and factors of production.¹¹ Fundamental to the Austrian school was the assumption—usually not very conspicuously displayed—that the quantity of the basic factors of production was not a function of their remuneration. Thus Böhm-Bawerk writes: "Production may be compared to a giant pump. Every branch of want has its separate pipe sunk down to the great *reservoir* of the original productive powers."¹² With our knowledge derived from a half-century we can of course see that within this framework of assumption the pull of demand would indeed have the dominant force in setting comparative values.¹³

The neoclassical school, led by Alfred Marshall, has fused the analyses of the classical and the Austrian schools. The marginal-utility schedules of the Austrians are pictured as

8. Viner, *op. cit.*, p. 375.

9. W. F. Lloyd, *A Lecture on the Notion of Value*, London, 1834. Cited by Viner, *op. cit.*

10. H. H. Gossen, *Entwicklung der Gesetze des menschlichen Verkehrs und der daraus-fließenden Regeln für menschliches Handeln*, Brunswick, 1854.

11. Eugen v. Böhm-Bawerk, *The Positive Theory of Capital* (William Smart, trans.), New York, 1923.

12. *Ibid.*, p. 230. The italics are mine.

13. Jacob Viner, "Cost Curves and Supply Curves," *Zeitschrift für Nationalökonomie*, III (1931), 24.

underlying demand schedules, and cost of production is developed from Mill as the long-run determinant of supply schedules. In one important summary Marshall speaks of these two forces as equal and opposite: "We might as reasonably dispute whether it is the upper or the under blade of a pair of scissors that cuts a piece of paper, as whether value is governed by utility or cost of production."¹⁴ However, on the next page Marshall holds "that, *as a general rule*, the shorter the period which we are considering, the greater must be the share of our attention which is given to the influence of demand on value; and the longer the period, the more important will be the influence of cost of production on value. For the influence of changes in cost of production takes as a rule a longer time to work itself out than does the influence of changes in demand."¹⁵

At various other points in Marshall there is evidence that he reverted to the classical antecedents of his thought. The very form of his analysis is such evidence. Marshall refined and carried farther the distinction commonly found in the early classical writers between market and normal price, by differentiating three periods of time in his analysis—a distinction based on criteria derived from the supply side of the dichotomy.¹⁶ Demand analysis can also be differentiated according to time periods, as is indicated in Chapter VI below. Again in his Appendix I on the history of value theory he defends Ricardo against the accusation of having slighted demand, by remarking marginally that "he took utility for granted, because its influence is relatively simple."¹⁷ This "simplicity" is reflected throughout Marshall by his willingness to put the same demand schedule to work against all of the various kinds of cost and supply curves of his elaborate analysis.¹⁸

14. Marshall, *op. cit.*, p. 348.

15. *Ibid.*, p. 349.

16. *Ibid.*, pp. 330, 415 ff.; Bk. V, chaps. ii, v.

17. *Ibid.*, p. 814.

18. *Ibid.*, pp. 342, 456.

Altogether it would appear that Marshall is rather confused as to whether or not he regards demand as co-ordinate with supply in determining value. Logically it seems to the writer that his scissors metaphor is his most logical position. Within the Marshallian framework, in all times and periods, demand and supply are co-ordinate and equal partners in the determination of value (unless one or the other happens to have an elasticity of either zero or infinity, as is the case with perishables or constant-cost commodities, when the asymmetry of influence is purely mechanical). Space does not permit any careful review of Marshall's theory, and it will be assumed to be unnecessary in a book addressed to economists. The concern of all of the groups mentioned above thus far—the classical, Austrian, and neoclassical schools—has been with pure (or, synonymously in this work, perfect) competition and with partial equilibria. There have been three other important groups which have challenged this main line of development of economic theory: the mathematical school is in revolt against the partial-equilibrium nature of Marshallian economics; the sociologists and psychologists attack its conception of human nature; the monopolistic-competition school abandons the assumption of pure competition.

It is obvious that a demand schedule for commodity A which is drawn up on the assumption that the prices of all other things remain the same leaves something to be desired. Other prices do not remain the same. A reading of Marshall and other neoclassical writers of a "literary" variety also gives rise to an uncomfortable feeling that one is reasoning around in a circle and not necessarily ever "coming out" of it. These difficulties are precisely those attacked by the mathematical school. It is assumed that prices of all commodities and all factors of production are mutually interdependent. Marshall had of course taken up certain commodities—rival goods such as tea and coffee—as peculiarly related, but he regarded such ties as exceptional or at least, if present, un-

important in influence.¹⁹ With the view that all goods and factors of production are interdependent the possibility of depicting the demand or the supply schedule for any single good disappears, and there results rather a series of mathematical equations. Fortunately for those who dislike indeterminateness, there is one equation for each unknown, so that the whole system is susceptible to solution as a series of simultaneous equations.

This view of the price system is indubitably the most satisfactory when one wishes to think about the functioning of the whole economic system, but it is incredibly cumbersome. As Professor Ricci has written concerning the work of Walras and Pareto, "the whole apparatus gives somewhat the impression of a magic castle, satisfying to the imagination but of little assistance in solving the housing problem."²⁰ For the solution of practical problems one cannot, in point of fact, assign values and proceed to solve the equations of the mathematical economists. For this reason, the Marshallian analysis and other partial-equilibrium treatments can survive side by side with the more philosophically adequate but less concrete mathematical analysis.

One of the tools developed by the mathematician Pareto for use in the special field of related goods was the indifference diagram. This device, explained at length below, has recently been seized upon by J. R. Hicks and others and has been made the basis for a new type of partial-equilibrium presentation. This approach to demand theory is now the main challenger of the Marshallian partial-equilibrium treatment, and so it will be examined in detail. Chapter II is devoted to an exposition of the Hicksian analysis in as Marshallian and therefore familiar terms as possible. Chapter III is devoted, in part, to a critique of Hicks's *Value and Capital*.²¹

19. *Ibid.*, p. 105 n. 1, p. 131.

20. Umberto Ricci, "Pareto and Pure Economics," *Review of Economic Studies*, I (1933), 20.

21. Oxford, 1939.

Another important line of attack upon Marshallian value theory is upon its alleged hedonistic psychology. Much of the criticism on this score stems from economics' sister sciences—anthropology, psychology, and sociology.²² The latter have gradually been developing a concept of man which reveals him as "irrational" over wide areas of conduct, habit-ridden, and culture-dominated. The very concept of "rational" behavior—so implicit in all contemporary schools of economic thought—is called into question. These criticisms are largely to be found in recent journal materials, and thus far, in the writer's opinion, they have not exercised the influence upon the course of economic theory which they deserve to have.²³ They form the background of Chapter IV and their consequences, I hope, run through much of the theory that follows.

A third contemporary revolt is from the Marshallian assumption of pure competition or a simple dichotomous competition—monopoly division of all markets. The monopolistic-competition school is re-examining the neoclassical analysis on the assumption that production is typically by a small group of sellers who are putting out differentiated products. A main feature of both of the definitive treatments of this approach—Professor Edward Chamberlin's *The Theory of*

22. Leading statements in opposition to the marginal-utility theory on the basis of its psychology are: Frank H. Knight, "Ethics and the Economic Interpretation," *Quarterly Journal of Economics*, XXXVI (1922), 454-481; Wesley C. Mitchell, "Human Behavior and Economics: A Survey of Recent Literature," *Quarterly Journal of Economics*, XXIX (1914), 1-47; and "The Rationality of Economic Activity: I," *Journal of Political Economy*, XVIII (1910), 97-113; J. M. Clark, "Economics and Modern Psychology: I," *Journal of Political Economy*, XXVI (1918), 1-30; E. H. Downey, "The Futility of Marginal Utility," *Journal of Political Economy*, XVIII (1910), 253-268; R. G. Tugwell, "Human Nature in Economic Theory," *Journal of Political Economy*, XXX (1922), 317-345.

23. Economists who have attempted to write a somewhat "sociological" type of economic theory include B. M. Anderson, *Social Value*, Boston, 1911, and Philip H. Wicksteed, *The Common Sense of Political Economy*, London, 1910. Undoubtedly Hicks's attempt to get away from the cardinal measurement of utility is a reflection of this body of criticism, although in other respects, as argued in chapter iii, Hicks seems to be oblivious to the implications of recent sociological thought.

*Monopolistic Competition*²⁴ and Mrs. Robinson's *The Economics of Imperfect Competition*²⁵—is that the demand schedule confronting the seller—unlike the situation under perfect competition—is negatively inclined. With shifted assumptions and new analytical tools a whole series of problems is now under discussion. Apart from the new shape attributed to the demand curve confronting the seller, however, the demand side of the analysis remains curiously unaffected by the new assumptions of the school. The demand schedule which is counterpoised against the sellers' cost curves may possess a different shape than that of Marshall, but each *individual* demand schedule is made up (by implication) in the orthodox Marshallian way. Part II of this book is largely devoted to attempting to supply a modernized analysis of demand in monopolistically competitive markets.

24. Cambridge, 1933.

25. London, 1933.

CHAPTER II

THE RELATIONSHIP BETWEEN INDIFFERENCE CURVES AND MARGINAL UTILITY

BY ALL odds the most important and widely discussed challenge to the Marshallian theory of demand is that of the contemporary British economists, J. R. Hicks and R. G. D. Allen.¹ Building upon the work of the mathematical school they have produced a systematic theory of subjective value; they would substitute "indifference curves" for the traditional marginal-utility analysis. The new approach is mathematically connected with the older analysis and the interconnections must be fully appreciated before we will be in a position to approach the important and difficult task of comparative evaluation.²

The present chapter aims, first, to reveal the connections between marginal utility and indifference curves. A second and by no means subsidiary objective is to present a simple and comprehensible version of the new approach. In this exposition the latest and most systematic expression of the indifference-curve analysis will be followed—Hicks's important book, *Value and Capital*.³ In a few minor respects this book supersedes the earlier work of these economists, and it provides an important summary. As all the reviewers of *Value and Capital* have been quick to acknowledge, it is a very difficult book. At times it seems to be needlessly elliptical and esoteric. It is indeed unfortunate that the geometrical thoroughness of Joan Robinson's *The Economics of Imper-*

1. J. R. Hicks, *Value and Capital* (Oxford, 1939), Pt. I; R. G. D. Allen, "The Nature of Indifference Curves," *Review of Economic Studies*, I (1934), 110-121.

2. See chap. iii.

3. This chapter should be read in conjunction with *Value and Capital*, Pt. I.

fect Competition could not have been brought to bear on this subject.

It will be convenient to organize the exposition of indifference curves around a familiar distinction in economic theory—that between goods which, if possessed simultaneously, do affect each other's marginal utility and goods which do not. Following Pareto's definitions,⁴ we will regard as "unrelated" those commodities which may be acquired without affecting each other's utility. Related goods are *substitutes* if the acquisition of one good *lowers* the utility of the other, or *complementary* if the acquisition of the goods mutually *raises* the others' utility. We may now conveniently start with the most familiar case, that of unrelated goods.

1. INDIFFERENCE CURVES BETWEEN UNRELATED COMMODITIES

HICKS holds that it is psychologically untenable to suppose that an individual is able to distinguish and weigh marginal utilities.⁵ To imagine that people go about comparing an increment of hats with an increment of their stock of shoes and then try to equate the ratio to price is considered unrealistic. Instead, he believes that between any two goods which one might think of possessing the individual is able to construct a table giving "bundles" of goods of equal *total* utility. Thus it might be that one would regard five pairs of shoes as identical in utility to ten hats. Between these two extremes we have the following schedule (composed, by introspection, by the writer) of goods of equivalent total utility:

- 5 pairs of shoes
- 4 pairs of shoes and 1 hat
- 3 pairs of shoes and 2 hats
- 2 pairs of shoes and 3 hats
- 1 pair of shoes and 6 hats
- 0 pair of shoes and 10 hats

4. V. Pareto, *Manuel d'Économie Politique* (Paris, 1909), p. 268; and Y. Edgeworth, *Papers Relating to Political Economy* (London, 1925, 3 vols.), I, 117; Hicks, *op. cit.*, p. 42.

5. Hicks does not go into the literature of criticism of cardinally measured marginal utility; but the presumption is that he is assuming much the same point of view as that of the critics cited in chap. iv.

If, instead, we started off with seven pairs of shoes, the quantities of both hats and shoes all along the line would be raised somewhat. Consequently there can be constructed along two axes a graph with as many of the family of indifference curves as is desired. On Chart 1, along OY is measured the quantity of shoes and along OX may be set off the number of hats of equivalent utility. Obviously the length of the units plotted on each axis *could* be absolutely arbitrary, but it is convenient to depict an initial small quantity of goods of equal total utility by an equal distance on each axis. Unless this is done, the indifference curve takes a flat or a steep shape purely as a result of the calibration of the axes, whereas such flatness or steepness has a special and definite meaning of its own, as will be indicated below. Measuring off, then, a quantity of shoes and hats of equal total utility by the distances OR and OS respectively, we get the following system of indifference curves:

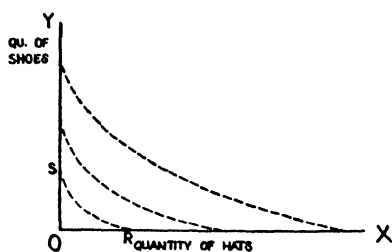


Chart 1. *A Family of Indifference Curves.*

We have thus constructed a contour map of aggregates of goods which have the same total utility. Curves farther from the origin will naturally indicate a commodity combination of greater utility than the nearer curves, but that is all they indicate. No judgment is made as to the exact amount of total utility or of increased utility caused by moving to a more remote curve. All values on Chart 1 are in terms of "more than," "less than," and "equivalent."⁶ The term "marginal utility" can be completely dispensed with. What is portrayed

6. Hicks, *op. cit.*, p. 17.

is physical quantities of *goods* which are deemed by an individual to be of equal subjective value with another quantity of *goods*. We are thus alleged to be free at last from the hedonistic incubus. This is supposed by the advocates of indifference curves to be a "behavioristic" theory.⁷

It will not have escaped the acute observer that the curves on Chart 1 were drawn convex to the origin.⁸ This is, for unrelated goods, the Hicksian expression of what Marshall would call the law of diminishing marginal utility. In the illustration, when one has five pairs of shoes and no hat, one attaches great importance to gaining hats and would be willing to part with a relatively high per cent of one's shoe stock to gain some. The opposite case occurs when one has all hats and no shoes.

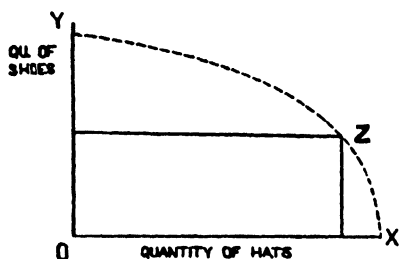


Chart 2. *A Concave Indifference Curve.*

It is instructive to contemplate on Chart 2 the meaning of a supposed point such as Z, on a concave indifference curve. It indicates that if this individual were to part with about a tenth of his hat supply, OX, the loss would have to be compensated by about a half of the shoe supply, OY. But

this is not easily reconciled with the basic fact that OX equals OY in importance to this individual. For most goods, consequently, we may presume a type of indifference curve which sags between the two points of equal total utility on the axes—in other words, a curve to some extent convex to the origin.

The question now logically arises: what precisely determines the *degree* of convexity? When will, in general, the

7. Henry Shultz, *The Theory and Measurement of Demand* (Chicago, 1938), p. 12; Oscar Lange, "The Determinateness of the Utility Function," *Review of Economic Studies*, I (1934), 218-225.

8. Convexity and concavity in this chapter should always be taken with reference to the origin.

indifference curve be nearly flat and when will it be bent sharply? To answer this and allied questions, let us assume for the moment that marginal utility is measurable in terms of a unit of psychic satisfaction, the "util." We make this assumption, it will be understood, without prejudice as to the ultimate question of the measurability of utility. We may start by assuming marginal-utility schedules for a pair of commodities and proceed to construct appropriate indifference curves from them. The mathematics of one such derivation will be indicated fairly completely, as the technique is one which will be frequently employed hereafter in this chapter. Let us assume that the individual has an elastic marginal-utility schedule for shoes and for hats⁹ and proceed to construct an indifference map, writing in at the various points the total utility of the quantity of the two goods indicated by the axes:¹⁰

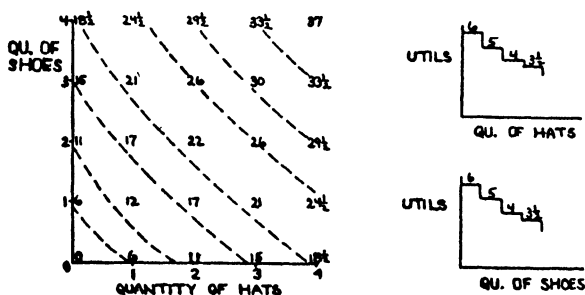


Chart 3. *Indifference Curves Derived from Elastic Utility Schedules.*

9. The goods are assumed to be homogeneous and competitive. Note that at the outset two goods of the same type of elasticity are compared; what occurs when utility diminishes at unequal rates will be taken up below.

10. This technique admittedly involves hedonism of the grossest type. Its only defense must rest upon its productivity. Indifference maps and curves can be drawn in terms of "more than," "less than," and "equivalent," or they can be drawn in "utils." The latter is more useful for the limited purpose of revealing the relationship with marginal utility. It may then suitably be abandoned.

This method rests upon Böhm-Bawerk's rather than von Wieser's concept of marginality. In a famous controversy the latter held that the total utility

For example, what is the total utility of two shoes and one hat? From the utility schedules given above, add six and five to total seventeen—the number found written in at the point in the indifference map corresponding to this position. From these numbers the indifference curves can easily be constructed by the simple process of connecting points which are, either by computation or interpolation, identical in total utility. It is obvious that the indifference curve between two such elastic commodities is only very slightly convex toward the origin.

By identical technique the indifference curve for goods whose diminishing marginal-utility schedules have unitary elasticity is as follows, together with the utility schedule assumed for both goods:

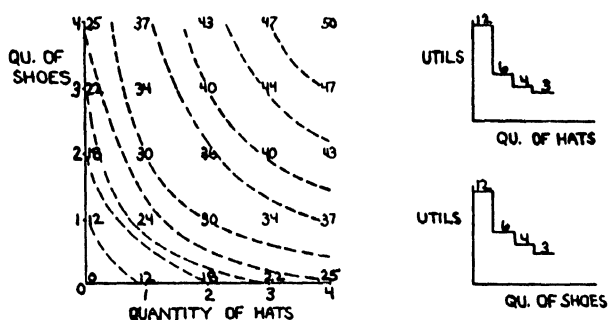


Chart 4. *Indifference Curves Derived from Unitary Utility Schedules.*

is found by multiplying marginal utility of the last increment to a stock of goods by the number of goods. Böhm-Bawerk held that since the least important increment to a stock of goods can be employed only once in the least important use, total utility is found by taking the sum of the marginal utilities of the various members of the stock of goods. See Carl Landauer, "Der Meinungsstreit zwischen Böhm-Bawerk und Wieser über die Grundsätze der Zurechnungstheorie," *Archiv für Sozialwissenschaft und Sozialpolitik*, XLVI (1919), 449-491, espec. p. 457.

And finally, if the utility schedule declines sharply, i.e., is inelastic, we get the following results:

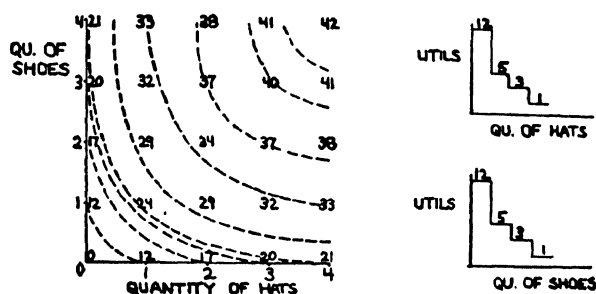


Chart 5. *Indifference Curves Derived from Inelastic Utility Schedules.*

These experiments indicate the following conclusions: convexity of indifference curves correlates with elasticity. Elastic utility schedules give rise to indifference curves which are slightly convex to the origin; unitary utility schedules yield more convex indifference curves; inelastic utility schedules cause the indifference curves to be extremely convex.

A system of such convex indifference curves which must exist between all (unrelated) pairs of goods which a consumer might buy is the fundamental background of the demand curve, or the "price-consumption" curve in Hicksian nomenclature. Suppose that the individual is given an income of \$8. Then, further, let it be assumed that the income is to be spent wholly between the two commodities under consideration. The individual gains the maximum total utility if he can obtain a quantity of both shoes and hats lying on an indifference curve as remote from the origin as possible. To carry through the earlier illustration, we may suppose that the given income of \$8 will enable this consumer to command, at existing prices, either OL units of hats or OB units of shoes, on Chart 6. We mark off on OY a length OB such that all of the income is spent on shoes;

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and OL indicates similarly on OX how much of X could be bought if all of the income were spent on it. By connecting these two points a line is found any point of which, by geometrical necessity, will indicate a quantity of hats *and* shoes which will exactly use up total income. Then it is clear that the individual will be getting the most for his money when he obtains the quantity of goods lying on the highest indifference curve which touches the line BL. This is at T, where an indifference curve is tangent to the hypotenuse.

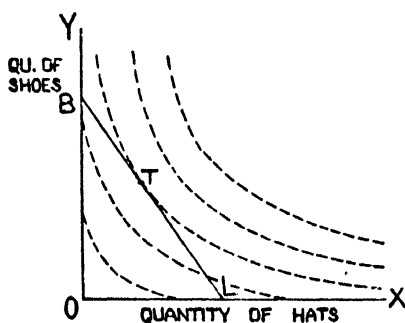


Chart 6. *Determination of a Point on the Price-Consumption Curve.*

We have now discovered one point upon this individual's demand curve for hats. If total income remains fixed at \$8 and the price of shoes is assumed to be held constant, we can readily find the quantity of hats which this individual would purchase (per unit of time). To find other points on the demand curve for hats requires only the asking of such questions as: how many units would he buy if the price of hats doubles, trebles, is cut in half, etc. For example, were it to be cut in half, say from \$2 a unit to \$1, then the amount of hats which his fixed income commands would be doubled, and a new situation is indicated:

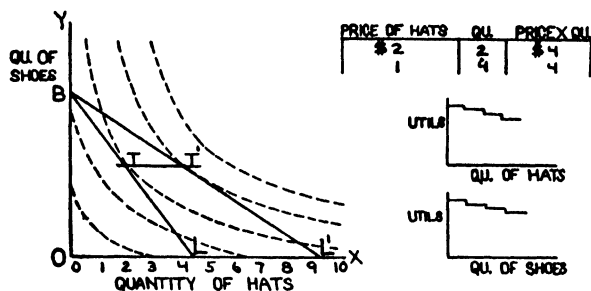


Chart 7. *Determination of Price-Consumption Curve: Demand for Hats Unitary.*

Under the new circumstances a different and more remote indifference curve would be tangent to the new line BL'. In the situation depicted above the two points of tangency are T and T'. Giving numerical values to the axis, we get the accompanying small demand schedule. The situation is revealed to be one in which the demand schedule possesses unitary elasticity.

If, on the other hand, the shift from \$2 to \$1 had caused the new point of tangency to be lower (measured vertically from the X axis) the demand schedule for hats would possess an elasticity greater than unity; and if the new tangency were higher, the demand for hats would be inelastic. These two situations are presented below, together with appropriate demand schedules:

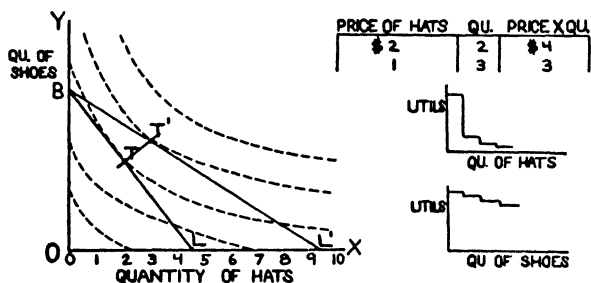


Chart 8. *Price-Consumption Curve: Demand for Hats Inelastic.*

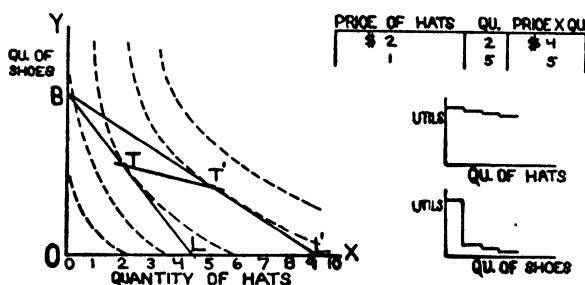


Chart 9. *Price-Consumption Curve: Demand for Hats Elastic.*

The question may well have arisen in the reader's mind: what *causes* these indifference curves to be tangent at various heights from the X axis? The question is a fair one and the answer is to be found in a study of the diminishing marginal-utility schedules which have accompanied the three preceding charts.

Let us assume that the individual has two extremely *dissimilar* diminishing marginal-utility schedules such as those pictured on Chart 8 above. The situation is that of the college student who wears hats only when she goes to town but has considerable use for different kinds of footwear. What will the indifference curve based on two such schedules be like? Let us calibrate the axes, as usual, so that two initial amounts of the two goods possessing equal total utility are equally distant from the origin. Now let us construct the family of indifference curves for larger quantities of the two variables. If the utility schedules are as indicated, it must be obvious that a very large quantity of hats indeed must be the equivalent of a small change in the stock of shoes. Hence the family of indifference curves has the skewed appearance of those in Chart 8. Since the indifference curves of larger quantities will at the right be nearly parallel to the X axis, points of tangency with such curves will be high relative to points of tangency with more steeply sloping curves. The demand schedule for hats under these conditions is *inelastic*.

This is as it should be. In Marshallian terms the presence of great inelasticity in the diminishing marginal-utility schedule for a good should result in great inelasticity in the individual demand schedule. The same result is, of course, obtained if utility theory be presented in terms of total utility, which is essentially what the indifference curve does.

Without carrying through the analysis in detail, it can be shown that if the marginal utility of two commodities diminishes at the same rate, the indifference curves will be such that the elasticity of demand is unitary as is indicated on Chart 7; and if the marginal utility of the good measured along the X axis—in this case, hats—declines less rapidly than the other commodity, then the curves will be skewed in such a manner that the demand schedule for hats will be elastic. This is the situation depicted on Chart 9.

It has seemed necessary to set forth these relationships in some detail since one otherwise very helpful and illuminating review of Hicks's book had these elasticities reversed¹¹ and the matter is never taken up by Hicks himself, because, we may infer, he viewed it as elementary.

To obtain the total or social demand curve one has only to summate, as in Marshall, the individual demand schedules. But will the individual necessarily be in equilibrium with the price which emerged from the total market situation? Not necessarily. Under the Marshallian system equilibrium was achieved only when the ratio of the marginal utility of any two goods equaled the ratio of their prices. In the Hicksian system this principle is translated into the rule that the price ratio must correspond with the slope of the indifference curve at the point of tangency on the indifference curve or, put another way, it must correspond with the "marginal rate of substitution of X for Y."¹² This rate, which takes the place in the Hicksian system of the com-

11. Fritz Machlup, "Professor Hicks' Statics," *Quarterly Journal of Economics*, LIV (1940), p. 279 n. 4.

12. Hicks, *op. cit.*, p. 20.

parative rates of decrease of diminishing marginal utilities, is the ratio of the amount of Y which has to be subtracted in order to compensate exactly for the addition of a small unit of X. The significance of this equilibrium condition can be understood by referring to Chart 7 above. If the price of hats is cut in half, the amount of hats which a constant income can command is doubled. The tangency point shifts to a more remote indifference curve, from point T to point T'. The slope at T' is just half as great as the slope at T, for the length of OL' is just twice OL. The amount of Y at the point of tangency which would have to be taken away to compensate for a small addition of X is just half as great, after price has fallen. Consequently the individual, in this case, is in equilibrium if as a result of a 50 per cent drop in price of hats he buys twice as much.

In addition to giving us an orthodox demand schedule by means of the indifference-curve approach, Hicks is able to tell us how much of a commodity will be purchased if its price remains unchanged, and the individual's income increases. There is no counterpart to this "income-consumption" curve in Marshall, for the latter explicitly assumes that the marginal utility of the monetary unit remains unchanged.¹³

If a person's income increases from \$1,000 to \$2,000, will he buy twice as much of everything? Usually not. Yet it is possible to conceive of two commodities, hats and shoes for example, upon which all income can be assumed to be spent which are of such a nature that this would be the case. Let us introduce a term for this situation: unitary elasticity of income expenditure. This would occur if the two commodities possessed, in Marshallian terms, equally diminishing marginal utility, regardless of the type of elasticity. A diagram of this situation follows:

13. Alfred Marshall, *Principles of Economics* (8th ed., London, 1927), p. 95; see pp. 145-146, below.

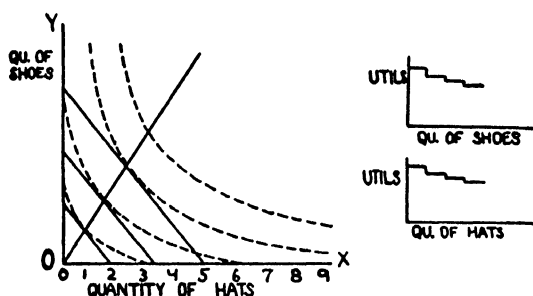


Chart 10. *Unitary Income-Consumption Curve for Hats and Shoes.*

A small income-consumption schedule can be constructed to correspond with Chart 10 given above:

<i>income</i>	<i>qu. of hats bought</i>
\$1	1
2	2
3	3

How will this income-consumption curve behave under varying assumptions concerning the marginal utility of the two commodities selected? For unrelated commodities it can be shown that the curve must have a positive inclination, with a vertical and a horizontal line as limits. In order to prove this proposition, a tool must be developed, namely, the satiation point.¹⁴ Logical extremes are often illuminating in the field of economic theory. Let us suppose that a consumer has an orthodox diminishing marginal utility schedule for shoes, but has use for only OP hats, *and no more*. Under this hypothesis, his indifference curve for these two commodities would take the following unusual shape:

14. This concept has been utilized by Milton Friedman as a means of defining competing, completing, and unrelated goods. Shultz, *op. cit.*, pp. 615 f.

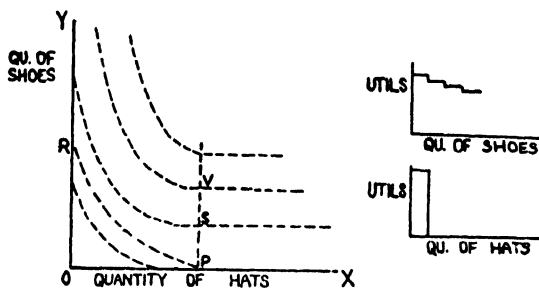


Chart 11. *Indifference Curves When One Commodity Is Satiabile.*

Set off on OX the quantity of hats, OP, which may be acquired before the point of satiation in hats is reached. Up to this point and its equivalent, OR on the Y axis, an orthodox family of indifference curves will exist. Beyond that point one can lay off on the Y axis, as usual, further quantities of shoes, and as one proceeds down the curves, the meaning is conventional to points S and V. Beyond these points, however, an infinite quantity of hats could be added without changing at all the total utility. Consequently the indifference curves flatten out into horizontal straight lines.

How will an individual spend an increasing income between two such commodities as those above? By drawing in successive parallel income-expenditure lines we find that they must be tangent to these indifference curves on very nearly a vertical straight line. This means, in common-sense terms, that if one gets no more utility out of a good once it has reached a certain quantity, one would *never* buy more than that given quantity (OP on Chart 11); and furthermore, one would approach that quantity—for most goods—only with an income sufficiently large to bring approaching satiation in all lines of goods. The following diagram sets forth the situation:

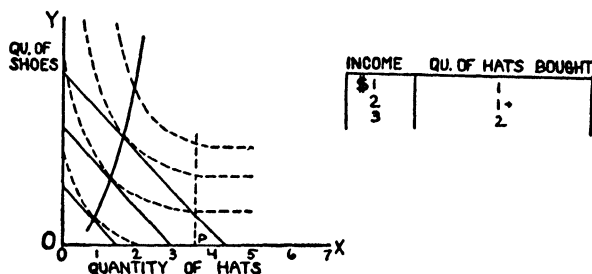


Chart 12. *Inelastic Income-Consumption Curve for Hats.*

Thus, the most extreme case of inelastic diminishing marginal utility conceivable produces an income-consumption curve practically vertical to the axis upon which the satiable commodity is placed.

At the other extreme we may assume that the quantity of shoes attains a zero marginal utility with the second unit, while that of hats goes on increasing in an orthodox fashion. A parallel analysis follows:

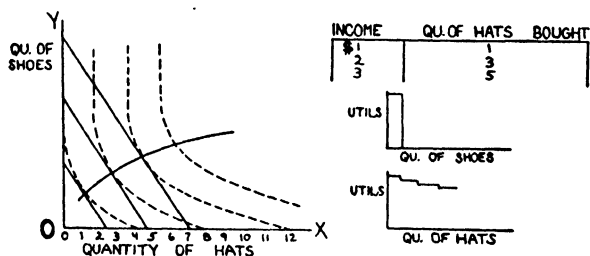


Chart 13. *Elastic Income-Consumption Curve for Hats.*

The effect, therefore, of satiability of shoes upon the demand for hats, when income increases, is to concentrate purchasing in the area in which demand is relatively insatiable, as one might expect. The income-consumption curve will be extremely elastic, almost horizontal to the axis upon which the insatiable commodity is placed.

The limits of the variability of the income-consumption curve have now emerged—a horizontal and a vertical straight

line, starting at the origin—in short, the axes. Contrary, however, to the impression which Charts 10, 12, and 13 might give, elasticity is not to be *identified* with horizontality; inelasticity with verticality. All income-consumption curves must start at the origin, of course, if income be reduced to zero. Any *straight line* starting at the origin, including the axes themselves, is a unitary income-consumption curve. Examination of Chart 14 will show that this is the case.

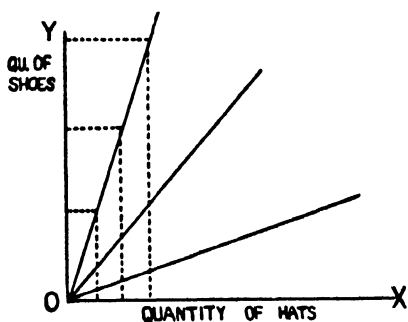


Chart 14. *Unitary Income-Consumption Curves for Hats and Shoes.*

Set off a series of equal intervals on any one of these lines. Now draw horizontal and vertical lines through the points on the selected income-consumption "curve." These construction lines will set off a series of equal intervals on both axes.

Elastic income-consumption curves for the commodity measured on the abscissa are those which are divergent from some one of the infinite number of possible unitary income-consumption "curves" on the down-side; inelastic income-consumption curves diverge from unitary "curves" on the up-side.¹⁵ The following two charts illustrate the possibilities. In both cases a few unitary income-consumption curves are drawn in, for comparison, in dotted lines:

15. If an income-consumption curve crosses a unitary income-consumption curve, it does not have one type of elasticity throughout its length. A "curve" may proceed along one unitary income-consumption curve for a distance and then, after an inflection, shift to another unitary income-consumption curve.

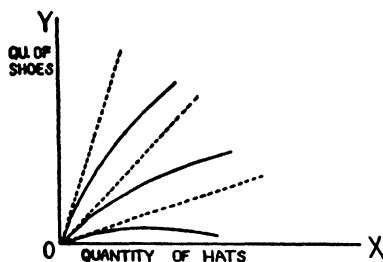


Chart. 15. *Elastic Income-Consumption Curves for Hats.*

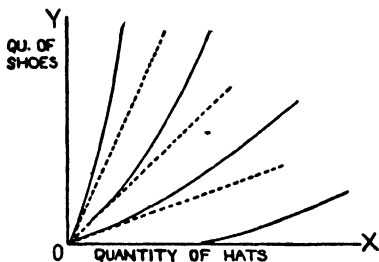


Chart 16. *Inelastic Income-Consumption Curves for Hats.*

The indifference-curve approach would be limited indeed in its application were it not possible to shift from a comparison of two commodities to a comparison of any one commodity and all other goods. It is the latter generalized indifference curve and not the former which makes the Hickian approach a serious challenge to the Marshallian theory of value. The foregoing and indeed subsequent exposition follows Hicks in presenting the development in terms of two commodities, for, like Hicks, I believe that the analysis is clearer in this simplified version. If dollars be presented on the vertical axis, there is danger, in a first approach, of confusion concerning the nature of indifference curves. One might easily think of them as demand curves rather than as commodities-of-equal-total-utility curves.

On the vertical axis, instead of shoes we can write "all other commodities than hats," or, as a convenient but slightly inexact symbol of such goods, dollars. Dollars must be interpreted when so used always to mean "dollars spent on all other commodities than hats." This is not the same thing as "general purchasing power," it will be noted, for the commodity on the X axis is always excepted. Failure to make this distinction can lead to confusion concerning the type of elasticity of income-consumption and price-consumption curves.¹⁶

16. Machlup, *op. cit.*, p. 279 n. 4.

With "dollars spent on all other things" on the Y axis, one can make up indifference curves in which a given quantum of any commodity such as hats is related to all other goods. If, for instance, the marginal utility of "dollars spent on all other things" declines at an equal rate with the marginal utility of hats, then, as income increases, we will increase our purchases of hats proportionally with our increase of purchases of other things. This precise result was found when the same equal rate of decline was assumed for hats and shoes. The result in either case is a unitary income-consumption curve for hats. The parallelism of the two analyses is complete in all respects and so will not be carried farther. Instead we will present, in conclusion, a chart showing the derivation of any point P on a price-consumption or income-consumption curve, and indicate the meaning of the parts of the diagram.¹⁷

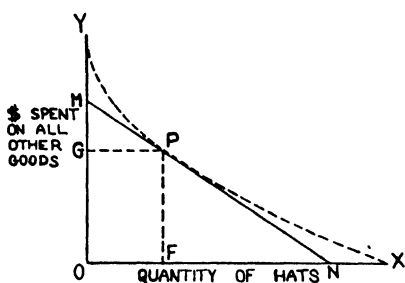


Chart 17. *Indifference Curves for Hats and Dollars Spent on All Other Goods.*

OX hats have the same total utility as OY dollars spent on other commodities. If income or prices are such that all of income will command OM of "all other goods" or ON hats, then the tangency with line MN is at point P. OG dollars will be spent on "other goods," and OF hats will be bought, involving an income expenditure on hats of GM. In other words total income, OM, is divided by point G

(in height equivalent to the point of tangency) into two parts: that spent for hats and that spent for all other things.

17. Hicks, *op. cit.*, p. 39. Figure 11 is adapted to the purpose of this exposition.

2. INDIFFERENCE CURVES OF SUBSTITUTES

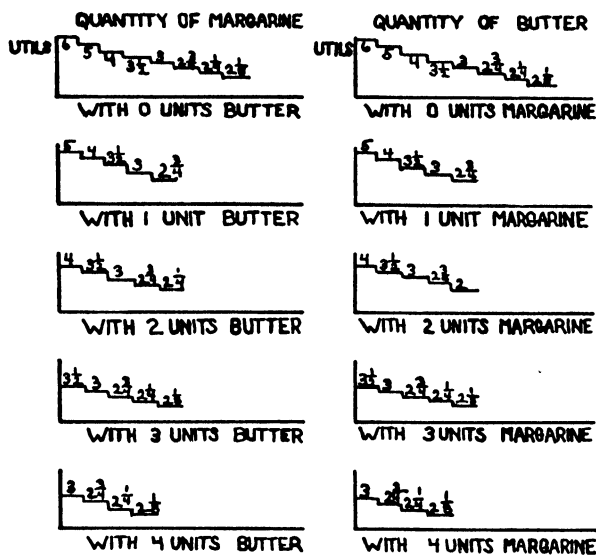
LET us use Pareto's definition of substitution and begin by analyzing substitute commodities such as butter and margarine. "Y is competitive with X (or is a substitute for X) if an increase in the supply of X (Y constant) lowers the marginal utility of Y. According to this definition, it appeared evident that the . . . relation is reversible; . . . if Y is a substitute for X, X is a substitute for Y."¹⁸

How will the indifference curves of substitute commodities behave? I think that it can be demonstrated that there are two major determinants: (1) the elasticity of the diminishing marginal-utility schedules of the commodities involved and (2) the degree to which the commodities affect each other's utility,¹⁹ that is, the degree of shift of the marginal-utility schedules.

It has already been pointed out that the indifference curve's contour is profoundly affected by the elasticity of the goods' diminishing marginal-utility schedules. This is true, as one might expect, for unrelated goods and related goods as well. In order to prove this correspondence, let us assume the following series of elastic diminishing marginal-utility schedules for margarine and butter, such that the more one has of one, the lower the entire schedule of marginal utility of the other. At the outset, we will suppose that the substitutes under consideration are equally valued. The case of inferior substitutes will be discussed at a later point.

18. *Ibid.*, p. 42.

19. R. Souter has claimed that the ideas of shift and of elasticity are essentially relative. *Prolegomena to Relativity Economics* (New York, 1933), p. 43; Knight has refuted this treatment by pointing out that "the difference between short- and long-period change lies in the 'other things' which are assumed 'equal'—'given conditions'—and the curves are analytically quite different." "The Nature of Economic Science in Some Recent Discussion," *American Economic Review*, XXIV (1934), 234. With that view the writer is in agreement.



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Under these circumstances, let us proceed to construct an indifference map. For example, what value shall we attach to one unit of butter plus two units of margarine? From the above table, four utils for the butter and nine utils for the margarine, or a total of thirteen utils. Chart 18 below, with total-utility data written in for each point, emerges from the use of this technique:

Applying the same technique to two curves of diminishing marginal utility of unitary elasticity,²⁰ the following map is found:

20. Curves may change their elasticity as they are moved downward. Each reduction, as in the previous illustration, was accomplished by starting the reduced series with the second figure of the preceding series, e.g., first reduction: 6, 4, 3, 2 $\frac{2}{5}$; second reduction: 4, 3, 2 $\frac{2}{5}$, 2, etc.

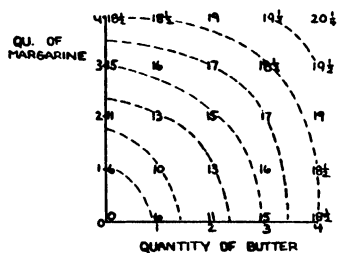


Chart 18. *Indifference
Curves for Substi-
tutes of Elastic
Marginal Utility.*

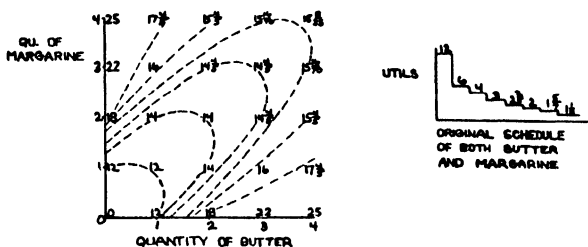


Chart 19. *Indifference Curves for Substitutes of Unitary Marginal Utility.*

Finally, indifference curves based on inelastic diminishing marginal-utility schedules yield the following interesting design:^{20a}

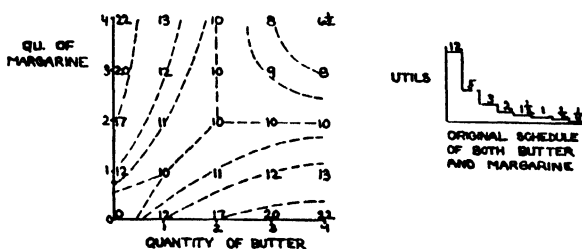


Chart 20. *Indifference Curves for Substitutes of Inelastic Marginal Utility.*

Does any generalization emerge from the study of these configurations? Two: the indifference curves of substitutes *may* be concave to the origin in shape. All three of the designs given above are concave, for the divergence which is characteristic of the indifference curves of goods of inelastic diminishing utility curves is merely an extreme form of concavity. The other conclusion which may be drawn is that the more inelastic the utility curves are, the more extreme will the concavity become.

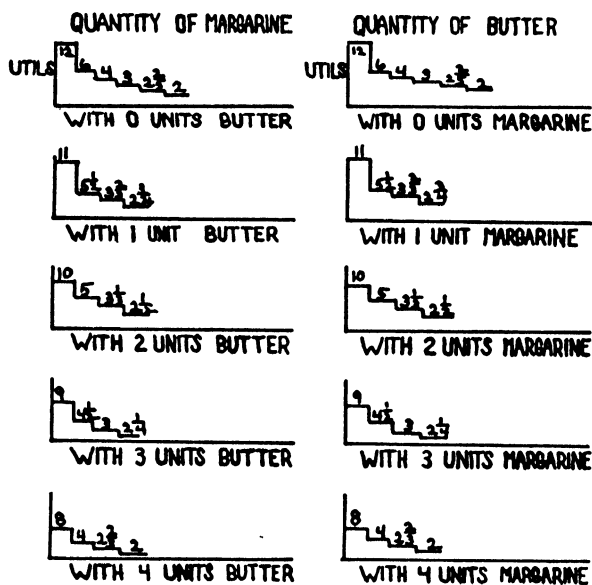
The second determinant of the form of indifference curves we have stated to be the extent of shift of the utility curves as the substitute is acquired. It will not have escaped the

20a. See n. 24, p. 42.

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reader that in all three of the analyses presented above, the schedules were shifted rather substantially from their original positions. It is not to be supposed that an "equal degree" of shift was achieved in the three cases, so that further study of shift, as an isolated factor, is needed.

Let us, for illustration, study the second case presented above in detail—that in which the diminishing marginal-utility schedules are of unitary elasticity. At the outset the reader is asked to note, on page 16, the contours of the indifference curve when two unrelated goods of unitary elasticity are compared. Now let us suppose instead that the two goods are substitutes, but to a very minor extent. The degree of shift is indicated numerically as follows:



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The indifference curves based on these shifting utility schedules are as follows:

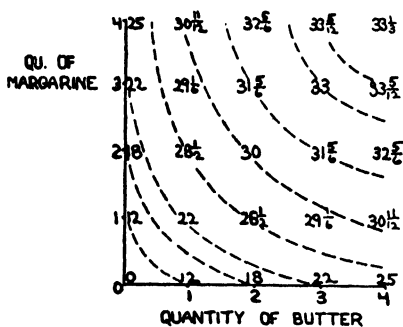
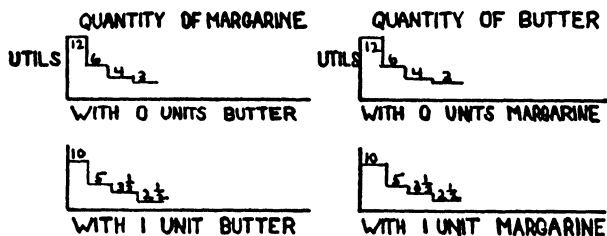
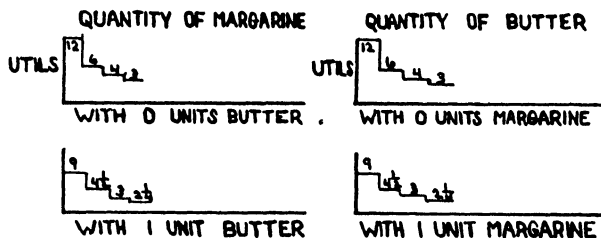


Chart 21. *Indifference Curves for Substitutes of Unitary Marginal Utility and Slight Shift.*

If the degree of shift is increased slightly, the convex indifference curves become flatter until they finally pass through the stage of being a straight line. Then as the degree of shift continues to increase, the curves become concave as indicated on Chart 19. Two of the stages in this evolution can be briefly suggested by concentrating our attention on a single indifference curve:



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The Marginal Utility of Margarine and Butter

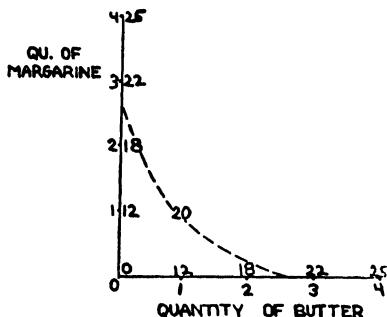


Chart 22. *Indifference Curve for Substitutes of Unitary Marginal Utility and Moderate Shift.*

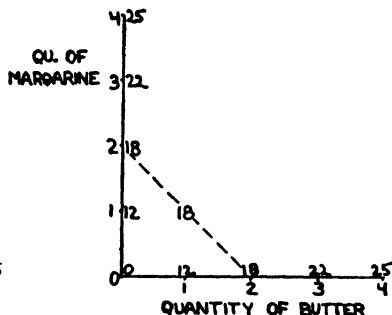


Chart 23. *Indifference Curve for Substitutes of Unitary Marginal Utility and Considerable Shift.*

The reader can, if interested, test the other kinds of diminishing utility curves by means of the same technique. The conclusions as to the behavior of the curves can be summarized most conveniently graphically.

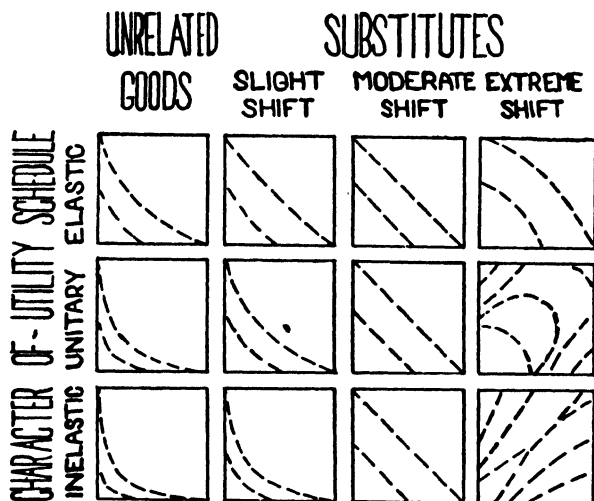


Chart 24. *Summary of the Form of Indifference Curves of Unrelated and Substitute Commodities.*

For goods of any kind of elasticity there is one certain degree of shift of one marginal-utility schedule as a result of changes in the supply of the substitute good which will cause any particular indifference curve to become a straight line. That position is a dividing line in the analysis for it corresponds with a situation of "perfect substitution." It means that the consumer is completely indifferent as to whether he has one commodity or the other. Stated another way, if *the same* commodity were put upon both axes, the "indifference curve" between "two" such commodities would be a straight line. Consequently, we may suitably term a degree of shift which results in convexity as "less-than-perfect substitution" and all degrees of shift which result in concavity as "more-than-perfect substitution."

Several aspects of the indifference curves for substitute goods require comment. Hicks has taken the position that diminishing marginal utility and the convexity of the indifference curve are not the same thing. He writes:²¹

There ought, it would seem, to be some way of translating into terms of this diagram the principle of diminishing marginal utility. At first sight, it looks as if such a translation were possible. As one moves along an indifference curve one gets more X and less Y. The increase in X diminishes the marginal utility of X, the diminution in Y increases the marginal utility of Y. On both grounds, therefore, the slope of the curve must diminish. Falling curves, whose slope diminishes as we move to the right, will be convex to the origin, as they have been drawn in the diagram.

But does this quite necessarily follow? As far as the direct effects just taken into account are concerned, it must; but there are other indirect effects to take into account too. The increase in X may affect not only the marginal utility of X, it may also affect the marginal utility of Y. With such related goods the above argument does not necessarily follow. Suppose that the increase in X lowers the marginal utility of Y, and the diminution in Y raises the marginal utility of X; and that these cross-effects are considerable. Then the cross-effects may actually offset the direct effects, and a movement along the indifference curve to the right

21. Hicks, *op. cit.*, pp. 14-16.

may actually increase the slope of the curve. This is no doubt a very queer case, but it is consistent with diminishing marginal utility. Diminishing marginal utility and convexity of the indifference curves are not the same thing.

In light of the above analysis it can be stated more precisely that concavity of the indifference curve occurs only in the case of more-than-perfect substitution. This is, as Hicks says, "a very queer case," but I doubt if Hicks realized *how* queer. More-than-perfect substitutes *are never possessed in combination*, so that the indifference curves which express estimates of the utility of various combinations of the goods cease to possess any utility. The indifference-curve family of "more-than-perfect" substitutes is an "empty economic box."

The proof of the proposition that more-than-perfect substitutes are never possessed in combination can easily be demonstrated in Hicks's own terms. If all indifference curves of more-than-perfect substitutes are concave to the origin, it follows that utility is always maximized on one or the other axis. This is evident if one scrutinizes the indifference maps given above for such goods of all kinds of elasticities. If a straight line be drawn on figures 18, 19, or 20 from any point on any X axis to any point on any Y axis, no intermediate point has as high total utility as one or the other axis. Sometimes the income-consumption and price-consumption "curves" lie wholly on one axis, and sometimes they shift abruptly from one axis to the other. But on the axes these "curves" always remain.²²

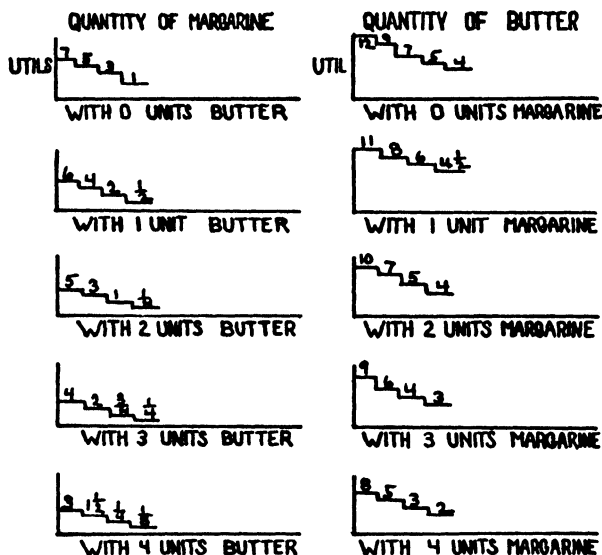
22. The price-consumption and income-consumption curves stay consistently on one axis if the marginal-utility schedules of the two commodities decline at an equal rate; if the rate of decline is unequal an abrupt shift may take place.

As a consequence of the identity of price- and income-consumption curves with the axes, there is a peculiarity and weakness of the indifference-curve analysis when applied to more-than-perfect substitutes. The elasticity of the income-consumption and price-consumption curve is always unity. This is a product of two factors: first, the assumption that all of income must be spent

In sharp contrast to the cases of indifference curves for more-than-perfect substitutes, the income-consumption and price-consumption curves of less-than-perfect substitutes are determined by points of tangency with the indifference curve family.

The income-consumption curve for unrelated goods, it has been indicated above, has as limits a horizontal and vertical straight line. Substitutes have, however, no such limitation, for it will often be the case, as income increases, that less preferred goods will be dropped from the consumption pattern. Hicks indicates this case as being characteristic of all "inferior goods" and suggests that a fairly large category of goods may be involved. He draws a chart (Figure 6, p. 29) showing a backward sloping income-consumption curve for such goods. That this could easily occur can be revealed by the simple process of assuming two unequal marginal-utility curves for butter and margarine, and shifting them slightly, as would be the case if they were unequally preferred less-than-perfect substitutes.

on two commodities, and second, the fact that under conditions of more-than-perfect substitution, utility is maximized on one or the other of the two axes. Thus, in terms of our analysis, if all of one's income is to be spent on two commodities and one's tastes and the relative prices of the goods exclude one of them, then the expenditure on the other *must* increase proportionally with income, or exactly inversely with prices. It might be thought perhaps that this unrealistic situation can be corrected by placing one of the pair of substitutes such as margarine along one axis, and along the other "all other goods" *including* the other substitute, butter. However, this is not a successful expedient. For as income increases and consumption of "all other goods" increases, consumption of butter may or may not increase. If it *does* increase, our analysis of substitutes shows that its alternative is not consumed *at all*; if the consumption of butter does not increase but rather decreases, then it has no business being assimilated into a category "all other goods," with whose behavior it is out of sympathy. The technique of placing one good against all others on the two axes is simply inapplicable to substitutes. What is needed is a three-dimensional comparison of the successful contestant among the substitutes with all other goods considered as an entity. Then, of course, unitary elasticity of the income-consumption curve and of the demand curve would no longer be inevitable.



*The Marginal Utility of
Margarine and Butter*

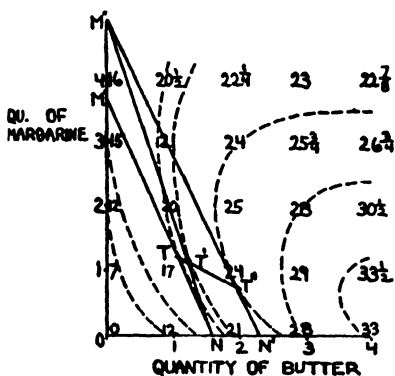


Chart 25. *Indifference Curves for Less-Than-Perfect Substitutes of Unequal Marginal Utility.*

As income increases (and line MN shifts to M'N'), it is apparent that the quantity of margarine bought will decline and the quantity of butter used will increase. The price-consumption curve for less-than-perfect substitutes will similarly be rendered determinate by the points of tangency with the indifference curves. There are no special problems here except in the realm of "inferior" goods.

Here, as in the case of the income-consumption curve, a case can be set up in violation of the "law of demand" in which, as the price of the

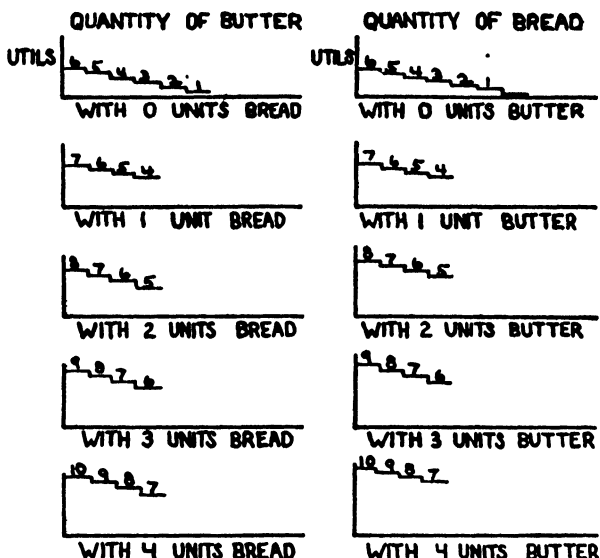
inferior good falls, less is bought. Chart 25 can be made to depict this situation by utilizing line MN from the previous analysis, and drawing in line M'N to reflect a drop in the price of margarine.

It should be noted in conclusion that the analysis of substitution through the technique of indifference curves leaves something to be desired. It is successful within the limits of its assumptions, but the assumptions are narrow ones. As Hicks has observed, we need to compare *both* substitutes with general purchasing power, and this of course cannot be done geometrically if the two axes are occupied by the two substitutes themselves. Through indifference curves we can ascertain which substitute will be employed or in what proportions two substitutes will be employed; but it is impossible without recourse to algebra to relate both substitutes to the mass of other commodities as can be done in the case of unrelated goods. If, as the writer believes, the main emphasis of the future in the analysis of both demand and supply is to be upon substitute commodities, this peculiarity of indifference curves is greatly to be deplored.

3. INDIFFERENCE CURVES OF COMPLEMENTARY GOODS

THE case of complementary goods can also be handled by the technique which we have employed on substitute commodities. According to Edgeworth and Pareto's definitions, "Y is complementary with X in the consumer's budget if an increase in the supply of X (Y constant) raises the marginal utility of Y."²³ Let us assume a series of utility schedules for two goods, say, bread and butter, such that if one has some bread the utility of butter is increased, and if one has some butter the utility of bread is thereby increased.

²³ Hicks, *op. cit.*, p. 42.



*The Marginal Utility of
Butter and Bread*

The indifference curves corresponding with this situation are shown below:

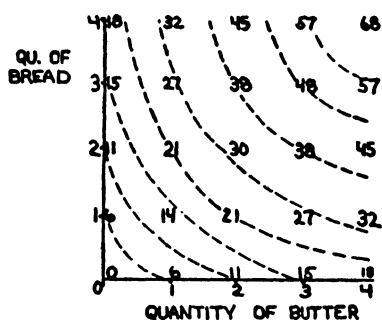


Chart 26. *Indifference
Curves of Comple-
mentary Goods.*

It is evident that the curves are extreme in their convexity; some combination of the two goods yields far more utility than an unmixed quantity of either, which is exactly what logic dictates. For comparison the indifference map of the same two commodities has been computed, on the supposition that the pair of marginal-utility schedules given first above are unre-

lated and therefore do not shift. The results follows:

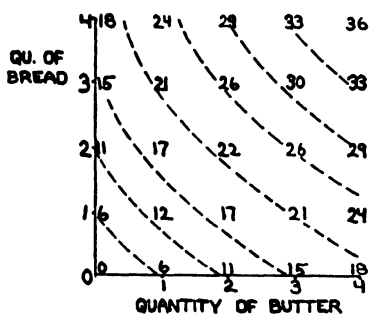


Chart 27. *Indifference Curves of the Complementary Goods Shown on Chart 26, Treated as though Unrelated.*

From this comparison it can be deduced that, whatever the elasticity of the original utility schedules, the indifference curves will range from extreme convexity to the origin to mild convexity — always more convex than as though the goods were unrelated.

As in the case of substitutes, the second variable which affects indifference curves is the extent of interaction. By applying techniques worked out in detail above it can be shown that the greater the degree of "shift," the greater the convexity of the curves. With these simple principles in mind it is possible to deduce a summary of the indifference curves of complementary goods:

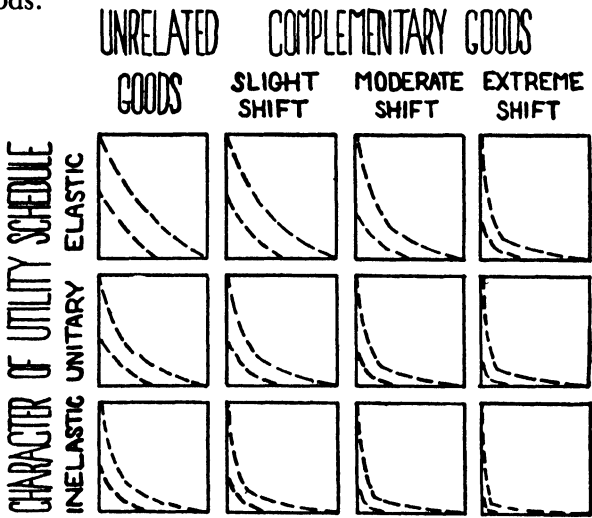


Chart 28. *Summary of the Form of Indifference Curves of Unrelated and Complementary Commodities.*

It will be noted that there is no significant line of division for complementary goods as there is for substitute commodities corresponding to the case of perfect substitution.

Complementary goods have income-consumption and price-consumption curves of an orthodox character and can be handled like the unrelated goods whose indifference curves theirs resemble. Both price-consumption and income-consumption curves have the same appearance and limits as do the curves of unrelated goods. There is no case corresponding to the backward sloping curves of "inferior goods" which occurs for less-than-perfect substitutes only.

As in the case of substitute commodities, the indifference-curve technique in geometrical form is successful in revealing how one would combine complementary goods in the consumption pattern, but not in relating a pair of such goods to all other commodities which might be bought. This is a limitation of the indifference-curve approach which can be overcome in the case of unrelated goods only.

24. There is no doubt, as Miss Jean Bowman has pointed out in her able review of this book in the *Journal of Political Economy*, that Chart 20 depicts an extraordinary situation. According to this chart, 3 units of margarine and 3 units of butter have less utility than 1 unit of either. This type of extreme divergence would, realistically speaking, be encountered only where the simultaneous possession of the substitute items would be an actual *inconvenience* to the consumer. For example, a piano and a small organ are substitutes, of a limited sort, for each other. Yet, it would certainly be true for most consumers that the utility of either one piano or one organ would be greater than any combination of the two. In fact, the marginal utility of the second unit of either would probably be zero, or actually negative. The impression of falsity created by the illustration given in Chart 20 stems from the fact that the commodities named are "margarine" and "butter"; in the case of such small commodities, actual inconvenience would of course not arise. For expositional purposes, however, it does not seem worth while constantly to shift the names of the commodities which we are using to typify substitute goods as a class. The fact that concave or divergent indifference curves present what Miss Bowman calls "an extraordinary situation" has already been noted and commented upon later in the chapter. On p. 36, especially, it is stated that "More-than-perfect substitutes are never possessed in combination, so that the indifference curves which express estimates of the utility of various combinations of the goods cease to possess any utility. The indifference-curve family of 'more-than-perfect' substitutes is an 'empty economic box.'" See Miss Bowman's review, *Journal of Political Economy*, 50 (1942), 761-764, and especially p. 761.

CHAPTER III

THE INDIFFERENCE-CURVE APPROACH TO THE THEORY OF DEMAND AND ITS ALTERNATIVES

IN CHAPTER II we have attempted to present a simplified non-mathematical treatment of the Hicksian approach to demand, with special emphasis upon its relationship to Marshall. Now we turn to the more constructive and important task of comparative evaluation. The indifference-curve approach stands today as the outstanding alternative to the Marshallian theory. What are its alternatives? How significant a contribution is it to the pure theory of consumer's demand?

1. THE MECHANICS OF INDIFFERENCE CURVES

HICKS's *Value and Capital* is a beautiful and complicated piece of selfconsistent mathematics.¹ One can make this statement without prejudice as to its usefulness.

I believe that had Hicks gone over more thoroughly and more hedonistically the interconnections of marginal utility and indifference curves he could have given greater precision to the chapter on complementarity.² This is about the only suggestion for the mathematical improvement of Part I of *Value and Capital* which occurs to me.

Any challenge to the Hicksian method of approach to subjective value must rest, not on the mechanics of the indifference curves, but upon their basic nature and particularly upon the framework of assumptions on which they rest. Accordingly the present chapter, devoted to a comparative

1. Several minor errors of printing and exposition are cited in Professor Machlup's review. Fritz Machlup, "Professor Hicks' Statics," *Quarterly Journal of Economics*, LIV (1940), 296-297.

2. By making the distinction between less-than-perfect, perfect, and more-than-perfect substitutes, for example. See chap. ii.

evaluation of Hicks, will be found to be very largely an examination and critique of assumptions both explicit and implicit, realistic and unrealistic, of the indifference-curve approach.

2. HICKS'S UNREALISTIC ASSUMPTIONS

THE MOST important criticisms of the indifference-curve system stem from the unreality of its assumptions. At best economic theory can approach only remotely the bewildering dynamics of daily life. However, it is the duty of the theorist to frame as realistic a set of assumptions as is possible. On the supply side of value analysis the modern theory of monopolistic competition has revolutionized price theory recently by setting up new assumptions concerning the number of sellers and the nature of the typical products of industry. But Hicks finds this new world too hard:³

We shall proceed throughout under the assumption of perfect competition; that is to say, we shall almost always neglect the influence on supply which may arise from calculations made by sellers about the influence on prices of the sales they make themselves. (Similarly for demand.) In fact, many supplies and demands are probably influenced to some extent by such calculations; it may be that they are influenced to a very important extent. However, it is very difficult to make much allowance for this influence in any other than the simplest problems; so that, although the analysis of this book would certainly be improved if more attention were paid to imperfect competition, I have thought it best to leave this over for the present. I do not myself believe that the more important results of this work are much damaged by this omission, but that is a matter which will clearly need to be investigated in due time.

This paragraph is richly ironical. Hicks's *Value and Capital* has been complained of by all its reviewers for its extreme difficulty. Yet we find Hicks failing to make the exceedingly important shift to monopolistic competition—a shift practically dictated by the changes in theory of the last decade,

3. Hicks, *op. cit.*, pp. 6-7.

because of its "difficulty." In Part II of this book an attempt will be made to carry Chamberlin's assumptions into the area of demand analysis, and I hope and believe that the analysis presented there will be found to be considerably *easier* than the convolutions of Mr. Hicks.

Professor Haley has already taken Mr. Hicks to task for this unbelievable backwardness, and nothing is gained by my laboring the point.⁴ However, one aspect of this criticism requires comment. If my analysis in Chapter IX be followed, then it must be acknowledged that we do in fact acquire very few duplicate commodities. Most of the goods we possess, for reasons which are taken up at length below, are distinctive and unique. If this realistic view of consumption composition be acceptable, then the concept—so fundamental to Hicks's analysis—of stocks of homogeneous goods which can be put on two axes, and between which indifference curves can be constructed, is revealed as highly abstract. We in fact possess or acquire practically no stocks of homogeneous goods with which to *build* indifference curves.

It might be possible to amend Hicks to allow for monopolistic competition by constructing indifference curves between "dollars spent on hats" and "dollars spent on shoes." This would permit the amassing of a number of differentiated products. It would, however, be difficult to work out a price upon the basis of which a price-consumption and income-consumption curve could be constructed. Which price would be chosen? Is there a tenable concept of "price level for differentiated hats" which could be employed? To venture a prediction, if the indifference curve is to become the major technique of exposition of demand analysis, the problem of product differentiation will have to be faced. As the curves have thus far been presented, they apply strictly to conditions of perfect competition.

The difficulty of framing indifference curves in terms of

4. B. F. Haley, "Value and Capital," *American Economic Review*, XXIX (1939), 560.

differentiated products is illustrated well in Professor Thurstone's interesting attempt to test the indifference curve approach experimentally.⁵ Dr. Thurstone, working with Professor Shultz, tried asking a subject the kind of choice questions which the indifference-curve approach envisages. Note, however, the assumptions he asked his subject to make:⁶

The subject was asked to indicate for each alternative which of the two combinations would probably give him the more satisfaction on the assumption that the two alternative combinations would cost him the same and with the further assumption that the articles would be of his free selection *within the general range in price and quality to which he is accustomed*.

How vague and ill-defined these assumptions are! They *have to be* when you are treating hats and shoes, monopolistically competitive, differentiated products, as though they were homogeneous and undifferentiated. Had Mr. Hicks attempted to label the axes of his many charts with other than X and Y he would have encountered the difficulty in an unmistakable form.⁷

A second assumption of Hicks which renders his theory of less general application is that institutional price controls are absent.⁸ Such controls are indeed impossible to incorporate in any theory which aims at generality. Public-utility regulation intrudes in the pricing of railroad tickets; trade-union bargaining influences significantly the pricing of houses; NRA codes, during the period of their operation, intruded their uneven and important influences into hundreds of commodity markets.⁹ On the whole I am in agreement with Mr. Hicks that institutional controls must largely be ignored, at the outset, in formulating a general theory of value. How-

5. L. L. Thurstone, "The Indifference Function," *Journal of Social Psychology*, II (1931), 139-167.

6. *Ibid.*, p. 154. The italics are mine.

7. Hicks, *op. cit.*, pp. 14-43 *passim*.

8. *Ibid.*, p. 7.

9. L. S. Lyon, *et al.*, *The National Recovery Administration* (Washington, 1935), pp. 620-622.

ever, countries at war and planned economies make it increasingly apparent that such institutional controls may be more important than "supply and demand." The edict of Hitler that the price of eggs may not be advanced may quite outweigh the laws of free markets on the subject. However, abstracting from institutional controls undoubtedly does less damage to the immediate applicability of a theory of demand than it would do in the case of a study of supply, for it is on the side of supply that most institutional controls operate. Hitler tells *the seller* that he may not advance the price of eggs. Since in most markets the sellers are less numerous than the buyers, administratively it is usually easier to approach the seller. Rationing and food cards are indications, however, of the occasional direct institutional interference with consumer's demand.

A third and more implicit assumption of the Hicksian analysis is that people are *able* to choose consistently between a rather comprehensive series of combinations of goods, to make ordinal judgments as to their total utility.¹⁰

It is quite conceivable that one could make a definitive selection between (four hats and four pairs of shoes) and (three hats and six pairs of shoes). I doubt very much, however, one's ability to form an opinion as to whether the foregoing combinations are equal to, less than, or more desirable than (ten pairs of shoes and no hats) or (twelve hats and no shoes). We are simply not accustomed to have no shoes or no hats. Just as the nature of the individual demand curve or marginal-utility schedules in regions remote from experience is highly conjectural, so is the indifference curve. Thurstone's experiments show that the subject tended to reach a resistance point in both directions at which no amount of addition of the other good would compensate for parting with the indispensable minimum.¹¹ This, I submit, accords with common sense.

10. Hicks, *op. cit.*, p. 13 and *passim*.

11. Thurstone, *op. cit.*, p. 141; figs. 6-17.

Some have carried this criticism farther and have argued that only in areas closely adjacent to positions experienced do indifference curves possess any reality. This point of view has been put forth cogently, for example, by Mr. Zeuthen in an interesting commentary on Hicks's analysis.¹²

Will it be possible in real life to double or increase tenfold the consumption of commodity A, and compensate this merely by a contrary movement for the commodity B, when the two commodities are not very close substitutes? Only marginal or very small movements on an indifference curve, starting from the point where one actually is, may be expected to be liable to observation.

This point of view seems to the writer entirely sound, but one which does not damage Hicks materially. After all, the same can be said of all Marshallian demand schedules, both individual and total, and all individual marginal-utility schedules.

Hicks probably would grant these points readily enough. Henry Shultz, an adherent of the indifference-curve approach, has written:¹³

Most persons simply *do not know* how their consumption of a given commodity would be affected if prices were to move much above or below their accustomed range, and even within the accustomed range there may be a great deal of uncertainty. They must *experience* a given set of price relations in its proper institutional setting in order to make up their minds as to the quantities they will purchase.

R. G. D. Allen in one of the important early statements of indifference-curve theory attempted to meet this criticism. He wrote:¹⁴ "Practically, this assumption of 'preferential discrimination' means that the individual can make a choice

12. F. Zeuthen, "On the Determinateness of the Utility Function," *Review of Economic Studies*, IV (1937), 238. See also N. Georgescu-Roegen, "The Pure Theory of Consumer's Behavior," *Quarterly Journal of Economics*, L (1936), 585 n. 3.

13. Henry Shultz, *The Measurement of Demand* (Chicago, 1938), p. 10.

14. R. G. D. Allen, "The Foundations of a Mathematical Theory of Exchange," *Economica*, XII (1932), 206-207.

between very small changes (in the limit, infinitesimal changes) from any particular combination: it does not mean that he can judge his relative preferences for widely separated combinations."

It seems to the writer that the locus of the income-consumption and price-consumption curves, after all, is in the middle reaches of the indifference curves and not at the highly problematical ends.¹⁵ It is the behavior-determining parts of the indifference curves which really matter, and these, Hicks would argue, are psychologically determinate. This criticism in other words, though sound, seems to me not to damage Hicks very greatly. I think, however, that the indifference curves should be drawn as typically leveling off at the ends into horizontality and verticality—or, better, as simply disappearing long before the axis is reached.¹⁶ The market moves in small steps from equilibrium positions at which it finds itself. It is the "marginal" and "very small movements" from an experienced point on an indifference curve which matter.

In addition to the unreality of the extreme reaches of any *particular* indifference curve, I believe that all *curves* which involve quanta of goods foreign to experience are highly hypothetical. Hicks writes as though any number of the theoretically infinite family of indifference curves could be derived, did one care to do so. If one is in the income-class which is accustomed never to having at any one time more than six pairs of stockings, it would be exceedingly difficult to compose an indifference curve starting with forty pairs. One would be entirely out of one's depth. This criticism is

15. It has been pointed out that the indifference curves of all more-than-perfect substitutes are concave and so both price-consumption and income-consumption curves lie on the axes. However, the case of more-than-perfect substitution is itself probably very rare. See chap. ii.

16. In most of Hicks's charts he draws the indifference curves without extending them to meet the axes. He does this without comment, however, and there is nothing in the text to indicate that he regards some sections of indifference curves as more demonstrable or realistic than other parts. See, for example, figs. 2, 3, 5, 6.

more than a merely formal one; it is rather damaging. Suppose one is attempting to derive an income-consumption or price-consumption curve from a system of indifference curves such as is presented in Chart 6 *supra* (chap. ii, p. 18). It must be evident at once that the point of tangency is *always* on an indifference curve *all of whose points other than the point of tangency* involve necessarily more income than the subject has. This must inevitably be the case if indifference curves are convex.

Another related but rather fine-spun criticism concerns goods of infinite utility. Suppose, for purposes of analysis, one is on an island and that the sole liquid for quenching thirst comes from a single spring of drinking water. How would the indifference curves of the inhabitants appear in which water was one of the two commodities compared? Presumably a single unit of water would have infinite utility. All combinations which included more than that single unit would be dealing with utility totals of *more* than infinite utility! This dilemma points attention to the fact that, after all, decisions are presented to the consumer in terms of marginal increments, not total supplies. No difficulty is encountered in handling this illustration in terms of diminishing marginal utility. The utility of the first units would simply be left open at the top. The slow evolution of economic theory throughout the nineteenth century was an evolution toward an emphasis upon the marginal as the behavior-determining increment. It is no *accident* that total utility has been subordinated. Emphasis on marginal units is necessary or we shall find ourselves embarrassed again by the "paradox of value."¹⁷

3. HICKS'S REALISTIC ASSUMPTION

IN one major respect, Hicks's assumptions constitute an improvement upon accepted doctrine: I refer, of course, to the

17. Eugen v. Böhm-Bawerk, *The Positive Theory of Capital* (William Smart, trans.) (New York, 1923), pp. 138-139.

fact that Hicks has taken over from Pareto, and further developed, an "economics which attaches ordinal instead of cardinal numbers to states of preference."¹⁸ Hicks introduces this assumption as follows:¹⁹

In order to determine the quantities of goods which an individual will buy at given prices, Marshall's theory implies that we must know his utility surface; Pareto's theory only assumes that we must know his indifference map. And that conveys less information than the utility surface. It only tells us that the individual prefers one particular collection of goods to another particular collection; it does not tell us, as the utility surface purports to do, *by how much* the first collection is preferred to the second.

Exactly what is the shift to ordinal measurement of utility and what are its necessary corollaries? The shift is basically one of psychology. Hicks not only condemns the hedonism with which economics has been written but proposes to do something about it. He assumes, therefore, not that people can accurately measure the psychic importance of a radio in comparison with a trip to the city—in terms of "utility" or some other quantum, but merely that they know whether these purchases are of equivalent, more or less utility. This, I submit, is the direction in which economics should go. It should move its assumptions in the direction of realism. This Hicks does.

Mr. Harrod, however, in his review of Hicks's work in the *Economic Journal* writes: "It would be a great confusion of thought to suppose that the economist in replacing cardinal by ordinal numbers in some way releases his subject from subservience to a particular moral philosophy."²⁰ "Release" is, of course, a matter of degree. It does seem to me that the assumption that we know only general directions of preference is *less* hedonistic than the assumption that we can meas-

18. R. F. Harrod, "J. R. Hicks: Value and Capital," *Economic Journal*, XLIX (1939), 297.

19. Hicks, *op. cit.*, p. 17. The italics are Hicks's.

20. Harrod, *op. cit.*, p. 298.

ure utility accurately. Hicks is moving in the right direction, and he is moving far.

The shift, it should be noted, is one of psychological assumption, not method. The indifference curve, like the diminishing marginal-utility schedules, rests upon introspection and imagination, except at the point of actuality. Following Thurstone's experiment, the subject is asked: would you prefer eight hats and eight pairs of shoes or six hats and nine pairs of shoes? This is a hypothetical question; its answer rests upon imagination.²¹ Only a few points on the indifference curve will ever meet the pragmatic test. The nearer the sections are to the points realized in experience, the greater their probability of accuracy, it has been argued above. It is better not even to attempt to draw the highly hypothetical ends of indifference curves. I find myself in complete agreement with Mr. Zeuthen when he writes: "The dividing line is not whether one is for or against introspection, but it is between valuations with or without measurable units."²²

Does the shift in assumption as to psychology imply necessarily that the method of exposition of economics must change? Hicks apparently thinks that it must. He writes:²³

. . . We have now to inquire whether a full theory of consumer's demand at least as thoroughgoing as Marshall's cannot be built up from the assumption of a *scale of preference*. In constructing such a theory it will be necessary every time to reject any concept which is at all dependent upon quantitative utility, so that it cannot be derived from the indifference map alone. We start off from the indifference map alone; nothing more can be allowed.

The fact is that, in getting rid of *absolute* measurements of utility, Hicks has also got rid of the orthodox sequence from utility schedules to demand curve. Oscar Lange has demonstrated that if a person knows that the utility of one incre-

21. Thurstone, *op. cit.*, p. 154.

22. Zeuthen, *op. cit.*, p. 239.

23. Hicks, *op. cit.*, p. 18.

ment to a stock of goods exceeds another to the same stock, utility is in fact cardinally measurable.²⁴ We cannot deal, apparently, with diminishing marginal-utility schedules without having reverted to a type of analysis in which utility is cardinally measurable. The proof of this proposition rests upon much journal material in the last decade, which can only be referred to here.²⁵ The indifference map, at our present stage of knowledge, appears to be an indispensable adjunct to the ordinal assumption.

4. EVALUATION OF INDIFFERENCE CURVES

ON the whole the indifference-curve approach—apart from its formal perfection as a mathematical system—represents advance along some lines and stagnation in others. It is not characterized by great internal consistency.

First there is a certain lack of harmony in the basic assumptions. As has been pointed out above, Hicks couples the modern and realistic assumption of the purely ordinal rating of utility with other assumptions long abandoned by contemporary theorists.

Second, it seems to the writer that the psychological assumptions of the indifference-curve approach, as a whole, are confused. Reacting, one infers, to the large body of criticism cited in Chapter IV, Hicks abandons the cardinal measurement of utility. Well and good. He then proceeds to embed the ordinal assumption in an exceedingly esoteric mathematical system. A consumer who is supposed not to be able to evaluate goods with exactitude would certainly have difficulty finding his way through the Hicksian labyrinth. If only ordinal utility judgments are posited, the kind of theory which should accompany them should be simple and realistic. This type of theory is attempted below in Chapter VII. The indifference curve may have exorcized the hedonism of ear-

24. Oscar Lange, "The Determinateness of the Utility Function," *Review of Economic Studies*, I (1934), 218-225.

25. See p. 114 n. 4.

lier economic theory, but it certainly retains all of the old rationalism, and then some. There is no recognition or discussion in Hicks of the importance of habit, no limitations placed on the extent to which the buyer is supposed to be willing to *seek out* the preferred combinations. Hicks seems to expect the consumer to apply his ordinal utility ratings with a rigorous mathematical precision quite foreign to man's nature. In the end, the psychology of Hicks is only slightly less naïve than that of orthodox economic theory.

5. THE ALTERNATIVES

IN an attempt to explain the derivation of demand curves, we have at the moment only two main alternatives of a partial equilibrium nature: indifference curves and diminishing marginal-utility schedules. To these can be added a derivative of the latter in which "demand prices" are substituted for utility ratings.

Indifference curves cannot be diagrammatically manipulated when many commodities—substitute or complementary goods—are compared. This greatly lessens their effectiveness when the assumptions behind demand theory are shifted—as they must be—to synchronize with the assumptions underlying monopolistic competition. They do give us an ordinal expressed structure of preferences which eliminates close psychic measurement of satisfactions or desires. Indifference curves lend themselves to the co-ordinate derivation of the income-consumption and price-consumption curves—a distinct gain. Too long the effects of changes in income upon purchases have been ignored. However, many of the assumptions behind indifference curves are unrealistic and much of the form of the analysis negates the advanced view of human nature implicit in the ordinal assumption.

The Marshallian diminishing-utility schedule assumes exact measurement of utility. This is its greatest fault—it manufactures a psychic unit unknown to modern psychologists. However, it lends itself to a shift of assumptions to

monopolistic competition far better than indifference curves. Substitutes—in any number—can be compared geometrically through the instrumentality of utility ratings. Like the Hicksian analysis, the Marshallian diminishing marginal-utility analysis is highly rationalistic. With theory of a high degree of refinement, the exact measurement of utility synchronizes far better than the ordinal assumption.

A third alternative is to develop a theory of choice in terms of a cardinally measured preference index, in other than utility terms. Long ago John Stuart Mill discussed a purchase of musical snuffboxes in terms of “D” and “U”—the latter referring to the largest sum of money which an individual would be willing to pay for the article in question.²⁶ This top price is sometimes spoken of, in modern times, as the “demand price.” In Hicksian terms, the demand price and the commodity would appear on the axes of the same indifference curve. The maximum amount of money which a person would give for a good rather than do without it can be used as a measure of relative preference. This seems to the writer to be an improvement upon the concept of utility, since the measurement is in objective rather than subjective units. Furthermore, these maximum prices are at least as “behavioristic” or “objectively demonstrable” as the indifference curve. Money is, after all, the only habitually used common denominator between the various commodities which confront the consumer. Through constant conditioning the adult consumer has formed an idea of the value of money, and that concept is the touchstone by which he tests the various alternatives before him.

If price maximums can be stated, they of course can be transposed into relatives of 10 or 100 and presented as a preference index, readily enough. Under conditions of perfect competition, this technique would be tantamount to beginning the analysis of demand with the individual de-

²⁶ John Stuart Mill, *The Principles of Political Economy* (Ashley ed., London, 1909), pp. 442-443. See also Marshall, *op. cit.*, pp. 125-126.

mand schedule, but under conditions of monopolistic competition or rivalry such judgments are but the first step in the analysis of demand, as will later appear.²⁷

It seems to the writer that there is room in economic theory for a vast range of assumptions, and that the results more often than not are complementary rather than competing. Economic theory is most useful when its assumptions bear some resemblance to reality, and when they become *sufficiently* remote, the body of thought which is based upon them becomes sterile. However, even the equations of the mathematical economists convey important general interrelationships of the whole pricing process. Department store executives are scornful of them, and understandably so, for these equations have little or no relevance to the problems with which they deal. This is an abstract and general branch of knowledge, useful in abstract and philosophical levels of thought.

The Marshallian type of economics represents a kind of theory only slightly less abstract than the work of the mathematical school. As long as the unrealistic nature of utility schedules is clearly perceived and acknowledged, no great damage is done by this type of economics. In interpreting marginal-utility schedules we should not imagine that we *are* realistically describing the want structure of a human being. We are rather setting up an abstract pattern of behavior which human beings approach, or act as if they approach, only in the mass. Only a kind of *statistical* individual can be supposed to have marginal-utility schedules which he relates by precise formulae to price. No physicist can possibly predict with accuracy the course of a molecule of gas as it darts about in a confined space. Yet he may know a good deal about the behavior of billions of them and be able to describe in formalized schematic terms the course of a typical one.

Even though economic theory based upon somewhat unrealistic assumptions may make a contribution to knowledge

27. See pp. 128 ff., chap. vii.

in its proper sphere and properly construed, this kind of economic theory has been thoroughly done. The work before us now is to shift, step by step, the assumptions upon which it is built closer to reality. The conclusions of this kind of theory are less definite, concrete, and satisfactory. On the supply side we need to consider price and production policies under the assumption of monopolistic competition; on the demand side we must approach the consumer assuming that he is surrounded on all sides by groups of close substitutes, and further, assuming that he is, not *homo economicus*, but a creature of foibles, habits, and inertia. Generalizations, under such assumptions, will come hard, and the results will be relatively complex. Yet such is the frontier of economic theory today.

In attempting to write in terms of certain assumptions which are closer to reality than those of Marshall or Hicks, it does not seem possible wholly to abandon conventional tools. All of them have their shortcomings, as has been pointed out above. They should be regarded as complementary rather than as substitutes. Sometimes, in the chapters which follow, one tool is used, sometimes another, depending upon the purpose at hand. In discussing depreciation of consumption goods in Chapter IX, recourse is had to Marshallian utility schedules; Chapter VIII is written wholly in terms of preference indices; Chapter VII is stated in three forms. Researches and discoveries in any of these systems should be worked out and expressed in the others' terms. Sometimes one, sometimes another will prove more productive for a particular problem. As Mr. Harrod has put it, "there is not much harm in keeping alive alternative methods of approach; too hasty a scrapping would probably be injudicious . . . only a rather lengthy experience can be decisive in what is fundamentally a matter of expediency."²⁸

If abstruse mathematical processes yield more enlightenment than simpler techniques, we must continue to employ

²⁸ Harrod, *op. cit.*, p. 295.

them. However, as Professor Cannan has said, “. . . most of the simplest things in economics have never been put in such a way as to carry conviction to the mind of the sort of person who is in the great majority of every public, and the blame is not altogether to be put on his feeble mind, but in large measure on the unnecessarily complicated expositions offered by the economists.”²⁹ Undoubtedly economics has much to gain by tapping the abundant knowledge of the businessman and the consumer. We shall be greatly handicapped in the institutional approach unless we are able to bring to bear analyses more simple and clear than those with which economists have been preoccupied in the past. Economics is not so resourceless a subject that we need to dress it up in esoteric garments to gain an aura of respectability. Let us move toward comprehensibility in terminology, realism in assumptions, and simplicity in exposition.

29. Edwin Cannan, “The Need for Simpler Economics,” *Economic Journal*, XLIII (1933), 368.

PART II

A THEORY OF DEMAND IN TERMS OF RELATED GOODS

CHAPTER IV

WANTS AND CHOICE

1. THE GENESIS OF WANTS

WE MAY appropriately start a theory of demand by taking over from the sociologists, anthropologists, and psychologists a modern view of human nature as it relates to want.¹ It is unfortunate that we must deal with man himself, for he is the most incalculable, evanescent, and volatile element in the whole of social science.² Economists would be only too happy to avoid the controversies which rage about him. But they cannot do so. As J. M. Clark has remarked, "If the economist borrows his conception of man from the psychologist, his constructive work may have some chance of remaining purely economic in character. But if he does not he will not thereby avoid psychology. Rather he will force himself to make his own, and it will be bad psychology."³

Where does man get the wants with which he approaches the market? Several views can be discerned in the literature on this subject. There is the rather old-fashioned concept of "consumers' sovereignty" at one extreme. Hotchkiss, in a recent defense of advertising, stated: "We know that man was created with infinite wants and desires that only await the knowledge of means to gratify them and purchasing power to get possession of these means. All advertising can do is to transmit the knowledge."⁴ A typical member of the

1. Jacob Viner, "The Utility Concept in Value Theory and Its Critics," *Journal of Political Economy*, XXXIII (1925), 369-387, gives an excellent brief review and bibliography of recent criticisms of demand theory on the basis of its psychology.

2. Frank H. Knight, "Ethics and the Economic Interpretation," *Quarterly Journal of Economics*, XXXVI (1922), 454-481.

3. J. M. Clark, "Economics and Modern Psychology I," *Journal of Political Economy*, XXVI (1918), 4.

4. George Burton Hotchkiss, "An Economic Defence of Advertising," *American Economic Review, Supplement*, XV (1925), 15-16.

Austrian school, such as Böhm-Bawerk, clearly thinks of wants as an independent force dominating production. He writes, for example: "We combine our own natural powers and natural powers of the external world in such a way that, under natural law, the *desired* material good must come into existence." ⁵

The concept of consumers' sovereignty has been attacked by many writers who advance particularly the notion that "the monarch allows himself to be swayed by the cajoleries of his slaves." ⁶ The definitive statement of Chamberlin on the effect of selling costs leans strongly in the direction of what we may term "seller's sovereignty." Chamberlin distinguishes selling costs from production costs on the basis that the former create demand while the latter create supply.⁷ Critics of advertising as a social institution have long maintained much the same point of view.⁸

It seems to the writer that a synthesis of these conflicting views and the thought of other social theorists can be achieved. Man, it is now generally accepted, is endowed by nature with very few native drives, and such as he has are exceedingly general in nature.⁹ The anthropologists give us innumerable examples of whole peoples who comport themselves successfully (from the point of view of survival) over a considerable period of time, in a way which appears "contrary to human nature" as we know it in our society. The

5. Eugen v. Böhm-Bawerk, *The Positive Theory of Capital* (William Smart, trans.) (New York, 1923), p. 17. The italics are mine. See also chap. 1 *passim*.

6. L. M. Fraser, "The Doctrine of 'Consumers' Sovereignty,'" *Economic Journal*, XLIX (1939), 546. See also Collis A. Stocking, "Modern Advertising and Economic Theory," *American Economic Review*, XXI (1931), 43-55; Morris A. Copeland, "Economic Theory and the Natural Science Point of View," *American Economic Review*, XXI (1931), 67-79. A. Victor Abramson in "Advertising and Economic Theory: A Criticism," *American Economic Review*, XXI (1931), 685-690, stresses the many limitations to the control of the seller over the desires of consumers.

7. Edward Chamberlin, *The Theory of Monopolistic Competition* (Cambridge, 1933), p. 117 and *passim*. See espec. pp. 125-126.

8. Stuart Chase, *The Tragedy of Waste* (New York, 1925), pp. 112 ff.

9. John Dewey, "Human Nature," *Encyclopedia of the Social Sciences*, VII, 531-537.

study of comparative cultures has left us very few "instincts." It is safer not even to attempt to name them, for fear of being outmoded tomorrow.

Man's *specific* wants are wholly determined by his culture. Culture is merely the cohesive social habits of the society in which man finds himself. We are led therefore to a historical-evolutionary concept of the want-equipment of the individual. Not only are the specific wants of man—such as our want for an automobile, for Birds Eye spinach, or for the movies—culturally determined, but so too are our method of exchange and our attitude toward goods in general. Do we "higgle and bargain"? Are we generous? acquisitive? penny-pinching? If so, it is not in our nature so to be. Certain physical-environmental factors, it is true, may play a part in determining these attitudes: no tropical people is very energetic. But except for the *very* wide limits of possible variation prescribed by physical environment the specific attitudes of any people are cultural growths.¹⁰ Dewey has reminded us that among the Greeks a person with many wants was regarded as defective in character.¹¹ It is a commonplace that many Mexican peasants will simply not turn up for work as long as any small change remains from their previous wages. These considerations lead to the belief that rather than man being born with "infinite wants," as Hotchkiss and many other have alleged, he is probably born with *no* specific wants and, indeed, very few general wants; and the precise degree of intensity of the want structure as a whole is a purely cultural growth. It is therefore impossible to discuss wants and want structures in general; they may be analyzed only within the framework of particular cultures.

The specific wants of mature individuals in our society are not rigid and fixed but rather malleable and adaptable. Sellers' allegations and exhibitions are part of the culture, and as such may indeed modify pre-existing want structures. How-

10. A. L. Kroeber, *Anthropology* (New York, 1939), chap. vii.

11. Dewey, *op. cit.*, p. 535.

ever, Hotchkiss suggests "that advertising has in very limited degree the power to 'create' demand may be inferred from the care with which the present-day advertiser consults public taste before embarking on any extensive campaign."¹² The effect of a seller's efforts at any given time is slight in influence compared to the long-prolonged incessant conditioning performed by the culture as a whole. Hence the more revolutionary and unfamiliar a product is, the heavier the advertising outlay necessary to sell a certain quantity of a good at any given price. On the contrary the more a new good conforms to the tenets of the culture, the more it synthesizes with other commodities in common use, the less it forces the individual to be conspicuous in an undesirable way, the less it jolts his habits in other aspects of life, the more easily it will obtain a market. Sellers cannot trespass far upon the basic culture without paying a stiff penalty in advertising costs. Professor Chamberlin has written: "Sales are a function of both price and advertising. . . ." ¹³ We may amend this to read: "Sales are a function of price, advertising, and the conformity of the product to the preëxisting public taste."

In light of what has been said, is the consumer sovereign? No, for so to hold would be to ignore the fact that all of his specific wants have been passed on to him by his culture. Is the producer sovereign? No, for the culture sets limits within which he can move demand. Culture is sovereign. It is not an inflexible ruler, however; it can itself be modified and shaped in time by sellers' efforts, among other dynamic forces. Limiting *both* demand and supply, in fact, is the cultural and physical environment.¹⁴ Any society is equipped with certain factors of production and not others. Its factor equipment is the joint product of the geology of the region and the human resources and capital equipment which have grown up with the society. These set the ultimate broad limits on the sort of

12. Hotchkiss, *op. cit.*, p. 16.

13. *Op. cit.*, p. 130.

14. Elizabeth Hawes, *Fashion Is Spinach* (New York, 1938), p. 146.

things which can be produced. Since human beings are not equipped by nature with wants for anything in particular, the kind of goods which a society is able to produce tends providentially to coincide with the sort of things which are wanted. This may be independent, notice, of the conscious efforts of sellers. Many goods which are produced under pure competition, and in whose behalf sales costs are not forthcoming—wheat, beans, lettuce—are nonetheless wanted. They exist; they are seen; habits of buying them have grown up. Until a physical object is seen, it cannot be imagined by the typical consumer. All of us have had the experience of seeing something in the home of a friend or in a store window which we had never thought of before. Upon the perception of the object, the realization that it can be consumed with social approval, that it is in use, the want for it is born. Wants do not, even under pure competition, antedate the commodity. Where product differentiation and monopolistic competition exist the "demand creation" function of the seller is merely more vigorously and more consciously assumed.

2. THE CONCEPT OF *Homo Economicus*

ECONOMIC theory on both the demand and the supply side has proceeded upon the assumption that man is a kind of psychological calculating machine. He is supposed, if a seller, to follow such "rational" principles as the equating of marginal cost with price. If a buyer, he is supposed to satisfy his wants by close, "rational" calculations. He is imagined to make the ratio of the marginal utility of goods of one kind, to goods of another kind, as their prices; he is supposed to wish to ferret out the cheapest market and to buy there. No purchase is too small to enlist his careful scrutiny.

The first objection to this concept is that the view of human nature implied is usually depicted as universally applicable. It is by now well known that one of the commonest tendencies in the history of ideas is that of universalizing on the basis of the particular institutions in which the theorist

finds himself.¹⁵ Possibly the Scotsmen of Adam Smith's day *were* the kind of people depicted in *The Theory of Moral Sentiments*. However, recent studies of the anthropology of economics reveal decisively that types of exchanges and attitudes toward want satisfaction vary greatly.¹⁶ Consumers approach markets with simply innumerable different attitudes toward the exchange process. The Melanesian Islanders, for instance, transfer goods among themselves in seven distinct ways, among which may be mentioned the ceremonial barter, with deferred payment; customary transferences, repaid irregularly, without strict equivalence; pure gifts.¹⁷

Another objection closely allied with the foregoing is to the idea that narrow weighing of alternatives, such as is envisaged by the marginal analysis, is "the" rational way of behaving. Most peoples who theorize at all about their institutions dignify them in this naïve way. If the reader will reflect on the techniques of exchange of the Melanesians referred to above, he will admit that there is no scientific way of establishing that any of these is more "rational" or less so than any other. They are all merely generally accepted ways in which human beings manage to effect exchanges, and that is all that they are. The same applies to our method (if it is our method) of careful bargaining and close mental estimates about the satisfaction-power of goods.

Something very like the hedonistic calculus is, I think, definitely a feature of our society.¹⁸ It occurs in somewhat different terms than are ordinarily discussed and it has much

15. Harvey W. Peck, *Economic Thought and Its Institutional Background*, New York, 1937.

16. Margaret Mead, *Coöperation and Competition among Primitive Peoples*, New York, 1937.

17. B. Malinowski, *Argonauts of the Western Pacific* (London, 1922), chap. vi.

18. This view is in contrast to that of Knight, *op. cit.* It seems to the writer that Knight has gone altogether too far in stressing the chaotic nature of man. If man were entirely the creature of whim and fancy whom Knight so brilliantly describes, certain market regularities which will be discussed below could hardly be explained.

narrower applications than is commonly supposed, and many people make it their first business, when the opportunity offers, to escape from it. But regardless of its extent and importance in our society it is vital for logical clarity to perceive that it is but a culture trait and therefore mutable, and is not to be supposed to characterize other societies or to be somehow inherent in our nature or ultimately more rational than other methods of exchange. Its limited nature can be seen within our own society by contemplating the economic dealings—the exchanges which go on within the family group. We act communally there, goods and services being exchanged with no close computing, weighing, or higgling. Yet no one would deny that such exchanges are quantitatively important, nor that they occupy a “rational” place in our culture, on the basis of any concept of rationality that can be devised.¹⁹

A second major criticism of the concept, *homo economicus*, is that it has not been carried far enough or rigorously enough applied. The area in which man does act in a careful, deliberate manner is much narrower than has been generally supposed because rational weighing is itself an onerous, costly process. In adjusting production it may not be convenient, in the light of the accounting techniques now available to compute marginal costs, especially for small “increments” to supply. It may be much easier, on the contrary, to distinguish average costs. Under these circumstances, the bother and cost of using the careful marginal technique might not bring in enough added return over those realized with average data to justify their computation. There is some reason to believe that this is the case over wide areas in industry.²⁰ In statistical work simple averages are sometimes preferred to more elaborate ones, although the former are

19. J. K. Galbraith, “Rational and Irrational Consumer Preference,” *Economic Journal*, XLVIII (1938), 336–342. Galbraith holds that the distinction between the rational and the irrational is a spurious one.

20. J. K. Galbraith, “Monopoly Power and Price Rigidities,” *Quarterly Journal of Economics*, L (1936), 471.

known to be less accurate or less theoretically sound for the purpose at hand, because of their relative ease in computation. From the consumers' point of view it is fundamental that the habits and accustomed pursuits of an individual at any one time are fixed. Behind him is typically the lethargy of years.²¹ To search out all the goods that are available, to higggle, to get the best buy, to equate marginal utilities is all a long energy-consuming, painful process which will be avoided by the consumer unless there are strong inducements to the contrary.

With these principles in mind, let us contemplate the consumer more closely. Under what condition, if any, *does* he find it worth while to buy with care, to weigh narrowly one good against others? Several principles can be set down which seem to the writer to be empirical laws of consumption in our society.

First, the larger the expenditure, the more carefully, as a long-run proposition, it is weighed, and the more rationally—a rather vague concept at best—does the consumer make the decision.²² Support for this view came in an interview with a woman who has had the responsibility for renting six apartments over a period of twenty years. She told the writer that "people seem to know within half a dollar what an apartment should rent for. If we price an apartment \$1 too high, it will lie vacant for months; if we come down to the general level, we will have immediately a number of possible tenants. There is very careful evaluation of rental differences on the part of tenants; it is a major expense for them, and they canvass the field very fully before making a decision."

Secondly, it is a general law of consumers' expenditure that the goods which are frequently purchased are bought with greater care and consideration than those which are not.²³

21. Galbraith, "Rational and Irrational Consumer Preference," *op. cit.*, 336-342.

22. R. F. Bretherton, "A Note on the Law of Diminishing Elasticity of Demand," *Economic Journal*, XLVII (1937), 576-577.

23. *Ibid.*

Thus an interview with the manager of a consumer's co-operative in an Eastern city revealed that there are about half-a-dozen staples which customers usually watch as a symptom of the reasonableness of a store's price level. Butter, eggs, coffee, and sugar, for instance, are especially carefully priced. Two reasons may be suggested for this. If a good is bought repeatedly, the amount of money spent upon the item may amount to a considerable outlay over a span of time, and so may fall under the principle stated above: care is exercised in large expenditures. Secondly, since many purchase events are involved, the consumer learns effortlessly by the repetitions what the customary prices are and so has data at hand with which to judge variations in price. He can remember, so he is in a position to compare. In contrast with such commodities, the typical grocery-store customer has no very accurate idea as to what a box of pepper, a jug of vinegar, or a can of caviar "ought" to sell for, since these commodities are bought very infrequently. It does not pay to clutter up the mind with data concerning such goods.

Thirdly, it can be stated with a good deal of assurance that the poorer the consumer, the more surely he will take careful thought in making his outlays. Money has to be made to go farther. As studies of slum dwellers have indicated, at the bottom of society are substantial groups which economize on practically everything, even water for domestic use.²⁴ The writer at one time had occasion to live on the East Side of lower Manhattan. Several salespersons and tradesmen in this neighborhood volunteered the information that "everybody around here counts every cent. They're all so poor."

These considerations lead to the concept of a level or margin at which, for any particular individual, care in the making of expenditures begins to occur. Below this margin are what will be termed "petty goods"—goods so inexpensive in relation to the total consumption that it does not pay to consider them carefully in relation to other goods or to go

24. Eliot Jones, *Principles of Public Utilities* (New York, 1931), p. 357.

out of one's way to find their cheapest market.²⁵ Each individual has a margin below which he acts without regard for any discernible economic principles.²⁶ Individual differences are great, of course, regarding this margin. In general it can be said that the higher the income, the higher the margin. Wealthy individuals generically do not scrimp on quarter tips, or on five-and-ten-cent store goods. Sometimes the level is absurdly high when the pattern of conspicuous consumption is involved. At the bottom of the economic ladder, everything is beneath the margin.

A second determinant of the margin of petty goods is the temperament of the individual. Cases of the niggardly millionaire are well known, as are the instances, usually disastrous, of the poor but lavish spenders. The very fact that parsimony on the part of the wealthy is noteworthy gives it in all probability a publicity out of proportion to its frequency. Of course many consumers have quirks concerning particular goods which violate the concept of a general margin. Some save string assiduously, others pins; yet these same individuals may treat themselves to all of the sodas and motion pictures they desire.

Not infrequently cases will be found where persons of moderate means treat as "petty" a wide range of goods, totaling a substantial part of income. This is likely to be the situation for *busy* people, for instance, who order their groceries by telephone from one supply agent, week in and week out, without inquiry as to prices. Bargain seeking and careful weighing of utilities involve time and effort.²⁷ When the

25. This concept has been developed by the writer in "The Analysis of Demand," *Quarterly Journal of Economics*, LIV (1939), 134-135. Permission has been granted to republish the section of this article reproduced here.

26. Philip H. Wicksteed, *The Common Sense of Political Economy* (London, 1910), p. 56, stresses the fact that there are limits to the fineness of discrimination of which any mind is capable. Here the emphasis is not upon the "minimum sensible" but upon the level at which a consumer is *willing* to exercise discrimination.

27. Arthur E. Monroe, *Value and Income* (Cambridge, 1931), p. 12; F. H. Knight, *Risk, Uncertainty and Profit* (Boston, 1921), p. 62 n. 1. It will be recalled that among the Greeks concern with market affairs was considered

latter are highly valued, we find the phenomenon of "unecomic" behavior over a wide range of commodities. Many persons would rather put up with a lower standard of living than involve themselves in money-saving shopping or endure a penny-pinching frame of mind. The weighing of marginal utilities is often as repugnant to the consumer as it appears to be attractive to the theoretician!

In conventional terms, the common characteristic of petty goods—whether of the five-and-ten-cent store variety or otherwise—is that the individual's demand schedule is absolutely inelastic within the range of customary price variation. This is because he buys such goods in *convenient* quantities and at *convenient* times, not when he thinks the market most favorable. He assumes either that the outlay is so slight that it does not affect significantly residual income, or that any saving is not worth to him the mental or physical effort of shrewd purchasing.

The total or social demand curve for almost any good, however inexpensive, undoubtedly follows the "law of demand," since no commodity is petty to everyone all of the time. For one thing, as income is gradually used up after payday, the margin for petty goods falls. People weigh far more expenditures when their funds are running low, and, although orthodox theory has largely ignored this fact because of the structure of its assumptions, people's resources do run low before payday.²⁸ Elasticity on the part of some consumers' demand all of the time and other consumers' demand some of the time is sufficient to give elasticity to the total demand.

From the same considerations concerning the mental cost of choice, it follows that the selection of goods which are

an intrusion upon the good life; Plato's "Guardians," for instance, were to be freed from commercial activities.

28. "In the majority of cases from 75 to 100 percent of the earnings had been spent by the end of the day following pay day." This conclusion was found in a budget study of 1,665 factory workers made by the Ross Federal Research Corporation and summarized in the *Monthly Labor Review* (January, 1939), p. 104.

above the margin of petty expenditures is not without bias. Any good which has been habitually consumed by an individual has an advantage over its alternatives. This point can be assimilated by the stickler for "rationality" by the concept of an increase in preference, utility, or whatnot for any item which is familiar. Whether this trait is viewed, therefore, as a departure from rationality or not is a matter of point of view and of terminology, largely. However, it is an exceedingly important point. Change of habit is psychologically onerous, and especially great improvements in the consumption pattern must be envisaged to induce such departures.

3. THE EVOLUTION OF THE INDIVIDUAL'S CONSUMPTION PATTERN

IF a consumer were thrown, full-grown and with an adult's income, into the world of competing goods, equipped only with "reasoning power," he would probably make a sorry mess of things. Persons habituated in the spending of money, whose income is suddenly greatly enlarged by inheritance or through such bonanzas as sweepstake prizes, frequently act in a highly capricious manner. The spending of money is one of the necessary skills of life in which individuals receive a long schooling, though they do not identify the training they receive as such. A person without background in pricing and commodity selection would, without a doubt, be completely and utterly baffled by our complex world of commodities, and would probably long to retire to the seclusion from which we have assumed him to emerge.

Not only are man's specific wants and his attitudes of acquisitiveness culturally determined, but also the general configurations of goods which in mature adults we think of as the consumption pattern. The mathematical economists portray an economic system in which the various unknowns appear as X's, Y's, and Z's of simultaneous equations. I submit that it would be as difficult for an individual to generate

independently a consumption pattern as it would be for most of us to solve the equations of the mathematicians.

Fortunately for the human animal, he is spared the horrors of sudden exposure to the economic system by his long period of immaturity. In the family group, or to a minor extent in institutions, he learns in a general way the proportions of income which are spent by at least one functioning consumption unit for the various kinds of economic goods, and also a good deal of concrete information as to actual brands and styles of goods. This pattern may not be very well advised; its wisdom (not easily demonstrable) will differ from group to group; however, it is a pattern, and it is transmitted by conditioning. The young adult is not thrust unprepared into the economic system.

Aside from the major consumption pattern in which the individual is reared, he ordinarily comes in contact in varying degrees of intimacy with many other configurations. He visits friends; he goes to the movies and reads stories; he sees advertisements. These suggest that the choices of other consumers do not conform wholly with that of his initial consumption group, and he forms, long before the income-earning age, certain ideas as to how he will alter the basic pattern in which he has been reared. That the alternation is often considerable is suggested by such studies as Miss Ware's on the types of consumption ideals of first- and second-generation immigrants in Greenwich Village.²⁹ It should be emphasized that at no time does an individual have to submit to the rigors of achieving an equilibrium of prices and satisfactions. The typical adult's consumption pattern is an accretion of pieces of consumption patterns he has put together like a jig-saw puzzle. Groups of pieces he has accumulated from different sources, but the majority usually come from his basic domestic economy.

If this view of man and consumption be acceptable, it is readily perceived that all choice problems are partial-equilib-

29. Caroline F. Ware, *Greenwich Village* (Boston, 1935), chap. xiv.

rium problems. The consumer never revises his estimates of goods or his knowledge of sources of supply systematically and simultaneously. All consumption changes are successive; and the toil and trouble of careful decision are such that changes in the basic pattern are relatively rare. "Rational" calculation of a hedonistic nature is also not common. If people were sufficiently schooled in satisfaction-calculus, if the importance of penny-saving to the limit were drummed in by teachers and parents from earliest childhood—so malleable is human nature—people might make all economic decisions very much along the lines economic theory has envisaged! But such meticulous conditioning is, in fact, unusual. Deliberate choice, realistically, is revealed in our society as holding but a limited area: man as he is found in responsible adulthood chooses with painstaking care relatively infrequently, when outlays of importance (relative to his total budget) are in prospect; his choice is weighted in favor of the habitual; and he relates the new acquisitions or the mutations to the vast bulk of his consumption pattern which is, and is regarded by him, as relatively static at any one time.

CHAPTER V

GOODS AND DEMAND CURVES UNDER PERFECT AND IMPERFECT COMPETITION

A "COMMODITY" has been defined by Mrs. Robinson as "a consumable good, arbitrarily demarcated from other kinds of goods, but which may be regarded for practical purposes as homogeneous within itself."¹ The world of commodities, so defined, is viewed by the consumer as broken up into clusters of competing substitutes.

"Substitutes" have been variously defined.² The classic definition of the mathematical school is:³ substitutes are goods which if possessed in combination have a total utility lower than the sum of the utility of the two goods possessed individually. If we wish to avoid all reference to utility, as the writer does, we may say: if a consumer is unwilling to spend as much money to acquire a combination of goods as the sum of what he would pay to acquire the goods individually, the goods are substitutes. This is a perfectly empirical, objectively demonstrable concept of substitution.

A little reflection will reveal that all commodities fulfill to a greater or less degree this definition. All commodities are in competition for the consumer's dollar, and if a person buys any single good, the demand schedule for all other goods presumably must decline. However, there can be no doubt that there are goods which are more closely related than through the tie of general purchasing power. If one buys a Plymouth, one's demand for all sorts of things—hats, shoes,

1. Joan Robinson, *The Economics of Imperfect Competition* (London, 1933), p. 17.

2. Henry Shultz, *The Theory and Measurement of Demand* (Chicago, 1938), chap. xix..

3. V. Pareto, *Manuel d'Économie Politique* (Paris, 1909), p. 268; and Y. Edgeworth, *Papers Relating to Political Economy* (London, 1925, 3 vols.), I, 117.

motion pictures—inevitably must decline. There is no presumption that any of these shifts in demand will be particularly marked; the decline is general, diffused. However, if one buys a Plymouth one's demand for a Ford or a Chevrolet decreases to a marked extent; the decline is perceptibly concentrated in that group of commodities identified by the buyer as "automobiles." We may, in accord with these distinctions, formally define a cluster of competing substitutes as follows: from the point of view of a buyer, goods are regarded in a cluster of competing substitutes if the purchase of any one member of the group would cause the amount of money which the consumer would pay for the others to decline by more than as though an identical sum of money had been lost, taken by the tax collector, or spent by the consumer for goods in general.⁴

Practically all goods occur in the consumption pattern of individuals in clusters of competing substitutes in the sense just defined. Unfortunately for neatness of exposition, however, some goods occur in two or more such groups at the same time, and different consumers' configurations of clusters will not necessarily coincide. It is a hopeless and pedantic task to attempt to make a mutually exclusive classification of commodities as they confront the entire consuming public.⁵

4. I am indebted to Professor J. M. Clark for the suggestion that a definition of substitution could be developed by utilizing the concept of loss or theft. Taxation has, of course, long been a favorite device for effecting a sudden loss of income for analytical purposes. The concept of "goods in general" is somewhat more difficult to apply, but it seems to the writer fundamentally sound. Since the number of goods in peculiarly close substitution are finite and few compared to the multiplicity of commodities in the total consumption pattern, this concept seems to be definite enough for our purposes. A large number of random samples of expenditures would presumably, if equal in amount, have the same effects upon outlays for any particular good. If any good be suspected of being in particularly close substitution with any other good, let expenditure for it be compared in its effect with that of the random sample expenditures. A large number of the latter will prove equal in effect, and these may then be used as a criterion of absence of close substitution.

5. Morris A. Copeland, "Competing Products and Monopolistic Competition," *Quarterly Journal of Economics*, LV (1940), 21. "Buyers and sellers are not to be thought of as grouped into separate genus markets, each a

The Customs Court has had endless trouble deciding the question of what tariff schedule to apply to particular goods. Is a cane seat which you take to the races a folding seat, or is it a walking stick? Some things are hazy in anyone's classification; some things would be considered in one "cluster" by one consumer and in another by another. One housewife would think of macaroni-and-cheese as an alternative for the meat course; another as a substitute for potato.

We may as well give it up and take the world of goods from the individual point of view. Admitting the presence of many "twilight zones," the mass of commodities do break up into complexes. The economic universe is not made up of hats, autos, and spinach. It is made up of felt hats, straw hats, dress hats, sport hats, blue hats, black hats, aeroplane helmets, nightcaps, and, on the edge, triangular scarves; and Plymouths, Fords, Chevrolets, roadsters, coupes, and convertibles; and plain spinach, fancy spinach, spinach in cans, and Birds Eye frozen spinach. Almost all commodities are regarded by each consumer as grouped into such clusters.

A few exceptions may be noted. There are, of course, such things as electric-light service for which there is no close substitute and which public policy has kept a monopoly. Also, every once in a while one runs across a novelty, strictly patented, which seems to be unique in its field. Such a "gadget," for example, is the "golf watch"—a device which if punched (honestly) will register the number of strokes per hole and per round. Such goods are unique because they are new, patented, and of rather minor importance anyway. If an invention really promises great consumer interest, competitors and near-competitors spring up quickly enough. Most things can be produced in a culture as technologically rich as ours in a myriad of ways.⁶ If they cannot, industrialists have not shown

clearly defined cluster of species markets separated from all other species markets by vacant regions. Rather we should think of genus markets as frequently overlapping."

6. The National Resources Committee, *Technological Trends and National Policy*, Washington, 1937.

themselves backward in poaching upon monopolized methods of production with varying degrees of legality. Edison spent, it is said, over a million dollars defending his patent on the incandescent lamp.

From the point of view of each consumer, the emphasis in cluster formation is upon the services the goods are able to render. Goods are in a relationship of substitution because they are believed to be capable of performing a common basic service. Some may be supposed to be able to perform the basic service better than others; and the goods may perform the service in quite different ways technically. Also some goods couple with the basic service certain other services of a more or less dispensable nature. Thus a \$20 watch and a \$100 watch may differ in that the latter has been constructed with greater care and precision and may fairly be expected to perform the basic service of time telling with greater competence. Sundials, hourglasses, and watches all are able to tell time, and so may be regarded as alternatives by some consumers, even though they perform the service in quite different ways. One watch, encrusted with diamonds, may combine the service of time telling with that of ornamentation. Examples can be multiplied by any of these variations.

The blurring of the lines between "clusters of substitutes" occasioned by lack of unanimity on the part of consumers makes it difficult to define the concept of "an industry." Mrs. Robinson speaks of a commodity as "bounded on all sides by a marked gap between itself and its closest substitutes. . . ." ⁷ Just who perceives this gap and how it is demonstrated is not made clear. It seems to the writer that for any commodity there is likely to be a certain amount of buyer unanimity—varying with the industry—as to what the close substitutes are. The amount of difference of consumer opinion on what constitutes the cluster "automobile" would be slight. However, there would probably be some who would

7. Robinson, *op. cit.*, p. 17, and Joan Robinson, "What Is Perfect Competition?" *Quarterly Journal of Economics*, XLIX (1934), 114.

regard a carriage as an alternative; others would regard the subway or taxi as close substitutes in their individual consumption pattern. In the entire market for automobiles such sporadic variations might be disregarded by most automobile manufacturers in decisions as to price policy. The test as to whether the "carriage" is in the automobile industry from the point of view of the seller under monopolistic competition would be whether the consumers who regard a carriage as an alternative to the automobile are sufficiently numerous so that their behavior and that of the sellers of carriages would have to be taken into account in the price and production policies of the automobile industry. With this criterion in mind we can define an industry as a group of sellers putting out commodities which are substitutes in enough consumers' estimations so that account must be taken of the others as rivals. Sellers in the same industry conceive themselves to be in closer substitutional relationship than merely the universal competition for the general purchasing power of the consumer. This concept of industry—looked at from the point of view of the producer—accords with common usage and the habits of thought of businessmen.⁸

Thus far we may seem to have framed a definition of commodity and industry with reference to imperfect competition only. Goods which are monopolistically competitive are found, by definition, in the same "clusters of competing substitutes." Any given cluster, however, may be made up of mixtures of competitive or monopolistically competitive products, or, rarely, entirely of goods in pure competition. In the latter case each distinguishable grade or subtype or style of competitive product—such as Grade A white eggs—would be a commodity in the sense defined by Mrs. Robinson. However, the concept of industry under pure competition cannot be defined by reference to price policy and rivalry for presumably price is set without dictation by sellers

8. I am indebted to Professor Mason of Harvard University for this concept of an "industry."

and rivals do not take account of each other's reactions. However, we can redefine an industry under pure competition by utilizing the concept of substitution as follows: a group of products are in a single industry if an increase in the total amount of money spent by consumers for one product causes a greater decrease in sales of the others than would occur as a result of a similar increase in expenditure for goods in general. This leads to rival commodities such as tea and coffee, for instance, being considered as belonging to the same industry—a result somewhat out of harmony with common usage but useful in this analysis. From the point of view of the consumer, tea and coffee occupy closely parallel positions to Fords and Chevrolets. Clusters of competing substitutes shade off by imperceptible degrees into other commodities because of lack of consumer unanimity on the question of alternatives. Most clusters will be made up predominantly of goods in monopolistic competition, since the latter is far more prevalent than are commodities produced under perfect competition.

There are admittedly difficulties inherent in the concept of industry stated above. Different sellers, unequally well informed, may gauge the extent of rivalry differently. Further, since sellers' products differ under monopolistic competition, no two sellers may have quite the same set of "close rivals." Thus the seller of one particular type of duck cloth might have only a dozen firms of whose policies he must take account, whereas another seller of a slightly different style of duck cloth might consider twenty firms to be in close competition with him. Both firms, furthermore, may have to take account of the highly competitive nature of the cloth industry in the setting of prices and the determination of policies. Although only twelve or, as the case may be, twenty sellers may at present be in active competition, if either rival put the price up to any substantial extent, hundreds of sellers might enter the field by making very simple adjustments in their looms. Hence the concept of an industry as a group of sellers

whose products are generally considered as close substitutes is not one which enables us to place all of the products of industry into neat "industry" boxes. It is rather a realistic statement of this concept as thought of by the businessman. The reality of industry is one of ill-defined and shifting rivalry.

2. MARSHALLIAN DEMAND SCHEDULES

WE may distinguish three different structures of demand schedules—those prevailing under perfect competition for unrelated commodities; under perfect competition for rival products such as the various staples of cotton, or grades of eggs; and under monopolistic competition.

Under perfect competition where no problem of rivalry is involved, it has been traditional to distinguish, for each "commodity," three kinds of demand schedules—the individual; industry, commodity, or total; and sellers'. The individual consumer has certain uses for wheat, for instance, and would take different amounts of it, presumably, at each and every price which might prevail. The demands of all the consumers in the market can be added together to obtain the total demand curve. However, the individual seller of wheat thinks in terms of a demand curve for his few bushels which is perfectly elastic. This is because he applies a microscope, so to speak, to the total demand curve at the prevailing price.⁹ The total demand curve, in terms of millions of bushels, slopes downward to the right. However, if a seller has only four hundred bushels to sell, the addition or subtraction of an amount this small would not cause the quotation of wheat to change by even a fraction. The amount is too small to be noticed or perceived by the market, and so for that amount the total demand curve is a horizontal straight line. If he raises the price ever so little above the market quotation, he can sell none; and he would under no circumstances offer

9. Nicholas Kaldor, "Professor Chamberlin on Monopolistic and Imperfect Competition," *Quarterly Journal of Economics*, LII (1938), 519 n. 7.

any below the going price, for he can sell all that he can produce at the higher, market price.

The familiar Marshallian demand curve is one which is made up on the assumption that the prices of *all* other prices remain the same other than the one under consideration. In the Marshallian analysis of perfect competition the cases of rivalry—such as tea and coffee—are treated as subordinate and unusual.¹⁰ Most commodities have demand schedules, it is assumed, which bear sufficiently independent relationships to other commodities so that the assumption of fixity of prices does little violence. Under conditions of monopolistic competition it is obvious from the outset that the price behavior of rival commodities is a ubiquitous and typical problem instead of a rare and extraordinary one. Perfect competition is a rare phenomenon under contemporary conditions. Perfect competition between goods which are also unrelated is even more unusual. When sufficient account is taken of the subgrades and substyles of strictly competitive products—such as the grades of eggs, the staples of cotton, we see that indeed rivalry even in this sphere is the rule and not the exception. We will, therefore, henceforth regard as typical and universal conditions of rivalry between a limited number of commodity components of an industry, whether the industry is predominantly competitive or monopolistic. In other words, unrelated commodities drop out of our analysis of demand by assumption.

3. DEMAND SCHEDULES UNDER MONOPOLISTIC COMPETITION

LET us move to the other extreme now and consider the structure of demand analysis under conditions of monopolistic competition. Conditions of rivalry under pure competition can most clearly be analyzed after monopolistic competition is understood.

Under monopolistic competition there is only the individ-

10. Alfred Marshall, *Principles of Economics* (8th ed., London, 1927), p. 100.

ual consumer's demand schedule and the commodity or seller's demand schedule.¹¹ The total or industry demand schedule (in the competitive sense) drops out. We may suitably discuss the relationships of these analytical tools.

When an individual asks himself, "What is my demand schedule for Heinz's catsup?" he is forced to ask himself the further question, "What am I to assume concerning the prices of other catsups competitive with Heinz?"

Let us say that the consumer assumes that all other catsups remain the same in price, regardless of the price charged by Heinz. If this is the case, then a series of perfectly definite small demand schedules can be made out—one for each consumer and potential consumer. These can then be summated algebraically and one gets the total demand schedule for Heinz's catsup on the basis of a particular assumption concerning rivals' prices.

If, alternatively, each consumer makes some other specific assumption—such as that for each one-cent rise or fall in the price of Heinz's catsup, all others also rise or fall by one cent—then again a series of individual demand curves becomes determinate. They can be summated similarly. If, finally, all buyers assume that other sellers do not react to a contemplated rise in the price of Heinz's catsup but do cut prices in a specified way if Heinz cuts his prices, then each individual demand curve would probably have a bend in it at the prevailing price, and so would total demand. This is one case described by Dr. Paul Sweezy in a suggestive article.¹²

Any individual consumer would therefore have, simultaneously, a system or "family" of quite differently shaped demand schedules for any one item, depending upon the

11. A seller's demand means in this work the sum of the consumer's demand schedules which confront a seller. Sometimes the expression has been used in quite another connection. Once goods have been produced, any sellers who withhold their stocks from the market are in fact "demanding" the goods. This point is stressed by Wicksteed and Davenport. See Frank H. Knight, "Demand: Theory," *Encyclopedia of the Social Sciences*, V, 69.

12. Paul M. Sweezy, "Demand under Conditions of Oligopoly," *Journal of Political Economy*, XLVII (1939), 568-573.

assumptions made about the price policies of related commodities. For illustration, Chart 29 below shows the family of demand curves of a single consumer for Heinz's catsup under all three of the assumptions mentioned above; and it is to be stressed that all three are simultaneous and all are equally realistic. They all state how many units of a commodity this consumer would buy if different prices of the product prevailed. The only difference is that they are framed on the basis of different assumptions as to the behavior of the rival sellers. The consumer may or may not be conscious of any of these schedules—any more than he may be aware of a Marshallian demand schedule—but they are in any case capable of being elicited by a series of hypothetical questions. Many other curves than the ones depicted are also latent in the consumer's mind—corresponding to as many kinds of assumptions of rival's reactions as one could devise.

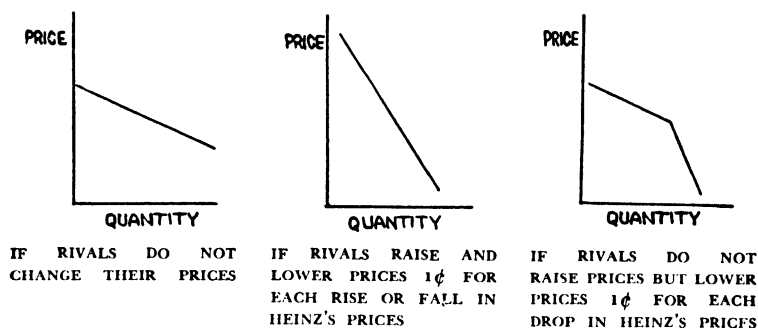


Chart 29. *Individual Demand Curves for Heinz's Catsup.*

Now it is obvious that in any given market at any given time one of the various sets of possible assumptions as to rivals' reactions will be the most realistic. Sellers are in a crucial position in the market, for they more than any buyer or economist know from long experience the behavior patterns of their rivals. The seller is *par excellence* the person best able to select the most probable assumption. On its basis

he is able to estimate the individual demand schedules of his public. Their algebraic sum will be the seller's demand curve if the seller is accurate in his estimates. It will be the same sum of the same schedules as those which individual buyers would make on the basis of the same assumption. For every possible assumption as to the price a seller might charge some particular set of rivals' reactions would be anticipated by him; and for each set of reactions the consuming public will buy a certain quantity of his goods. The sum of these individual consumer demand schedules is his demand.

With reference to a total demand curve thus obtained Paul Sweezy has written: "Imagined demand curves, unlike the ordinary demand curves of economic analysis, can only be thought of with reference to a given starting point."¹³ Of course that is the way the problem of price setting most typically presents itself to a seller. However, logically there is nothing in the way this curve is derived to make a given starting point any more necessary than in a Marshallian demand schedule under perfect competition. Any seller of a differentiated product entering business for the first time, or putting out a new style of product, must at some time or other set an initial price. He will in attempting to arrive at this optimum original price be confronted by a schedule of total demand under the assumptional framework described above.

There has been some terminological confusion about the nature of the seller's demand curve—Sweezy, among others, has called it an "imagined demand."¹⁴ It is, of course, imagined in the sense that the seller must *estimate* the individual demand schedules which he summates. But in this sense so is the Marshallian total demand schedule—no one knows its position with accuracy. It is not imagined in the sense that

13. *Op. cit.*, p. 572.

14. *Op. cit.*, pp. 568-573, and Nicholas Kaldor, "Joan Robinson: Economics of Imperfect Competition," *Economica*, I (1934), 340-341. Fritz Machlup in "Monopoly and Competition: A Classification of Market Positions," *American Economic Review*, XXVII (1937), 445-451, often mentions the demand as "conceived by" the seller.

the seller's demand curve under pure competition is sometimes—rather carelessly—spoken of as imaginary—its shape a result of the smallness of the seller's offering in relation to the total market. There are no demand schedules which may *appropriately* be designated by the term "imaginary."¹⁵

In character the sellers' demand schedules under monopolistic competition are very much like the total or social demand curve under pure competition. In fact insofar as there is any total demand curve under product differentiation, it is the sellers' demand curve. This is because it is impossible to set up assumptions with any degree of realism or generality on the basis of which an industry demand schedule could be constructed. Each of the goods under monopolistic competition is typically differentiated physically from the others, and often in price as well. Under these circumstances neither a total consumers' or a total of the sellers' demand curves can appropriately be summated.¹⁶

Many writers on monopolistic competition have derived curves, for comparative purposes, which are based upon one or another assumed set of rivals' reactions. Thus Professor Chamberlin in his initial statement draws a curve "which 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."¹⁷ With this he compares another curve based upon the contrasting assumption that all rivals do not change their prices at all regardless of the price behavior of the seller under consideration. Professor Copeland, in his review of Professor Chamberlin's book¹⁸ and again in

15. M. Bronfenbrenner, "Applications of the Discontinuous Oligopoly Demand Curve," *Journal of Political Economy*, XLVIII (1940), 420 n. 2, also criticizes the use of the expression "imagined demand."

16. Occasionally one finds references to the "total demand" under conditions of monopolistic competition. J. M. Clark, "Toward a Concept of Workable Competition," *American Economic Review*, XXX (1940), 245 n. 2; Edward Chamberlin, *The Theory of Monopolistic Competition* (Cambridge, 1933), p. 90.

17. *Ibid.*

18. Morris A. Copeland, "The Theory of Monopolistic Competition," *Journal of Political Economy*, XLII (1934), 531 n. 2.

a recent commentary,¹⁹ has criticized Chamberlin for the vagueness of the latter's concept. In his own constructive work Professor Copeland employs the same devices—renamed by him, respectively, the “apportioned genus demand curve” and the “species demand curve”—with a more complete description and discussion.²⁰

No objection to this analytical device can be raised as long as the unrealistic nature of the assumptions is clearly borne in mind. The method is utilized by the writer in Chapter IX. It is of rather limited applicability, for when it is employed, differentiated goods of a single price are almost always necessarily selected. Furthermore, it must be recognized that it does some violence to the freedom of will of sellers which is rather an essential ingredient of monopolistic competition.

4. DEMAND SCHEDULES FOR COMPETITIVE RIVALROUS COMMODITIES

WE are now in a position to analyze the structure of demand for rival commodities under perfect competition. Let us say that there are two commodities, in the sense—already defined—of homogeneous physical objects, such as Grade A eggs and Grade B eggs. Both are produced under perfect competition. There are numerous sellers and within each class the product is homogeneous.

The individual demand curve will strongly resemble the “family” of curves described for monopolistic competition. For every price of B which might prevail, a consumer would probably have a different demand schedule for A. The only difference is that the prices of the rival products are set by the free functioning of the market rather than by the administration of the sellers.

The individual seller's demand curve under these conditions will resemble those under perfect competition, for the

19. Morris A. Copeland, “Competing Products and Monopolistic Competition,” *Quarterly Journal of Economics*, LV (1940), 4 n. 5.

20. *Ibid.*, p. 19.

producers of eggs are assumed to be numerous. At whatever price of either grade the market yields, each seller will be confronted by a perfectly horizontal demand schedule because he is such a small part of the whole.

Under conditions of rivalrous competition there is another type of demand schedule which must be distinguished—the commodity demand. Under monopolistic competition there is but one seller to one commodity, hence, the seller's demand curve is the commodity demand curve. This does not hold true when the sellers of a commodity are numerous.

The commodity demand schedule for Grade A eggs can be summated from the individual demand schedules which reflect different demands according to the price of Grade B eggs. It will be a different total curve for every price of Grade B eggs which might prevail. This is the curve which is strictly analogous to the sellers' demand curve under monopolistic competition. In the latter case a different sellers' curve prevails for every different set of rivals' reactions which can be imagined.

However, no total demand for *both* Grade A and Grade B eggs can be summated. The goods are physically different, and so are defined as different commodities. Except by accident, the market would produce different prices of the two commodities at any one time. It is impossible to frame any assumptions or make any mathematical adjustments which could render the two commodities homogeneous and therefore in a position to be integrated. The same is ordinarily true of the component members of a group of commodities in monopolistic competition.

From the above it can be seen that analytically the demand curves of competitive rivalrous products strongly resemble those of monopolistically competitive products. About the only difference is that the seller of a rivalrous competitive product is one among many and has no power to name prices. The multiple nature of the individual demand curve, the make-up of the commodity demand curve (as distinct from

the seller's curve), the impossibility of constructing a curve for the industry are very much alike. The relationships set forth in the three sections above can be graphically summarized in a chart. The quantities are arbitrary and the elasticities are of course purely hypothetical, except for those which are infinitely elastic.

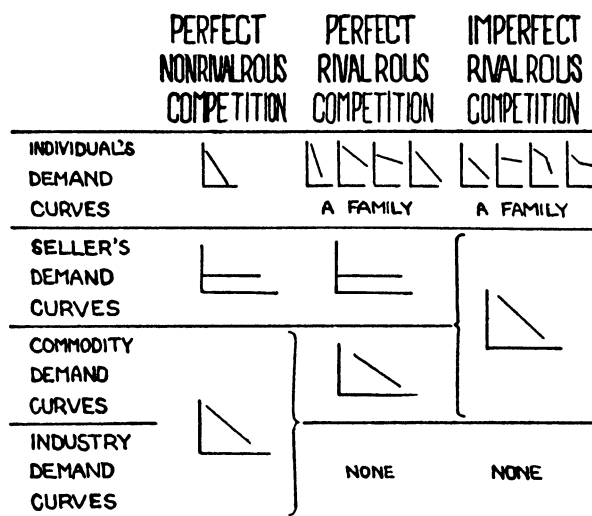


Chart 30. *Demand Curves under Perfect and Imperfect Competition.*

If we concentrate attention upon commodity demand curves, we may say for both perfect (rivalrous) and imperfect competition that their character depends upon two sets of factors: ²¹ (1) the attitude of buyers toward the product and its alternatives and (2) the pricing of rival products. The latter is a matter of policy under monopolistic competition and of market equilibrium under perfect competition. The former also, for that matter, is more consciously the product of seller activity under monopolistic competition.

21. Benjamin Higgins, "Elements of Indeterminacy in the Theory of Non-Perfect Competition," *American Economic Review*, XXIX (1939), 475.

5. THE OUTWORN DICHOTOMY OF DEMAND AND SUPPLY

THE traditional treatment of demand and supply by means of two intersecting curves and the comment of Alfred Marshall to the effect that price setting is done by these two curves as though they were blades of a pair of scissors have given us the concept of the forces of demand and supply as equals and opposites.²² Modifying this view we may first note the conclusions of Chapter IV and its analysis of the genesis of wants. Sellers, though not omnipotent, have a good deal to do with the creation of the demand curve which confronts them. Also, the very existence of a commodity is itself necessary before any significant demand for it on the part of consumers is conceivable. Under monopolistic competition the dominance of the seller—always limited by the cultural background of society—is unmistakable; and it tends to be the case to a less extent under perfect competition.

Further, the analysis just presented of the structure of demand schedules points clearly to the fact that the extent and elasticity of the demand for any single commodity at any one time are a function of the prices of rival commodities. The latter are subject to the will of producers in all monopolistically competitive industries.

In still another sense demand is subordinate to the will of the supplier under monopolistic competition. It follows from the analysis of demand schedules given above and from the nature of monopolistic competition that the seller has it in his power (under certain conditions) to gain by pricing the products he has to offer differently and otherwise treating various buyers in a differentiated manner. Some aspects of this problem have been discussed by various writers under various names: "price discrimination"—perhaps the most common—by Mrs. Robinson;²³ the "discount struc-

22. Marshall, *op. cit.*, p. 348.

23. Robinson, *The Economics of Imperfect Competition*, *op. cit.*, chap. xv; A. R. Burns, *The Decline of Competition* (New York, 1936), chap. vi.

ture" by Willard Thorp;²⁴ "parcelation of the market" by Professor Copeland.²⁵ I suggest that the term "demand differentiation" is particularly happy because it calls attention to the close relationship between this phenomenon and product differentiation—a matter which will be referred to again; and it also enables one to discuss other forms of differentiation than price as a part of the same problem. Certain prerequisites must be present before demand differentiation can occur. It is at the outset a phenomenon peculiar to monopolistic competition. The demand curves of the various buyers must possess different elasticities. If we suppose that some of the costs of delivery or of selling are different for different buyers (and we do not rule out these costs differences by our original concept of "a commodity") then these differences might occasion demand differentiation, even if the demand schedules *did* possess identical elasticities. The conditions of the market must, further, be such that any group of buyers who are charged the higher price or given less favorable terms do not have easy access for some reason or other to the lower priced goods; nor do the buyers of the cheaper good find it feasible to resell to the persons being charged the higher price.²⁶

If these prerequisites are present, a seller will gain by distinguishing those demand schedules which are more elastic and charging such persons lower prices than those whose demand schedules are inelastic.²⁷ Alternatively more favorable terms of sale may be offered. In the recent monograph of the Temporary National Economic Committee on Price Behavior and Business Policy it took some four pages of close type even to outline the various forms which nonprice competition may take. Business *mores* are increasingly directed

24. Willard L. Thorp, "Price Theories and Market Realities," *American Economic Review, Supplement*, XXVI (1936), 15-22.

25. Copeland, "Competing Products and Monopolistic Competition," *op. cit.*, pp. 25-26.

26. Robinson, *op. cit.*, pp. 179-180.

27. *Ibid.*, p. 187.

against the price cutter, so that competition, it would appear, is being directed into the forms of various changes in the product and in their conditions of sale.²⁸ It may be that the shift in the conditions of sale is preferred by a buyer to a mere drop in price, for quite often a shift in the conditions means more gain in revenue to the buyer than they mean in concession from the seller's point of view. For instance, if the seller pays transportation costs rather than the buyer, the seller may be able to incorporate any one buyer's shipment in a carload lot and thus obtain a lower freight rate than the buyer would have been able to. Variations of conditions of sale also recommend themselves to the seller, for they are more personal, less duplicable by the industry; he is able through them to bind the buyer to him more securely than he would be by a mere drop in price. Changed conditions of sale are also less easily traced and publicized than changed price quotations; and if discovered they are less likely to excite buyer ill-will, for more plausible grounds can be made out for their existence than for crude price discrimination. For all these reasons and doubtless many others peculiar to particular industries, conditions-and-terms discrimination is even more prevalent than price discrimination.²⁹

At the logical extreme each buyer could be treated by the seller on an individual basis, and one observer believes that the trend in recent years is toward more "customer classes."³⁰ Special prices, or alternatively, special terms of sale, could be worked out for each buyer. However, demand differentiation by no means is carried as far as this. Several factors militate against the treatment of each buyer as an individual market to be exploited monopolistically.

In the first place the more classes of customers are distinguished, the more complex and bothersome the sales

28. Temporary National Economic Committee, *Price Behavior and Business Policy*, Monograph No. 1 (Washington, 1940), pp. 94-98. See also A. R. Burns, *The Decline of Competition* (New York, 1936), pp. 412-417.

29. *Ibid.*, pp. 60-63, 98 ff., and *passim*.

30. *Ibid.*, and Thorp, *op. cit.*, p. 16.

process becomes. Advertising has to be more elaborate; salespersons have to have more lengthy instruction. Professor Copeland, indeed, refers to these considerations as the chief considerations militating against market parcellation.³¹ From a purely mechanical point of view the more types of buyers are segregated the higher the extra cost of so doing, and a point is soon reached in the process where further parcellation does not pay.

Secondly, the seller is deterred because the process of demand differentiation, especially in the form of price discrimination itself, is, according to our rather capricious business mores, "unfair." Thus a seller may be charging every single customer an outrageous price, and there will be no criticism. "That's business." But let him charge one customer one price and another another, and the person paying the higher price will invariably complain. It may put him, of course, in an inferior competitive position. The outraged buyer is likely then, out of ill-will, to cease to buy from the discriminating seller altogether. The importance of buyer resentment, of course, depends upon the degree of secrecy possible in the making of sales, and the ease or difficulty of finding criteria for differentiating buyers which will recommend itself to the buyers as fair. As in "tariff specialization," sellers will often set up such elaborate and detailed sales terms that in fact different buyers whose characteristics are well known to the seller will get precisely the terms intended by the seller. Very frequently some superficial or disguising changes are made in the product so that from the buyer's point of view the products are rendered "different" whereupon the moral necessity of the same price disappears. Cases are cited of the identical product being put out in different markets "differentiated" only by different brand names.³² When any physical change whatsoever occurs we have, accurately speaking, left the field of demand differentiation

31. Copeland, "Competing Products and Monopolistic Competition," *op. cit.*, p. 25.

32. Temporary National Economic Committee, *op. cit.*, p. 80.

and entered the field of product differentiation. The reader can easily see what a short step it is.

Thirdly, the seller is deterred from demand differentiation by such legislation as the Robinson-Patman Act and the (so-called) Fair Trade Acts.³³ Here public policy intrudes into the pricing process, strongly encouraged to do so by the high-cost retailers. In the one case the law intervenes to prevent the seller from making advantageous terms to buyers with large sales when the price difference does not reflect genuine economies of large-scale selling but rather the difference in the elasticity of the demand of the buyers. In the other, goods are priced by the manufacturer, so that the discretion of the ultimate sellers is destroyed.

Last, but not necessarily least, sellers are affected in the extent and type of demand differentiation they attempt by considerations of rivals' reactions. Rivals must be considered, in the analysis of monopolistic competition, in all policy changes, not only price shifts. Rivals' reactions condition the elasticity of all of the demand curves confronting the seller, we have had occasion to point out. It often happens that rivals' competition is more active in one part of a seller's market than in another. If rivals are relatively lethargic and unresponsive to policy changes in one part of a seller's market then, in the event that the elasticity of buyer's demands permits, that is the segment of the market in which higher prices are likely to be charged.

The problem of demand differentiation in the writer's opinion is a part of business policy which should logically take its place beside product differentiation. The two are alternatives, in one sense, and yet each tends to give rise to the other in a complex way.³⁴

The above considerations lead to the view that the dichotomy of demand and supply as equals and opposites, like the dichotomy of monopoly and competition, must go by the

33. *Ibid.*, pp. 62, 86.

34. See chap. x, pp. 194-196.

board. Competition is now regarded as rare. In between competition and monopoly we now envisage dozens of stages of imperfect or monopolistic competition. These markets, with the current work of Mason, A. R. Burns, Thorp, and others, are gradually being shown to be highly individualistic.³⁵ The demand-supply dichotomy breaks down in a parallel way. For demand to approach supply as an equal and opposite force, conditions of perfect competition must be approached, and even here we have argued that the physical presence of a commodity antedates demand. Under monopolistically competitive conditions, producers have a good deal to do with creating, sustaining, augmenting, and directing demand. Their policies in reacting to rivals condition its elasticity. They have it within their power—limited by law—to segregate buyers and to treat them in differentiated ways, according to any criterion which recommends itself to them.³⁶ The degree of power of the seller is one which is manifoldly and disparately conditioned by habitual ways of doing business in particular industries and by the more or less pointed reactions of rivals.

Particularly in monopolistically competitive markets, the simple dichotomous concept of "demand and supply" is no longer tenable.

35. Edward S. Mason, "Price and Production Policies of Large-Scale Enterprise," *American Economic Review, Supplement*, XXIX (1939), 61-74; J. M. Clark, "Toward a Concept of Workable Competition," *American Economic Review*, XXX (1940), 241-256; Willard L. Thorp, *op. cit.*; A. R. Burns, "The Organization of Industry and the Theory of Prices," *Journal of Political Economy*, XLV (1937), 662-680; Frederick J. Mills, "Discussion," *American Economic Review, Supplement*, XXVI (1936), 62-66.

36. Mr. Thorp writes: "The discount structure may group customers by function, geographical area, quantity of business, method of purchase, or any combination of the four." *Op. cit.*, p. 16.

CHAPTER VI

A SHORT-RUN THEORY OF CONSUMER'S DEMAND¹

THE MARSHALLIAN analysis of supply has been usefully differentiated with respect to time. Three periods are distinguished: the market period during which stocks are regarded as constant; the short run in which production is permitted from fixed plant and equipment; and the long run during which entry or exit of firms and enlargement or contraction of plant are allowed. Counterpoised against the various supply curves which emerge from these analyses, Marshall, and conventional economic theory based upon his work, have placed a single demand schedule. This is presumed to be equally valid for the market, the short-run, or the long-run period.² There are no sound grounds for this supposition. Neither demand nor supply should be treated in an undifferentiated way with respect to time.³ A short-run theory of de-

1. The bulk of this chapter is reprinted with permission from an article by the writer, "The Analysis of Demand," *Quarterly Journal of Economics*, LIV (1939), 131-142.

2. Alfred Marshall, *Principles of Economics* (8th ed., London, 1927), pp. 156, 342-380; Albert L. Meyers, *Elements of Modern Economics* (New York, 1937), chaps. iv-vi. It is striking to note how orthodox is Meyers' treatment of demand in contrast to his treatment of supply which draws upon much post-Marshallian material.

3. Criticism of Marshall on this score has not been entirely lacking. See particularly Ralph W. Souter, *Prolegomena to Relativity Economics* (New York, 1933), chaps. vii, viii. Souter states: "It is not Marshall's supply curves that are theoretical monstrosities: it is his long period normal demand curves. The only valid criticism of Marshall on this whole fundamental matter is that he was not Marshallian enough: he did not extend (with, of course, appropriate flexibility) his own conception—of the essential relativity of the distinction between 'elasticity' and 'shift'—to both demand and supply curves for all periods. Hence the very noticeable lack of firmness in his handling of demand analysis." Souter, *op. cit.* p. 43. It seems as though Souter has misconstrued the meaning of 'shift' and 'elasticity' as these concepts are used by Marshall. F. H. Knight has repudiated Souter's interpretation in these terms: "The difference between short- and long-period change lies in the

mand needs to be developed in quite different terms from the conventional ones, for in the short run the usual marginal-utility approach, the indifference curve, or any variant of either is almost wholly irrelevant.

The consumer is a creature of habit, not only with respect to the goods he buys but the brands of those goods. The recent stress on differentiation of product and importance of selling costs, good will, and brand names makes this fact more and more clear.⁴ It takes *time* to make a consumer break old habits or adopt new ones.⁵ Further, it is obvious that consumers' habits are severely wrenched by any marked increases or decreases in income.⁶ It usually also takes time for income to change. If tastes and incomes be considered the two major variables behind consumer demand, then the "short run" for purposes of an analysis of demand can be defined: a period of time so short that no changes in income occur and no changes in established consumption rates occur.⁷ The "long run" would then be a period during which

'other things' which are assumed 'equal'—'given conditions'—and the curves are analytically quite different." F. H. Knight, "The Nature of Economic Science in Some Recent Discussion," *American Economic Review*, XXIV (1934), 234.

After Souter's announcement of the problem in the terms stated above, his own analysis of short- and long-period demand is far from satisfactory. In the end he actually eliminates the short-term demand analysis and presents a contradictory discussion. See Souter, *op. cit.*, pp. 47 ff. Referring to Souter's work, F. H. Knight writes: "I cannot understand how he means to define the curves, the variables and the given conditions; and his general conception of the curves in different periods is confused. . . ." Knight, *op. cit.*, p. 230.

4. Edward Chamberlin, *The Theory of Monopolistic Competition*, Cambridge, 1933; Joan Robinson, *The Economics of Imperfect Competition*, London, 1933. Cf. *Recent Social Trends* (New York, 1933), II, 875-877. Here Dr. Lynd suggests a recent decline in consumer loyalty to brands.

5. A fact of which Alfred Marshall was well aware. Cf. Marshall, *op. cit.*, pp. 110, 807. See also Arthur E. Monroe, *Value and Income* (Cambridge, 1931), p. 263.

6. Maurice Leven, Harold G. Moulton, and Clark Warburton, *America's Capacity to Consume* (Washington, D. C., 1934), pp. 84-95, and Carle C. Zimmerman, *Consumption and Standards of Living* (New York, 1936), pp. 51-54.

7. Souter asks (*op. cit.*, p. 66): "Is it appropriate and useful, and is it even intelligible, to define a 'short demand period' as one during which there is no 'alternation in the character or tastes of the man himself?'" He points out

habits are formed and broken, and income may increase or decrease. It is clear that one could break the analysis down more minutely than these two divisions since there are four combinations of habit changes and income changes possible: (1) taste and income constant; (2) taste constant, income changing; (3) taste changing while income is constant; and (4) taste and income changing. However, it is hoped that an analysis simplified to two periods will prove useful and suggestive as a beginning.

What determines the goods and services that buyers purchase in the short run—a period during which their incomes and consumption habits are fixed? First, before attempting an answer, it must be observed that just as the market supply *offers* of a good, while no production occurs, can be increased by drawing from stored supplies or decreased by resorting to storage, so income can be increased by drawing from savings accounts or investments and by borrowing, or decreased by saving while earnings remain constant.⁸ The parallelism between demand and supply is perfect in this respect, except that in the case of supply one class of goods—perishables—does not admit of storage.

1. AREAS IN WHICH CAREFUL WEIGHING IS ABSENT

A VERY large part of most people's current income is spent

that if a demand schedule remains fixed in position, and price drops, thus, presumably causing a larger quantity to be bought, only on the assumption that the demand schedule possesses unitary elasticity will there not be more or less money spent on other goods. If prices of other goods remain the same, and the changed income is spent on them, then the demand schedule for other goods must shift, he claims. Proceeding down a demand curve, static in position, itself involves a change in taste, he claims. I am here by assumption getting rid of some of the dynamic problems suggested by Souter. I am not assuming that all of income must be spent, nor that income cannot be enlarged by borrowing; thus I am able to insulate consumption of other commodities from the effects of changes in rate of purchase of the item under consideration; and I am proceeding throughout the short-run analysis, upon the assumption of a constant rate of consumption, so that no changes in the taste for any particular good can occur. Souter, *op. cit.*, pp. 67-70.

8. An estimate of the amount and kinds of consumer borrowing for the end of 1935 is given by L. R. Foster, *Credit for Consumers*, Public Affairs Pamphlets, No. 5 (1936), p. 21.

without free current choice of any kind.⁹ Commitments of various kinds made in the past project into the present their legal or moral obligations.¹⁰ Legal obligations such as rent on a leased house, home-purchase installments, debt payments simply must be met by the solvent individual. Other obligations such as board and room, children's tuition, annuity payments, insurance provisions may not be strictly legally compulsory, but in practice are done as a matter of course or family policy and involve no utility or other analysis whatsoever, once the undertaking has been embarked upon. They are, in the short run, automatic expenditures. On the whole, as a person grows older, a larger proportion of total income is spent upon such outlays. The typical older person has family responsibilities, becomes a home owner, has increased awareness of the need of provision for old age.¹¹ He may on the other hand have fewer of the "installment" obligations than the younger person in the age of accumulation of household equipment.

The possibility of saving is noted above. Obviously, if the consumer has made legal commitments involving saving, as in the purchase of an annuity or the joining of a "Christmas Club," he has adopted a fixed policy, assumed a moral or legal obligation. Under such circumstances saving may be classed as a commitment exactly similar in the processes involved to the others mentioned above. On the other hand, as we shall see, saving may be an unplanned thing, a residual after all other outlays have occurred.¹²

In addition to commitments, there is another important class of habitually consumed goods with respect to which no

9. *Recent Social Trends*, *op. cit.*, II, 889, gives for 1929 the allocation of the National Income spent by consumers for various purposes. If house rent, taxes, fuel and light, life insurance, and automobile purchase and use expenses be regarded as what may be termed "commitments," then about 40 per cent of consumers' expenditures were in this category in 1929.

10. Monroe, *op. cit.*, p. 32.

11. Charles S. Wyand, *The Economics of Consumption* (New York, 1937), p. 184.

12. See chap. vi, p. 107.

weighing process or utility analysis can conceivably be applied in any time period, short or long. These we have called "petty" goods. Each individual has a margin below which he does not think it worth while to weigh expenditures, as we have pointed out at length in Chapter IV.

After commitments are taken care of semiautomatically and typically early in the income period,¹³ and when the sometimes large category of petty goods is ignored, how does the consumer allocate the rest of his income? By assumption he has certain rather rigid habits—he consumes, let us say, potatoes as a main staple of his diet and uses a certain number of safety pins, Lucky Strikes, a certain amount of Ivory soap and Heinz's catsup per month.

2. THE AREA IN WHICH CAREFUL WEIGHING OCCURS

THE most important class of habitually consumed goods consists of those sufficiently costly so that the buyer addresses himself to the problem of obtaining them cheaply. Let us say that his tastes call for steak, salt, Ipana toothpaste—at a certain rate per year. How does he determine how much to buy at the various prices which might prevail at any one time?

First he takes into account the stocks of the good he has on hand and his storage facilities for the various quantities

13. By "income period" is meant the span from one payday to the next. This would obviously differ from individual to individual to some extent. Marshall explicitly excludes the factor of dwindling consumer income during the income period from his analysis. "When a person buys anything for his own consumption, he generally spends on it a small part of his total resources; while when he buys it for the purposes of trade, he looks to reselling it, and therefore his potential resources are not diminished. In either case there is no appreciable change in his willingness to part with money. There may indeed be individuals of whom this is not true; but there are sure to be present some dealers with large stocks of money at their command; and their influence steadies the market." Marshall, *op. cit.*, p. 335. See also *ibid.*, pp. 334, 335 n. 1, and Monroe, *op. cit.*, p. 19.

A budget study of 1,665 factory workers made by the Ross Federal Research Corporation indicates that "expensive items were likely to be contracted for on pay day or the day after. . . ." *Monthly Labor Review* (January, 1939), p. 104.

he might acquire, together, of course, with their perishability. He is then moved by any forecasts he is able to make of future prices or costs of the good he requires.¹⁴ If he foresees rising prices he will tend to "stock up," just as the seller is likely to hold off his current offers in light of the same prediction.¹⁵ If, on the other hand, he foresees falling prices, he is likely to postpone purchases. Any forecasts he is able to make concerning rivals' reactions to the price cut in a particular commodity are of importance also. If, for instance, he has reason to believe that a cut in one price will be a signal for a "price war," he may hold off purchases, awaiting the rivals' retaliatory prices, and further cuts on the part of the first seller. On the whole, sellers are more strongly motivated by forecast than buyers, since the former are specialists in their particular goods whereas the latter cannot know a great deal about a wide range of items.

The buyer is also affected by forecasts of his future income, especially commitment-free income. If he foresees a period of rising unallocated funds, he is less likely to lay in large stocks under present conditions of comparatively low income. His purchases are, furthermore, influenced strikingly by the amount of free current income on hand, and that is, for most individuals, a function of time.¹⁶ The earlier parts of his income period find a consumer more receptive to buying appeals than the later parts. Graphically, there occurs a continuous shifting to the left of the individual's demand schedule for goods as depletion of income occurs. Stores are well aware of this fact and direct their heaviest barrage

14. Marshall, *op. cit.*, p. 348.

15. It is argued below that the richer the consumer, the less careful estimations of all kinds he makes. This applies to short-run as well as to long-run analysis. See chap. ix, pp. 161-165.

16. Purchases of "small items" are much less concentrated at the beginning of the income period than are commitments. However, the Ross Federal Research Corporation budget study shows that 1.5 per cent of purchases of small items (food, drugs, etc.) are made the day before payday in contrast to 18.7 per cent on payday and 22.4 per cent on the day after payday. *Monthly Labor Review*, *op. cit.*, p. 104.

of advertising at buyers on and near paydays.¹⁷ Underprovision for the later parts of the income period is due to the principle of time preference, essentially. However, the concentration of buying inducements (loss-leaders, etc.) at the beginning may also account for the practice of early purchase.

Under monopolistic competition the "rational" reactions of a speculative nature by a consumer are often impinged upon by other considerations. There is a tendency for prices to fluctuate less widely than under pure competition, and it often happens that a habitual level of price develops.¹⁸

Some time ago Dr. Nichol in an illuminating article argued that at the level at which price is, there may exist a kind of plateau in the total demand curve.¹⁹ The demand curve is then discontinuous. He claims that recent writers in the monopolistic-competition school are guilty of "consciously or unconsciously regarding marginal buyers as either nonexistent or else negligible in their influence."²⁰ He attacks the Chamberlinian assumption that "when other rival prices are fixed, the demand for any one of a number of 'differentiated' products may be represented by a continuous curve tilted upward to the left and downward to the right."²¹

†Professor Chamberlin, quite rightly in my opinion, con-

17. The Ross Federal Research Corporation budget study indicates that advertisements are much more likely to be noticed by purchasers on the day before payday than any other single day. Over half of the persons studied, however, reported that the days when advertisements were noted had no relation to payday. *Monthly Labor Review*, *op. cit.*, pp. 104-105.

18. Temporary National Economic Committee, *Price Behavior and Business Policy*, Monograph No. 1 (Washington, 1940), p. 32: "It may be reasonably inferred that most prices whose quotations change at short intervals are of the 'market dominated' variety and that those whose frequency of change is at the other extreme are, to some extent, affected by price policy decisions of individual firms or groups of firms."

19. A. J. Nichol, "The Influence of Marginal Buyers on Monopolistic Competition," *Quarterly Journal of Economics*, XLIX (1934), 121-135. Another statement of this view by the same writer is in "Imperfect Competition," *American Economic Review*, Supplement, XXIV (1934), 30-32. See also M. Bronfenbrenner, "Applications of the Discontinuous Oligopoly Demand Curve," *Journal of Political Economy*, XLVIII (1940), 420-421 n. 3.

20. Nichol, *op. cit.*, p. 121.

21. *Ibid.*, p. 123.

ceded that Dr. Nichol had hit upon one of a vast number of possibilities. Professor Chamberlin wrote: "Viewed as the solution of a particular case, rather than of the general one, the analysis is interesting and valuable. It represents, in fact, one of many possible situations with respect to discontinuities and irregularities in the demand and cost curves under monopolistic competition. Surely here is a fertile field for investigation."²² In another, more critical, section of his reply to Dr. Nichol, Professor Chamberlin writes: "Nowhere is any reason given why these marginal buyers should be more numerous at one price than at another, which is the real meaning of the curve upon which Professor Nichol bases his conclusions."²³ Certainly Professor Nichol's failure to discuss the point laid him open to precisely this attack.

However, there may well *be* more marginal buyers than elsewhere at any price which has become habitual—especially if several competing products—or a whole cluster of commodities—are priced identically, as is the case with so-called "price-lines."²⁴ Habitual price may be a point of particularly great elasticity. Mr. Henry Smith has presented an example of Dr. Nichol's thesis in an interesting commentary.²⁵ He argues that extensive and prolonged advertising of a product at one price has the effect of rendering the product unsalable in any comparable quantity at all other prices. If there is a habitual price level, then any higher price not only means that the consumer must spend more money but that he must go to the trouble of thinking about spending more money. Both are painful. At lower prices, the annoyance of readjustment may offset any inducement to purchase, so that total sales may simply remain the same. Indeed, if

22. Edward Chamberlin, "Comments," *Quarterly Journal of Economics*, XLIX (1934), 136.

23. *Ibid.*

24. Temporary National Economic Committee, *op. cit.*, *passim*, and pp. 102-103.

25. "Discontinuous Demand Curves and Monopolistic Competition; A Special Case," *Quarterly Journal of Economics*, XLIX (1935), 542-550.

we may take some parts of Mr. Smith's verbal analysis literally, we should infer a loop in the demand curve with an actual decrease in quantity taken at a price below the habitual one. This possibility is not depicted graphically, however. Mr. Smith's chart shows a vertical drop in the demand curve at the right of the plateau, whereas Mr. Nichol's original statement showed merely a perfectly elastic segment interrupting what would otherwise be a negatively inclined continuous demand curve. Two principal reasons are suggested by Mr. Smith for discontinuity in demand at habitual prices. A lower price for a good which has been long sold at a certain level shocks the consumer. He *has* to think, and thinking may cause a readjustment in which the good may be totally revalued. Also, a lower price for a standard product, widely advertised at a certain price, may awake fears in the consumer's mind that the good is substandard in quality for some reason. (The chaotic effects of a wrenching of consumers' habits is suggested by a brief note by Professor Ginzberg.²⁶ He reports that a large mail-order house experimentally changed the customary 49¢, 79¢, 98¢, \$1.49, and \$1.98 prices to 50¢, 80¢, \$1, \$1.50, and \$2, respectively, in several regional catalogues. In some cases more and in some less was sold. The results defied generalization.) X

It is to be noted that the market demand schedule facing the market supply schedule according to this analysis would ordinarily possess the negative inclination familiar to economic theory, but not for the usual reasons. If, as we are assuming, the individual is going on using at the same rate his favorite goods, a high price will usually elicit less purchases than a low price. However, no principle of diminishing utility or any analogue is involved. *No rate of consumption is revealed by purchases in the short run.* Just as a seller's offer of his goods from a fixed stock tells nothing about production policy, so a buyer's purchases at any one time tell nothing as to the extent to which the consumer intends to use

26. "Customary Prices," *American Economic Review*, XXVI (1936), 296.

the good. For perishable commodities only—a vanishing genus in these days of modern refrigeration and storage—are purchase and consumption closely related. The reason for the usual presence of a negatively inclined demand schedule in the short run is not the law of diminishing marginal utility but rather the fact that at lower prices more people think that the price is as low as they are likely to find it for some time, and so tend to buy, or buy more.²⁷ However, if a lower price encouraged a consumer to hope for still lower prices, it might lead to a falling off of purchases rather than to an increase. Also, insofar as consumers are shocked by any divergence from a habitual level, the reaction is apt to be a constriction of purchases as a reaction to price changes in either direction, according to Mr. Smith's verbal analysis. This point is relevant, as has been indicated, only to conditions of monopolistic competition where habitual levels of prices are found.

It will be observed that the factors depicted above as underlying market demand are the same *kind* of factors as those which have been developed by recent writers in the analysis of sellers' market supply schedules.²⁸ Surely the two curves should be co-ordinate in nature.

3. THE DYNAMIC RESIDUAL

LEFT over, after commitments are met and habitually used goods laid by, as opportunity offers, is a residual amount of income. It may of course be negative in amount, if income has been exceeded by expenditure, resulting in debt commitments for succeeding income periods or depletion of the individual's investments.²⁹ If the residual is positive, it represents an experimental fund used by the consumer in unpredictable ways. The demand schedule of the individual buyer

27. Marshall, *op. cit.* p. 348. "Their desire to have it depends partly on the chance that, if they do not buy it, they will be able to get another thing like it at as low a price."

28. Meyers, *op. cit.*, pp. 65-67.

29. Leven, Moulton, and Warburton, *op. cit.*, pp. 96-97.

for new goods is, typically, of perfect inelasticity, since he is interested in a minimum, experimental amount.³⁰ As in the case of "petty goods," however, the total or social demand will conform to the law of demand not only because more individuals will experiment, if price is low, but because for any given good there are usually some consumers familiar with it who have a somewhat elastic demand.

Whether or not expenditure on the part of the individual takes place depends upon such incalculable factors as effectiveness of selling appeals and moods of receptivity, and again the time during the income period at which the sales appeal takes place. Most individuals become noticeably less experimental during the waning parts of the income period. Less of the income is left over and therefore the danger of not being able to take advantage of some exceptionally good opportunity to buy a habitually consumed good is great. Emergencies may also arise of great social importance. The individual has a habitual "danger line" below which he dislikes to let liquid funds fall. He is therefore less likely to use up his residual income on other than strictly necessary outlays as he approaches an emergency level of his bank account.

The unallocated, experimental income is often spent in ways that start commitments which carry over into subsequent income periods such as first installments or initial insurance payments. It is also by trying a little of this and that that the consumer develops the new tastes which revolutionize subsequent spending.³¹ Here again the usual concept of weighing utility is inapplicable, since the expenditures are essentially unplanned and successive. During the first week of the month a buyer might spend \$5 for a hat

30. Eugen v. Böhm-Bawerk, *The Positive Theory of Capital* (William Smart, trans.) (New York, 1923), p. 203. The demand of an individual for an experimental good is very like that of the purchasers in Böhm-Bawerk's horse market.

31. During periods of increasing incomes, as in business recovery, experimentation is particularly active. See Wyand, *op. cit.*, p. 7.

and during the first week 15¢ for a sample of a new cold cream. Since at the first purchase the very knowledge of the existence of the second good was lacking, the extent of subsequent income unknown, and the sales appeal yet to be experienced, to claim that any rational weighing of the marginal utility of the two goods occurs is simply preposterous. Insofar as weighing takes place at all, it must be done between only those purchases considered fairly contemporaneously.³²

At the end of the income period such saving takes place as was not allowed for by a formally legal or embarked-upon commitment undertaken at the beginning. Residual saving, like experimental spending, is distinctly unplanned, and is a kind of score of the consumer's resistance power to sales appeals during the period in question. It is quite unrelated to interest rates or abstinence inducement for most people under ordinary circumstances.

4. THE PARTICULAR IMPORTANCE OF A DIFFERENTIATION OF DEMAND ANALYSIS ACCORDING TO TIME UNDER CONDITIONS OF MONOPOLISTIC COMPETITION

To summarize the analysis of short-period demand: demand, like supply, requires an analysis differentiated according to time. In particular a theory of short-run or market demand should be developed in terms which parallel the treatment of market supply. This analysis should treat the main category of habitually consumed goods in terms of the problem of stocking up and buyer forecast, and should take account of the importance of periodic paydays. It should not primarily be written in terms of diminishing marginal utility or

32. The traditional marginal-utility formula,

$$\frac{\text{marginal utility of A}}{\text{marginal utility of B}} = \frac{\text{price of A}}{\text{price of B}}$$

might be rewritten in light of this analysis in the following form:

$$\frac{\text{marginal utility of A at time a}}{\text{marginal utility of B at time b}} = \frac{\frac{\text{price of A}}{\text{income left at time a}}}{\frac{\text{price of B}}{\text{income left at time b}}}$$

any alternative of that theory, which is involved only to a minor extent (and to the extent that it is, not in the orthodox terms) as long as consumption rates remain static. The analysis should, further, acknowledge the existence of substantial outlays about which no short-run decisions are made—commitments; it should treat the sometimes large category of purchases made with complete lack of deliberation—petty goods; and should differentiate sporadic experimental purchases.

Until recently value theory has been written, consciously or unconsciously, in terms primarily of the great produce markets such as wheat and cotton. On the supply side such commodities are characterized by (1) numerous producers and (2) homogeneity.³³ On the demand side they are marked by (1) relatively little attempt at speculative stocking up on the part of ultimate consumers, (2) unexperimental utilization by most consumers, (3) purchase on a periodic, not commitment, basis, and (4) costliness above the margin of petty expenditures of most consumers.

Of these alleged characteristics of the demand for staples none, perhaps, requires comment except the first. It has been argued that in the short run demand usually conforms to the law of demand because of stocking up. The extent to which consumer forecast operates, however, differs to some extent with different kinds of commodities. Buyers are much more likely *speculatively* to acquire stocks of monopolistically competitive differentiated products than of competitively produced staples. This may seem at first sight at variance with experience: what of the sugar barrel, the potato sack, and the coffee bin of the typical householder? Further study of consumer habits would probably reveal that such staple stocks are bought by the consumer primarily to obtain quantity discount and for convenience, and rather rarely because of an opinion that prices are at a bargain level. *There is no habitual level which can be related to existing prices.*

33. Chamberlin, *op. cit.*, p. 16.

Prices of competitive products vary continuously and, from the point of view of the ultimate consumer, fortuitously.³⁴ In contrast the branded goods and other differentiated products have well-known habitual prices for reasons now apparent.³⁵ A lower price for Campbell's soup or Ivory soap as an incident to a sale, or as a loss-leader, or in a cut-rate store, is sure to inspire consumer stocking up. The shelves of the typical consumer are very likely to contain bargain-bought *differentiated* products and rather unlikely to contain stocks of competitive staples *bought purely in response to price conditions*.

It should also be noted that many of the competitively supplied staples such as copper, cotton, and wheat are not usually purchased by *ultimate* consumers. The bread industry is a chief consumer of wheat, not the housewife. The bread industry is very likely indeed to stock up—and do so with a maximum of acumen—if the price of wheat is subnormal. But the ultimate consumer, upon whose behavior the marginal-utility analysis is posited, is scarcely a consumer of wheat and therefore rarely concerned with forecast concerning its price. Also to some extent the staples are perishable and so do not admit of storage.

For these reasons it can be argued that, although stocking up and consumer speculation on staples in the short run are not wholly unknown, they are probably less in degree than for the monopolistically competitive products.

The classical economists, in extolling free competition and the wonders of the pricing system, not unnaturally concentrated their attention upon competitive products. But we are now increasingly aware that there are other commodities than the staples. Recognition of this fact has shifted our attention on the supply side to the differentiated product sold by relatively few sellers; and we see that such commodities are

34. Gardiner C. Means, *Industrial Prices and Their Relative Inflexibility*, 74th Congress, 1st Session, Document No. 13 (Washington, 1935), pp. 5-7.

35. Fear of spoiling the market, need of mentioning prices in sales literature, etc. See Meyers, *op. cit.*, chap. x.

indeed the rule and not the exception. On the demand side, similarly, we must acknowledge that stocking up is a marked characteristic of short-term consumer demand for habitually consumed goods, especially nonstaple goods. And the short-run analysis of consumer demand for other than the great homogeneous staples must be differentiated to treat commitment goods, petty goods, experimentally purchased goods. In summary, short-run demand can *most* excusably and correctly be assimilated with long-run demand for *exactly* those commodities which have held the main attention of economic theory in the past. It is time that we looked at other than the great staples on the demand side as well as on the supply side of value analysis.)^N

CHAPTER VII

LONG-RUN DEMAND: CHOICE OF AN ITEM FROM A CLUSTER OF SUBSTITUTES

1. FROM SHORT TO LONG RUN

WHEN we shift our orientation from the short to the long run, we run immediately into the problem of how the various habits of consumption are formed, which are taken for granted in the last chapter. Why does the consumer utilize Grade A eggs, Birds Eye spinach, a Plymouth, instead of their alternatives? In the long run the problem of original choice is before us, in all of its complexity. We need at the outset to remind ourselves of some of the basic principles stated in Chapter IV^{*} that man does not choose often with deliberation, that he does not take great care in purchases unless they are relatively important purchases; that his consumption pattern—both in its general configurations and in specific goods—is to a very large extent passed on to him by the functioning consumption groups with which he comes in contact. To admit all of these things is, however, not to escape the fact that in our culture—or in most parts of it—“it is smart to be thrifty” and we condition our young not to be “cheated” by paying more than things are “worth.” Children are taught by precept and experience that if they buy *this*, they will have to forego *that*.¹ F. H. Knight, in his brilliant essay on “Ethics and the Economic Interpretation,” portrays “the restless spirit of man” which is capable of only a “scientifically undescriptive and unsatisfactory characterization.”¹ It seems to me that Knight is too negative. Cultural conditioning of any society creates in that society at any one time a human nature which is capable of description. In our society we train our businessmen to try to make

1. *Quarterly Journal of Economics*, XXXVI (1922), 472.

a profit, and we train our consumers, within limits and with provisos as indicated above, to try to "make the most of their money" and to "buy in the cheapest market."

We may appropriately begin a theory of long-run demand by reviewing the categories discussed in the short-run theory and relating them to the long-run consumption pattern.

In the long run, as more time is permitted for adjustment, commitments are usually revised rather carefully. Persons change their living arrangements, dropping excessively expensive leases, hiring or firing servants, shifting the schooling arrangements of their children. Unsatisfactory installments run out and are not renewed. The individual makes resolutions against the recurrence of policies he deems to have been unwise. As he grows older, the consumer learns from experience that certain types of expenditure do not bring the satisfaction anticipated and adjustment is made accordingly. On the whole the older person tends to have a higher per cent of his income taken up with commitments.² They are probably made more wisely, their merits weighed more carefully one against another, than any other type of outlay. This is to be expected because of the large sums involved, just as, according to our argument, petty expenditures are not weighed at all. Deliberation is in rough proportion to outlay, in other words. Cost is very carefully considered in the long run, for major commitments by most individuals.

In the long run, also, individuals may find that they have been incorrect in assuming that the petty expenditures do not affect their total income or that they are worth ignoring, and attempt to change their habits accordingly. Thus we have the resolutions, familiar to experience, not to dribble away so much money with "nothing" to show for it; or, on the other hand, not to be so "tight." These are attempts rationally to adjust what has been called the margin of petty

2. Charles S. Wyand, *The Economics of Consumption* (New York, 1937), p. 184.

expenditures. Such shifts are frequently to be met with when individuals' incomes have been increased or decreased.

In the long run, habits change. Introduction to new goods occurs through free samples, gifts, and the expenditure of one's experimental income. The consumer is called upon to choose between the old and the new. Once an improvement upon a previously accepted product has proved satisfactory, the consumer must adjust other commodities in his consumption pattern accordingly.

As persons grow older, it is often said that they become "fixed in their ways." This means that more of their total income has been satisfactorily allocated in habitual ways, leaving less for the experimental new developments which change taste patterns. Also the mental effort of choice and the physical effort of shopping become more onerous with advancing years. Very aged persons seldom add or substitute a single new good or brand during a year, unless forced to do so by changing incomes. For the aged, often, income is in the period of contraction and this in itself tends to cut out the experimental residue. Because of the possession of typically increasing income, lack of experience, and the mental and physical vigor necessary for choice, we may state as a general empirical law of consumption that the younger income recipients make more deliberate choices between alternative consumption goods than older income recipients. Advertising and sales appeals are addressed primarily to the young.³

We are now ready to analyze with greater care the process by which the consumer makes his relatively rare choices between the various members of a cluster of substitutes. How is it done, when expenditure is well above the margin of petty expenditures and when sufficient time is allowed so that he can address himself to revision of fundamental estimates rather than merely to obtaining a habitually con-

3. Albert T. Poffenberger, *Psychology in Advertising* (Chicago, 1925), pp. 584-585.

sumed good advantageously. It is not supposed by the writer that in making choices many individuals are *aware* of the processes described below. However, I believe that consumers go through steps—because they are habitual—subconsciously. When one drives an automobile, one is after a time unconscious of shifting gears, steering, turning; one can do these things with a minimum of mental exertion because of conditioning. The same applies to the process of choice. I believe that these steps actually occur and that the facts of mass behavior as seen by the businessman are explicable in light of the process described.

2. CHOICE BETWEEN SUBSTITUTES IN INDIFFERENCE TERMS

We will start by assuming only the "first postulate," i.e., that persons are able to evaluate one combination of goods as superior, inferior, or equivalent to another combination of goods.⁴ No judgment as to the extent of superiority or inferiority is implied. This is the Hicksian assumption.⁵ In general, the following theory is an attempt to apply the postulate which underlies the indifference technique to monopolistic competition. No elaborate system of curves is drawn; but the series of decisions which are involved are typical indifference-curve decisions.

At the outset it is necessary to observe that clusters of substitutes vary greatly in complexity. Some goods are offered in tens of thousands, others one can number upon the fingers of the hand. One can walk the streets of New York for hours looking at handbags or neckties, and never see the same item repeated in the store windows. Such lines of goods not only have numerous sellers but numerous models put out by each seller. The effect, of course, is that the buyer

4. O. Lange, "The Determinateness of the Utility Function," *Review of Economic Studies*, I (1934), 218. An extensive literature on this topic has appeared during the decade. Some of the most important references are given by W. E. Armstrong, "The Determinateness of the Utility Function," *Economic Journal*, XLIX (1939), 453-467.

5. Hicks, *op. cit.*, p. 17.

cannot possibly hope to canvass the field. All consumers have experienced the accidental discovery, after a selection has been made, of an item which would have been preferred to the one chosen. This familiar experience is merely a symptom of the ignorance of the consumer in making many of his purchases. On the other hand some lines of goods have become so highly integrated industrially that only a few brands need be considered, and these are well known.

As a result of the multiplicity of items in certain clusters, the choice of the consumer is in those cases to a certain extent based upon chance.⁶ To some extent, too, one can blame the ineffective advertising or display techniques of the excluded sellers. In any event, an initial elimination of many potential purchases occurs—one which is based upon sheer ignorance of the existence or location of particular items. The remaining problem is to choose between what is usually a numerous array of alternatives.)^{*}

The problem confronting every buyer of an automobile we may suitably examine as a prime example of pure substitution theory. This is one of the highly integrated industries and so the element of fortuitous elimination is reduced to a minimum. The purchase of a car is a very important expense and is carefully weighed by most people. Buyers are interested ordinarily in only one unit, so that we can easily and realistically postpone for the moment the question of how one decides whether to buy more units of the same good. Let us further simplify the problem by assuming that our purchaser is not interested at all in the used-car market.

As one approaches the market for a car one is presented with literally dozens of competing brands, with special appeals and highly advertised differences, and half-a-dozen subtypes for each brand. Let us assume that one has a certain income and sundry habitual activities which make certain types of cars more to one's taste than others. Another usual (but probably decreasingly frequent) feature of most

6. Chamberlin, *op. cit.*, p. 118.

markets is that the competing substitutes are priced differently. To make an intelligent decision between the bewildering array of alternatives, while at the same time relating the purchase to the rest of one's consumption pattern, is indeed a multidimensional problem if there ever was one.)

We have said that the various alternatives are held by the consumer in different degrees of esteem. Each of the cars has a quoted price. The buyer, therefore, at the outset must decide whether in each case the car is or is not preferred by him to the goods which he could buy with the money the car costs. The preference decisions of this order might be presented in a schedule as follows:

<i>car brand or type</i>	<i>cost</i>	<i>decision</i>
A	\$800	prefers car
B	725	prefers money
C	900	prefers money
D	700	prefers car
E	600	prefers money
F	900	prefers car
G	850	prefers car

As a result of this series of preferential decisions, the second elimination occurs: any car which is valued less highly by the buyer than the money necessary to buy it will be dropped from consideration.

Choice, however, by no means necessarily becomes definitive with this simplification. Several contestants may easily remain, of varied costs, which are held in unequal, though unmeasured, esteem. We may reorganize the series above and place the surviving contestants before the buyer in order of their costliness:

<i>car brand or type</i>	<i>cost</i>	<i>preference rank</i>
F	\$900	first
G	850	fourth
A	800	second
D	700	third

The third elimination now takes place. Any item which is more expensive than an alternative preferred to it is dropped from consideration. In other words the consumer must arrange these brands in a preferential series—must rank them, as is shown above. In the above schedule car G would under no conceivable circumstances be bought, since the cheaper cars A and D are preferred to it.

The simplification arising from this rule may be exceedingly important. Except for goods in which conspicuous consumption is involved—in which the estimate attached to the good is itself a function of price—it is a common and a salutary thing that many goods are ranked in one's estimation other than in the same order as their prices. Were it not for this factor one would have either to select goods with an undue amount of labor or act without deliberation. It may be pointed out further that the more goods are in the competition to start with, the greater the chance that any particular good will fall out of line in one of the three eliminations described above, and fail to be seriously considered. Sellers generally gain by reducing their numbers not only because they gain greater power to fix the prices monopolistically (e.g., formal or informal collusion is easier to achieve), but because their commodity is much more likely to engage the serious consideration of more buyers, the fewer the goods to choose between. }^x

The three simplifying eliminations having occurred, the buyer is still faced with a difficult problem. He typically has several alternatives left capable of being arranged in order of preference, and they necessarily are priced in the same order. The revised series might appear as follows:

<i>car brand or type</i>	<i>cost</i>	<i>preference rank</i>
F	\$900	first
A	800	second
D	700	third

The precise alternatives before this consumer are therefore as follows: (F) or $(A + \$100)$ or $(D + \$200)$.⁷

Which one will be chosen? The answer is within the consumer's competence on the basis of the first postulate. The differentials mean to a consumer a group of other goods which he is enabled to command, if he chooses a cheap alternative. Each car is distinctive in his mind. One or another aggregate of these goods will be the preferred combination.

3. CHOICE BETWEEN SUBSTITUTES IN MARGINAL-UTILITY TERMS

THE above theory—so simple in structure—seems to me to be about on the level of complexity of consumer decisions. However, it may be interesting for comparative purposes to restate the same analysis in terms of the theory of diminishing marginal utility and its assumptions. As has been indicated in Chapter III, the methods and assumptions of Hicks and Marshall may be regarded as in a complementary rather than substitutional relationship. They may both be kept before us, compared and refined; perhaps ultimately one will be totally discarded, but we are not yet ready for such a drastic step. When consumers' preferences are expressed in cardinally measured marginal-utility terms and the monetary differentials in cost as well, we get a more elaborate, more mathematically precise theory which lends itself well to the study of the role of price, utility, and income in the formulation of these decisions. Whether consumer thought processes actually are characterized by so great a degree of precision as the analysis presumes is another question—and one to which some attention was given in Chapter III.)

7. W. B. Reddaway, "Irrationality in Consumers' Demand," *Economic Journal*, XLVI (1936), 419-423. Mr. Reddaway believes that the consumer often fails to appreciate exactly what the alternatives really are. "It is quite obvious what is the correct basis on which to decide whether to buy a better quality article for 3s. or an inferior one for 1s.; the purchaser must decide whether he would prefer to have the first, or the second plus 2s., which can, of course, be spent on further amounts of the second if desired. But, in fact, the question is often settled by the purchaser asking himself whether the first is worth three times as much as the second, without defining too closely what he means by 'worth.'" *Op. cit.*, p. 420.

First, then, an elimination of many items in most clusters of substitutes occurs because of ignorance of the existence or location of the goods. ✓

As before, the consumer is then faced with a considerable array of alternatives, different in cost and different in utility. The relative estimations of goods we may assume for the present purposes are measurable in psychic units of desiredness—utility. We assume, further, the law of diminishing marginal utility and the general approach of Marshall. The problem here is to apply this well-known system to goods which typically confront the consumer in clusters of competing substitutes.

Following the first elimination the consumer might be faced by the following alternatives, for which he had the accompanying series of utility ratings, expressed, in this case, in cardinal terms.

<i>car brand or type</i>	<i>cost</i>	<i>utility</i>
A	\$800	10
B	725	6.5 (eliminated)
C	900	7 (eliminated)
D	700	9.5
E	600	4 (eliminated)
F	900	12
G	850	9

The consumer has a certain marginal utility of money, and he at once scrutinizes the goods before him to see if, in any case, the utility of the money required to be spent on any alternative is greater than the utility of the good in question.⁸ Let us say that in the case of cars B, C, and E he feels that the cars are not worth the money.

A reorganized series can now be placed before the consumer, with the alternatives arrayed in order of cost:

8. An alternative method of presentation would be to assume a utility quantum for each of the costs given in the array. These utilities could then be directly compared in magnitude to the utilities of the cars.

<i>car brand or style</i>	<i>cost</i>	<i>utility</i>
F	\$900	12
G	850	9 (eliminated)
A	800	10
D	700	9.5

The third elimination now takes place. Any item which is more expensive than an alternative of higher utility is dropped from consideration. In the above schedule car G meets this criterion. Under no conceivable circumstances will G be bought since the cheaper car A is preferred to it.

Remaining before the consumer are three cars, which are priced in the same order as their utility rating. The intervals of the two series will ordinarily be anything but symmetrical. The revised series is as follows:

<i>car brand</i>	<i>cost</i>	<i>utility</i>
F	\$900	12
A	800	10
D	700	9.5

The precise alternatives which remain before this consumer are, again, F, (A + \$100) and (D + \$200).

Which will be chosen? The answer will depend upon the character of the cost and utility series, the extent of the individual's income, and the utility to him of that income spent on other things. If he is a very poor individual, just able to afford a car anyway, the differentials in price will loom as exceedingly important. He will probably estimate that he had rather spend the \$100 or \$200 difference on other things than on getting the car he prefers. Graphically this comparison can be set forth, if comparable utility quanta be attached to the money differentials and to the \$900. Following orthodox practice it will be supposed that the utility of money, like that of commodities, diminishes as increments are added. Hence the utility of the first \$100 exceeds that of the second \$100.

Also, the utility of \$900 will be considerably less than the utility of \$100 multiplied by nine. (Ignore, for the moment, the areas outlined in dotted lines):

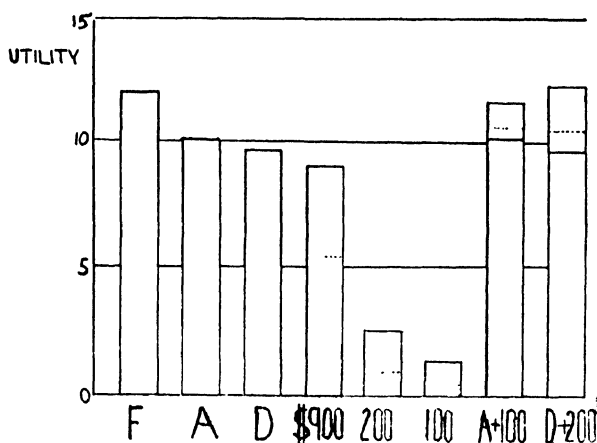


Chart. 31. *Choice between Substitutes.*

Under these circumstances car D will be bought. The utility of this automobile plus the money differential is a maximum, and it exceeds the utility of \$900 spent in other ways.

A little study of this utility comparison will reveal the variables which can be conveniently summarized: (1) the cheaper the car, the greater the money differential and the more likely the car is to be purchased; (2) the more the car appeals to the person's taste or the higher its utility, the more it is likely to be bought; (3) the higher the person's marginal utility of money, the more he will tend to purchase a lower priced, less satisfactory car.

Light can be shed on the first two propositions by analyzing more closely the characteristics of the cost and utility series. Let us suppose, after the initial eliminations have occurred, that the buyer is left with a list of five cars, with rather asymmetrical cost and utility series, as follows:

<i>car brand</i>	<i>cost</i>	<i>utility</i>
A	\$1,000	10
B	900	9
C	600	8.9
D	500	7
E	400	6

Let us define any item's *interval*—utility or cost—as the range between the next highest and next lowest alternative. We can see that car C is almost as well liked as B, yet it is far below B in cost. Another way of putting it is to say that C is very high in its utility interval (9 to 7) and very low in its cost interval (\$900 to \$500). Both of these circumstances will cause car C to tower in total utility above the cars just above and just below it. Looked at one way, conditions are nearing those under which cars B and D would be eliminated. The utility rating of C would have to rise only slightly to eliminate B, and the cost of C would need to fall only slightly to eliminate D.⁹

From this analysis it can be concluded that any item is likely to be chosen which is high in its utility interval or low in its cost interval; the higher and lower, the greater the likelihood. If an alternative is favorably placed with respect to both of its intervals, the presumption of its selection is enhanced considerably.

Thus far conditions have been discussed in which the various alternatives differed to the individual, in utility as well as in cost. This is probably the most common and certainly the most complex case. For completeness of exposition, the simpler possibilities can be briefly disposed of.

If a consumer has to choose between substitute commodities of the same price, how shall the decision be made? Shall he, for example, drink Coca-Cola, Pepsi-Cola, or chocolate

9. If B and D be considered eliminated as serious alternatives, we are left with A, C and E. The cost and utility intervals of these survivors may be such that one may be leading in utility. The principle stated applies only to adjacent items and must then be reapplied to the remaining alternatives.

milk with his lunch? If the utility of any of these is greater than the utility of a nickel spent in other ways, he will buy the one he likes best, or the alternative with the highest utility.

On the other hand, if an individual found a group of substitutes which were to his mind *perfect* substitutes, then he would quite simply buy the cheapest. For example, if a Ford, Plymouth, and Chevrolet were according to his tastes indistinguishable in utility, he would buy the cheapest, provided of course that any car proved more valuable to him than the money spent on other things. When an industrialist or the United States Government operating through the Bureau of Standards sets up specifications, the lowest bid wins.

What is the effect of changes of income upon the selection of an automobile described above? In the first place more income means a changed mode of life, and it is quite likely that the original relative rating of the various automobiles in the field might change under such circumstances. As Frank H. Knight has written, "Consumers value commodities just as producers value labor and other productive services, as increments not merely to a stock of the same kind but to a combination of several kinds used together."¹⁰ If one becomes wealthy enough to have acquired a country estate, station wagons might rise in one's preference index, among other automobiles. On the other hand, many categories of goods are so dissociated in the types of services they render that considerable shifts in income would in no way alter the relative esteem in which the alternatives are held. No increase, decrease, or shift in the type of shoes, radios, or pencils one acquires would effect one's relative rating of the various types of mucilage which one might select to keep on the desk. We can, therefore, while acknowledging that income increases *may* alter relative utility, select for further study a cluster of substitutes in which the increase in income is as-

10. F. H. Knight, "Demand: Theory," *Encyclopedia of the Social Sciences*, V, 70.

sumed to have little if any effect upon the relative preferences.

Changes in income, of course, never affect in any way the cost hierarchy of the commodities confronting the consumer, for that is an objective market fact, from the standpoint of the individual. The element in the foregoing analysis which is *always* and significantly affected by changes in income is the importance which the consumer attaches to the cost differentials between commodities.

In the light of these considerations let us revise the utility comparison set forth on Chart 31 on the basis of the assumption that the same individual has become exceedingly wealthy. Money means little to him, as he has a great deal of it. What has changed? The cars still have the same utility, by assumption; their order of preference will therefore be unchanged. The market prices are assumed to remain the same. The marginal utility of money is, however, now a negligible factor. Chart 31 can be revised to meet the new situation by simply writing in, in dotted lines, the new utility quanta for the various sums of money involved. Under these circumstances car F will be bought. Alone, its utility exceeds that of any alternative plus cost differential.

It is quite revealing to set forth these relationships on a different kind of chart, with income variations in semilogarithmic form on the base line. The utility of money, following orthodox doctrine, is supposed to diminish for any of the cost differences as the amount of income is increased. Further, the marginal utility of successive equal increments of income diminishes at any given income. For this latter situation we shall adopt the notation: utility of (\$300-\$200) < utility of (\$200-\$100) < utility of (\$100). The behavior of the marginal utility of money can be described visually, in universal terms, as follows:

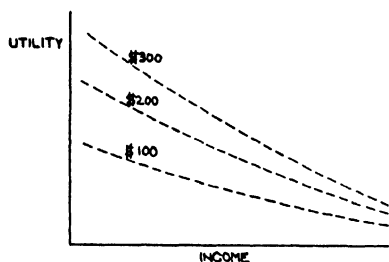


Chart 32. *The Structure of the Utility of Money.*

In the simple static illustration of Chart 31, the effect of increasing income is shown to be a shift from the least expensive to the most expensive alternative. That this tends to be the case can be shown in a more effective manner if we set up an illustration which will minimize as far as possible effects of

uneven cost and preference intervals.

Let us assume that, after the early eliminations have occurred, a consumer is left with the following cost and utility series:

<i>car brand</i>	<i>cost</i>	<i>utility</i>
A	\$1,000	10
B	900	9
C	800	8
D	700	7
E	600	6

If the utility ratings are not disturbed by changes in income, the influence of income changes can readily be exhibited. On Chart 33 below, income is placed on a semilogarithmic scale on the abscissa, and utility ratings are placed on the ordinate, as on Chart 32. Added vertically to each car's fixed utility is placed a curve which shows the marginal utility of its cost differential (relative to the most costly alternative) for various incomes. If income is very large and the importance of general purchasing power is low, the most expensive preferred car will be bought. In between, as income increases, there will occur periods during which each one of the cars in order of expensiveness will for an interval be the preferred item.

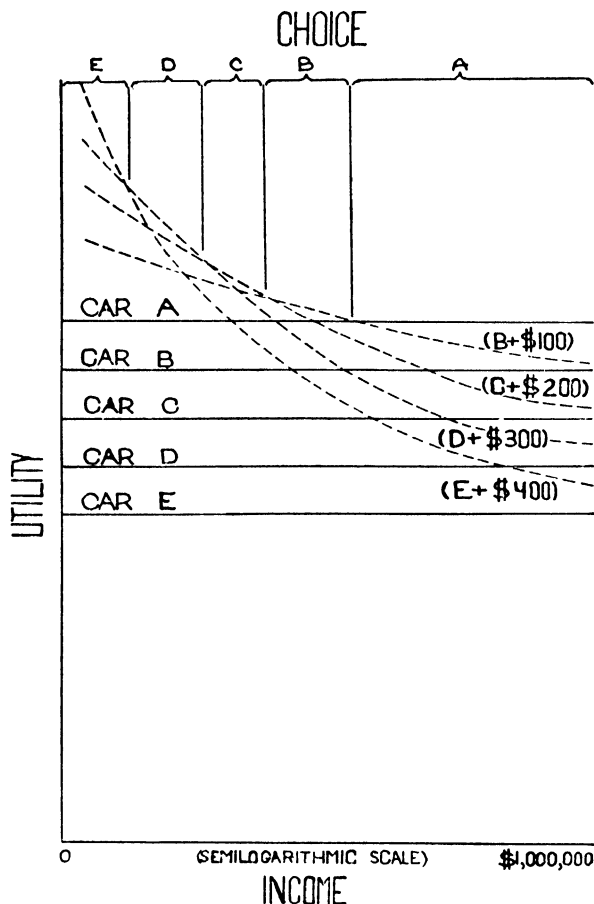


Chart 33. *The Effect of Changes in Income upon Choice of an Item from a Cluster of Substitutes.*

To be more precise, we can express the cases in which each car will have maximum utility mathematically. U is the fixed utility differential between the cars. It will be recalled that the structure of the utility of money is such that the utility of $(\$400-\$300) < \text{utility of } (\$300-\$200) < \text{utility of } (\$200-\$100) < \text{utility of } (\$100)$, for any income. It can now be stated that:

if $U >$ utility of (\$100), car A is bought.

if $U >$ utility of (\$200-\$100) but $<$ (\$100), car B is bought.

if $U >$ utility of (\$300-\$200) but $<$ (\$200-\$100) car C is bought.

if $U >$ utility of (\$400-\$300) but $<$ (\$300-\$200), car D is bought

if $U <$ utility of (\$400-\$300) car E is bought.

Since as income rises the utility of money presumably declines continuously, it will pass through all of the stages mentioned and all of the cars (plus their cost differentials) will possess maximum utility at various incomes.

It follows from these principles that if the utility ratings of a group of alternatives remain constant and income is fixed, purchase is likely to be induced by a lowering of the price. When this principle is applied to masses of consumers, we encounter the familiar "law of demand": the lower the price, other things equal, the larger the quantity of goods which will be sold. Hicks and others have cited the fact that a decline in the price of *inferior* substitutes will cause a *decrease* in the amount sold of such products.¹¹ This exception can be explained by the consideration that if even one price falls, to that extent the purchasing power of income has not remained the same, original assumptions notwithstanding. The drop in the price of an important staple of the diet such as margarine or bread has the same effect as a rather significant increase in income. Our analysis has indicated that a rise in income tends to shift purchases to the higher priced commodities generally. The phenomenon can therefore best be accounted for as one in which the income effect of the drop in price counterbalances and outweighs the usual price effect.¹²

4. CHOICE BETWEEN SUBSTITUTES IN PREFERENCE-INDEX TERMS

A THIRD alternative, which need not be presented in detail, is

11. Hicks, *op. cit.*, p. 28.

12. Marshall, *op. cit.*, p. 100 n. 1.

a theory of choice in terms of cardinally measured preference indices. Instead of marginal utility—a psychic quantum—we may substitute a more objectively demonstrable measure of preference based upon maximum demand prices. This device we have adapted from the work of Mill and others and have already sketched its character.¹³

Its applicability to the problem discussed in the foregoing sections of this chapter can be briefly indicated. The individual at the outset is asked what is the most money he would be willing to give for car A, B, C . . . , assuming in each case that no alternative is available. Presumably he would be able to give this information, after reflection, on the basis of the first postulate.

car brand or type	"demand" price	preference index
A	\$1,000	10
B	650	6.5
C	700'	7
D	950	9.5

These maximum prices are "behavioristic" or "objectively demonstrable," insofar as the indifference curve itself is. Indeed, the car and the maximum price would appear on the same indifference curve, in Hicksian terms. From these demand prices, relatives of 10 or 100 can be computed, which then constitute an index of preference. The latter seems to the writer to be vastly preferable to the concept of utility. After all, money is the only habitually used common denominator between the various commodities which confront the consumer.¹⁵

13. John Stuart Mill, *The Principles of Political Economy* (Ashley ed., London, 1909), pp. 442-443. See also Marshall, *op. cit.*, pp. 125-126. See chap. iii, pp. 55-56, above.

14. The consumer probably uses it crudely. If asked to state the maximum amount of money he would give for a wide array of goods, the consumer might state sums which would aggregate far more than his total income. However, at any time he does have a general impression of the purchasing power of money. His judgments of the *relative* merits of commodities to him, expressed in this form, would probably be more accurate than as though expressed in any other measure.

If preference indices, derived from "demand prices," be assigned to the various alternatives before the consumer, and similar indices attached to money differentials as well, then an analysis in strictly parallel terms to the foregoing one can be constructed in which the term "preference index" can be substituted for utility. The cost differentials are comparable with the goods under consideration. Car A is to car B, in the above illustration, as 10 is to 6.5. If car A costs \$200 more than car B, he will weigh in with car B the goods which the \$200 would enable him to command. For these goods he presumably has a preference index such as 4, which is strictly comparable in nature with the index of the substitute commodities themselves. The analysis of choice based upon preference indices parallels the marginal-utility analysis in all respects, and need not be recapitulated. Utilizing the preference indices, the same series of eliminations would occur and the final decision would lie in choosing a combination of goods and cost differentials which aggregated the largest composite preference index.

In the analysis which follows, the preference-index form of presentation will be followed, as greater precision is desired than ordinal utility analysis permits; on the other hand, the preference-index approach seems to the writer psychologically preferable to the marginal-utility analysis.

CHAPTER VIII

LONG-RUN DEMAND CONTINUED: THE SELECTION OF COMPLEMENTARY SUBSTITUTES

IT MIGHT at first thought be supposed that the selection of a combination of items from a single cluster of substitutes would be a highly improbable thing. After all, substitutes, according to the concept developed in Chapter V, are goods which if acquired in combination lower to an abnormal extent the amount of money that a person would give for them.

However, we need at this point to remind ourselves of another category of related goods—complementary or “completing” goods.¹ These have been defined as commodities which if used together have a greater utility than the sum of the goods used separately would have.² Alternatively we may frame a definition in terms of demand price as follows: goods are complementary if a consumer would pay more for them in combination than he would pay for the goods if they were to be utilized separately. It can be seen that this definition is somewhat simpler than the corresponding definition of substitutes, for all commodities are not completing in the same sense that all commodities are competing for the consumer’s dollar. Examples of complementary goods are fairly common. You might be willing to pay a certain small amount of money for golf balls. Likewise golf clubs. Together they enable you to play golf so that you would probably be willing to pay a good deal more for these goods acquired in combination than you would if each was to be possessed without the other.

1. Henry Shultz, *The Theory and Measurement of Demand* (Chicago, 1938), pp. 571 ff.

2. J. R. Hicks, *Value and Capital* (Oxford, 1939), p. 42.

Contrary to the impression which these definitions might give, it is possible for both a relationship of complementarity and substitution to exist between the same goods at the same time. It is, in fact, a very common thing. Frank H. Knight has, for instance, written:³

Prices for substitute and complementary goods stand in an opposite relation to demand; higher prices for the former increase the demand or move the schedule upward, higher prices for the latter lower it and vice versa. It is important to note that there may be relations of both kinds at the same time between the same two goods. This fact is especially important because it is typical for the productive services, the various kinds of labor and property uses; these are generally necessary to each other's effective use, yet they are in competition for employment. . . .

The two-sided relationship of complementarity and substitution for ordinary consumption goods has not been adequately investigated, however, or its importance recognized for conditions of monopolistic competition.

1. THE THEORY OF COMPLEMENTARY SUBSTITUTES

LET us start out with shoes, by way of illustration. A young lady plays tennis, climbs mountains, goes to dances, drives a car, walks to work. For these activities this particular individual needs tennis shoes, climbing boots, evening slippers, comfortable flats, street shoes. If the person started out with a minimum income, she would probably select a sort of all-purpose shoe which would have to implement all of these varied activities. It would have neither a high nor low heel—it would have to be a compromise in style, material, and color.

Now what happens when she considers buying two pairs of shoes? One choice might be a sneaker, one a high-heeled dress shoe. Her needs are not perfectly met. For mountain climbing she will have to use the sneaker—a shoe imperfectly adjusted to this purpose but still a great improvement over her

3. "Demand: Theory," *Encyclopedia of the Social Sciences*, V, 70.

original all-purpose shoe. For dancing she will have to make her dress shoe serve, again not a perfect adjustment but better than a street shoe. The acquisition of the two pairs of shoes, so different in character, insures a higher degree of specialization of the good to the task than was possible in the first instance. The shoes, it should be stressed, are *very* different from each other, and there will be few if any functions which they could serve equally well. The element of substitution is reduced to a minimum.

Continuing the illustration, we can suppose the individual to increase her income and become a buyer of three pairs of shoes. She will then probably purchase tennis shoes, street shoes, and dancing slippers. As the goods are multiplied *more instances of overlapping functions will arise*. It is often dangerous to reason by analogy; but in this instance the metaphor of "spacing" seems inevitable. The more goods are added, the smaller becomes the space between each pair of goods and the others, and there will come into being more border lines at which pairs of goods are truly substitutes. If we imagine the consumer in question to become very wealthy indeed, she may well have a dozen pairs of dress shoes alone, each designed to accompany a particular costume. Yet, though specialized in function to some extent, in many uses such goods would be interchangeable. The more goods, the more nearly their functions merge with other goods' functions, and the more marked is the element of substitution.

In light of the above description we are now in a position to suggest the behavior of the index of preference for shoes as more are added. During the first very vital specializations, the amount of money which the consumer would be willing to pay for extra pairs of shoes will be relatively large. For a combination of flat and high-heeled shoes, a person *would be willing to pay more than she would for the goods considered as acquired individually*. The situation can be set forth in tabular form:

	<i>goods</i>	<i>maximum demand price</i>
(A)	flat walking shoes, possessed alone	\$ 5
(B)	all-purpose shoes, possessed alone	10
(C)	high-heeled dress shoes, possessed alone	7
(AA)	in combination	6
(BB)	in combination	11
(CC)	in combination	8
(AB)	in combination	13
(AC)	in combination	18
(BC)	in combination	12

Several points require comment in this table. It is to be noted, first, that the initial maximum demand prices for single units are not of that degree of magnitude which is usually associated with indispensability. They are neither infinite nor in terms of hundreds of dollars. Yet one would, of course, be willing to give most of one's income rather than go without shoes altogether. The idea of indispensability is relevant, in actuality, only to conditions of perfect competition. As one thinks about how much one would give for one of a group of substitutes, the problem of *having to go without the good altogether* simply does not arise, by the very concept of substitution. The prices attached, therefore, to shoes A, B, and C considered as possessed alone, are prices one would give for each in a market well stocked with alternatives.

Shoe B, considered individually, has its high demand price in comparison with A and C because it is able to perform a wide array of services. The quality of all of its services is presumably low. A and C may be thought of as performing collectively the same services as B, but doing them far better. Hence AC is an extremely desirable combination. However, in comparison with B, neither A nor C could conceivably be chosen for wide areas of this individual's need for shoes would be completely neglected in that event. A and C would

have a high preference index *only on the assumption that the other is present in the consumption pattern.*

When two pairs of shoes are chosen, it becomes quite apparent that duplication would be unlikely to occur. Exact duplication of commodities is a case of perfect substitution.⁴ Having two pairs of flat walking shoes leaves one little better off than having one pair, and one would accordingly pay little for the second unit. Nor is it particularly advantageous to combine an all-purpose shoe with a flat walking shoe. The two commodities are substitutes in many of their services, and independent or unrelated in but few. The combination which would obviously be preferred is one in which the element of overlap in services is reduced to a minimum—in the illustration AC. It will be observed that the total amount of money which a person would pay for this combination considerably exceeds the amount which these shoes commanded individually. They are, therefore, complementary goods, within the definition given above.

A and C are also substitutes for each other—but to a *very minor extent*. A cluster of substitutes is made up both of close and *remote* substitutes, sometimes shading off to the point where a consumer might well be in doubt as to whether a particular commodity is in the cluster at all. It is the *remote* substitutes which may form very advantageous combinations. The areas and uses in which they are in substitution (thereby decreasing their joint preference index) are few and unimportant; the respects in which they complement each other may be many and important. In such a case the preference index of the pair of goods behaves like complementary goods rather than like substitute goods. Whenever the goods' preference index is, in combination, augmented, the complementary aspect of their association is ascendant over the substitution aspect. They may then suitably be designated as "complementary substitutes." If, however, more units are added, goods will be increasingly in a substitutional relation-

⁴ Shultz, *op. cit.*, p. 571.

ship to the commodities already possessed, and also some of the wants to which attention is being paid may be exceedingly unimportant. Let us adopt the notation that $(A + B \dots)$ means the sum of the preference index of A and B considered individually—assuming that the other good is not present—and (AB) to mean the joint preference index when the bracketed goods are used in conjunction. If we have a cluster of substitutes A, B, C, D, E, F, G, we may express what happens to the index of preference as follows:

if two units are chosen, (BF) may well be far greater than
 $(B + F)$

if four units are chosen, $(ACEG)$ may be about equal to
 $(A + C + E + G)$

if eight units are chosen, $(ABCDEFGG)$ may well be less than
 $(A + B + C + D + E + F + G)$

To generalize, as more members of any cluster of substitutes are chosen, their joint preference indices, relative to the sum of their individual preference indices, will pass from behavior characteristic of complementary goods to behavior characteristic of substitute goods. In all stages both the aspects making for complementarity and substitution are present, but different aspects are ascendant according to the number of items selected.

Having defined and explained to some extent the category "complementary substitutes" we may now approach the question as to whether one will buy a group of them, and which ones. In general, the purchase of two or more complementary substitutes depends upon three conditions: (1) the existence of a cluster of substitutes; (2) the existence of divisible wants or the possibility of commodity specialization; and (3) the satisfaction of the general rule that no combination is bought if the amount of money paid for it could be expended more advantageously for another combination of the same substitutes or for other things. These conditions will be discussed in turn.

2. THE EXISTENCE OF A CLUSTER OF SUBSTITUTES

THE first condition can be disposed of briefly, as we have pointed out in Chapter V that only a few commodities confront the consumer in other than complexes of substitutes. However, whenever one finds such a commodity, e.g., water as it is piped to one's house, one has to use it for a variety of purposes. One uses it for drinking, washing, watering the lawn. If one *had* a lower-grade water available, as many country people located on a lake do, one would undoubtedly use cheaper, unhygienic water for the purpose of watering the lawn. Lacking a cluster of types of water, the city dweller has no problem of combining the various grades advantageously.

3. THE DIVISIBILITY OF WANTS

WE have long held to a concept of supply as made up of a number of homogeneous, unrelated, competitive commodities. This has led to a parallel oversimplification on the side of demand. If, as has long been the case, we conceptualize "the suitcase," for example, as a single variety, then it is natural that we should discuss "the" want for suitcases as though it were also a homogeneous thing. Just as, I think, the sociologist W. I. Thomas does considerable violence to human nature when he endows us with four "wishes," so the economist misrepresents mankind when he supposes that paralleling the highly unreal *lines* of goods are just so many wants. We have allowed in our conventional theory, it is true, for these wants to possess various degrees of intensity; but we have not thought of them as divisible entities.

Paralleling the clusters of substitutes described in Chapter V should be placed want-clusters, or complexes of wants. The concept of desire which forms the best background for this analysis is that of Irving Fisher in *The Nature of Capital and Income*.⁵ The emphasis of that study is upon the *services* of goods, not upon the goods themselves. Wants should be

5. New York, 1906, pp. 26-27.

thought of not as desires for goods—but rather for the events which the possession of them makes possible. This may seem a slight and academic shift of verbiage, but further development of the analysis, perhaps, will prove otherwise.

The end and aim of economic activity are to service mankind. Goods are wanted because they are capable of performing services—favorable events which occur at a point in time. Because of temporal distinctiveness, if for no other reason, each performance of a good is in point of fact a unique event. Usually, of course, there are many other differentiating characteristics beside time-differences, services of a good may be rendered to different persons, at different places, under differing conditions. Goods differ very widely in the extent to which conditions of use differ from service to service.

Take suitcases, for illustration. Every time we put our things into a bag is clearly a unique occasion. No two trips in a long and active life, it is safe to say, involve exactly the same number and weight of things to be taken. Sometimes we travel by boat—and a large amount of poundage is permitted free; at other times by air and we have to weigh every item carried. Sometimes our travel will involve exposing our bags to rough handling or the elements; at other times they will be protected in well-cushioned compartments. And so forth.

At the other pole are the series of services obtained from, for instance, a toothbrush. It is typically used at certain times of the day in the same place, in the same way, by the same person. The fact that the various services occur at different times is about the only differentiating circumstance between the various individual uses of the good. Each service is unique, but the conditions of use are far more homogeneous than are those of suitcases.

The importance which attaches to these dimensions of service is very great, for it can be stated as a law: the more diverse are the conditions of service of a good, other things equal, the greater the number of complementary substitutes which tend to be chosen. On the other hand, the more homogene-

ous are the conditions of service, the fewer of a series of substitutes will be purchased by the individual consumer.

Let us revert to the suitcase illustration. The individual is to take many trips, under widely differing circumstances. Confronting him for purchase is a finite number of different kinds of suitcases in different brands, styles, shapes, sizes, materials, and colors. As far as demand factors go, if he were to regard each service independently, he might well select, in the course of many journeys, a large number of the cluster of competing substitutes as suitable for the different trips. Some items there would be, undoubtedly, such as lawyers' brief-cases, which one particular individual might never wish to acquire; other items might be chosen several times as the best possible answer to the service requirements of the moment. But the general situation is that when conditions of service are diverse, a variety of the competing substitutes will under various circumstances prove the best solution for particular services desired.

On the other hand, consider the toothbrush illustration. The uses are practically homogeneous. One particular item will suit the consumer. We can conceive of the individual wanting a *new* one for each service, but it will be the *same* brush. As long as conditions of service are identical, the good which is the best buy for one service is the best buy for all.

Instances can be found occasionally of commodities which are used under quite heterogeneous conditions which nonetheless, from the point of view of a single individual, do not admit of commodity specialization. One of my wants, for example, is for gasoline with which to run a car. Now running a car is an activity which occurs under a variety of conditions—running it by day, night, for long distances, for short. Yet as far as I am aware the gas which best meets my needs for any one of these purposes best meets them for all.

This situation is, however, exceptional. In the first place, where conditions of service are different it is highly probable that different members of a group of substitutes will, in fact,

be technically superior (and be known to be so) under different conditions. Better information on my part, for instance, might result in my using one brand of gasoline in cold weather and another for warm weather. Second and by no means less important is the fact that the various sellers of competing goods leave no stone unturned to create in the buyer's mind reasons for preferring their particular good for particular services (as well as in general). Thus my belief that the gasoline which best serves one purpose serves all has been maintained only with prolonged mental resistance to the advertising barrage that "Super-Shell" excels for "Stop-and-Start Driving."

Wants are typically either genuinely or artificially divisible, man being the suggestible creature he is. Some of the major types of divisibility of wants or specialization of goods may usefully be outlined at this point.⁶

Some goods which meet a given purpose may be better adjusted to the purpose at some *times* than others. Evening clothes, by definition, are such. One might wish a second typewriter to use as a spare—that is, to use at such times as another machine breaks down. One might use one kind of golf ball for ordinary and another for tournament play.

A wide array of goods are specialized according to *activity*. Thus there are reading glasses, golf gloves, traveling bags, tennis shorts, etc.

Many commodities are specialized according to *place*. For example, an airplane helmet is a hat particularly adapted to covering the head while up in the air. Many a family buys a special and usually cheaper set of dinner plates and utensils for use at their country shack. Country clothes are another example of place specialization.

Finally, there are a vast number of *accessories* in most people's consumption pattern. Women, particularly, are par-

6. These categories are not mutually exclusive, of course. An airplane helmet may be thought of as a hat specialized according to activity, or according to place.

tial to having many items of clothes to "go with" other goods, usually coats or dresses. Photographic fans will attest that the stores offer an almost endless array of gadgets with which to implement one's camera. If you take up fishing you may easily be induced to add a pair of boots to your shoe supply, a fish basket to your basket supply, a waterproof short coat to your coat supply, etc.

Many wants which at first sight appear to offer no possibility of division prove on further reflection to do so. Members of the lowest income groups often wonder what on earth the wealthy *do* with three country estates; or what Mr. Clark Gable *wants* with fifty suits of clothes. Mr. Steinbeck pictures the land-hungry Okies speculating on what use Mr. Hearst has for his thousands of acres. The more goods one has, the more possibilities of commodity specialization occur to one. Especially is this true, I think, in the multiplication of accessories.

Practically all wants are divisible. Specializations of goods in time, place, activity, and accessory relationships are the rule and not the exception. For many physically distinct groups of close substitutes the differences undoubtedly do correspond to genuine differences in function. Advertising is not above creating physical differences in the buyer's mind, where none exist, and transforming minor differences with no real significance for want satisfaction into supposed material differences. On the whole, the presence of differentiated substitutes offers a strong presumption of parallel "want clusters," at least on the part of some consumers.

Wants are not, therefore, single and one-dimensional. They are a complex of desires for different services, each unique in time if in no other dimensions. Ideally, a person might wish to choose a different commodity to render each service. However, even if income were unlimited most people would simply not want to bother with the multiplicity of goods which would result from optimum selection. More important as a force making for limitation on selection is in-

come. As a result of these two factors, we habitually classify services. This is quite a mental feat, especially when the conditions of service are diverse. If one can afford only two suitcases, shall one think of all of their heterogeneous services as most advantageously being divisible into those calling for a big bag and those calling for an overnight case; or for those requiring a case fitted with hangers and one of about the same size which is not so equipped? There are usually several alternative classificatory criteria possible, and there is quite a problem before the consumer to decide which one will be the most advantageous. Actually all trips are different; psychically all trips are thought of as falling into categories.⁷ We lump together the services rendered under what seems to us to be "similar" conditions, and buy one good to provide for the group. The minuteness of the subdivision is more or less dictated by income and by the importance of the whole set of services in comparison to the services of other kinds of goods. A rise in income, therefore, is accompanied by continual reclassifications⁸ of services. Likewise an increase in the importance of a group of services. If a person suddenly becomes a traveling salesman, the variety of bags acquired will doubt-

7. The difference between psychic and scientific fact is often encountered and is by no means unique in this field. Take the leaves of a tree. Usually one thinks of them as homogeneous—just as so many leaves, with no subdivisions. This is because no purpose or object in dividing them up according to any criterion is present. No subdivisions have any significance for the well-being of the observer under most conditions. *In fact*, the leaves are all absolutely unique; biologists tell us that the microscopic configurations of their cell structure are as various as are the fingerprints of the human hand. Yet they are psychically identical. If we start to decorate our house for Hallowe'en, we quickly distinguish between those leaves which are yellow, orange, or red in color and those which are merely a bedraggled green; if we are a student in statistics working on normal curves, we think of them as objects which differ only in length. Classifications of things are constantly being made by mankind according to teleological principles; where no purpose exists for differentiating a class of things, no subdivision is made. Classification is one of the important time- and thought-saving habits which enable man to deal effectively with his environment.

8. We are here thinking of the long-run problem in which the character of all suitcases may be changed because the combination has enlarged. The short-run problem, in which new items are considered as added to the others, regarded as fixed, would bring a somewhat different solution.

less increase. The purchase of combinations of complementary substitutes is accompanied by classification of services.

The significance of the foregoing is probably obvious. However, at risk of being redundant, we may conclude that divisibility of wants is an essential condition to the combination of goods in the relationship of complementary substitution. One acquires a different brand or quality of good *only* when one wishes to get different qualities in the good purchased from those already possessed. Put another way, the main reason for buying complementary substitutes is to use the goods for specialized purposes—one good for one set of services, another for others. If it is expected to use the new good for exactly the same uses under the same conditions as before, one will simply buy more of the same.

4. THE OPTIMUM COMBINATION OF COMPLEMENTARY SUBSTITUTES

WE come now to the third condition for complementary substitution. No combinations of complementary substitutes, any more than other goods, can be bought if money spent for them could be more advantageously spent in other ways. This means that a purchase must meet two criteria: (1) that it be the optimum combination in the group of substitutes under consideration and (2) that the chosen combination stand comparison satisfactorily against all other goods. It will often happen that several different pairs, triplets, etc., of complementary substitutes would "pay" in the sense that any of them would be preferred to other kinds of goods of equal costliness. Which pair, triplet . . . among the number of goods available will be chosen? We are faced again with the problem of "spacing."

In the long run every time the range of one's purchases is enlarged selection must be rearranged to some extent. It by no means follows that because you chose A in buying one good, A will be present in a selected pair of complementary substitutes. Choices might occur as follows:

if 1 unit is chosen	A	A
if 2 units are chosen	BC	or AC
if 3 units are chosen	DEF	or ACE
if 4 units are chosen	HIJK	or BDEG

At each rate of consumption the problem is to select as advantageous a group of goods as possible. Services are classified and reclassified. Goods may reappear at various points in the enlarging combinations, or they may never recur. The latter is highly probable when one considers that as income rises not only are *more* complementary substitutes selected but each tends to become a more expensive good.

We have here a mathematical problem of pairing, tripling, etc., which is susceptible to the same kind of manipulation as we applied to the problem of choice of a single item from a group of substitutes, in which both price and preference differed for the various alternatives. For illustration, a typical problem of finding the optimum pair of goods is the following:

<i>combination</i>	<i>joint cost</i>	<i>joint preference index</i>
(AB)	\$10	10
(BC)	9	9½
(CD)	9.50 (eliminated) .	8
(AD)	8	7
(AC)	9 (eliminated)	7
(BD)	7.60	4

As before, we may proceed to drop all combinations whose joint preference index is lower than that of a cheaper combination. This rules out (CD) and (AC). We then proceed as before to find the pair of goods whose combined preference index plus the preference index of the price differential is a maximum.

In summary we may say that any combination of substitutes is more likely to be preferred the higher their joint

preference index. This index is likely to be high if the two goods serve widely different purposes. Successful spacing of goods in a cluster of substitutes implies augmenting as much as possible the element of complementation and minimizing the element of substitution. However, this principle cannot be interpreted too mechanically. We have thus far spoken too frequently of spacing as though the various services which a good can perform are of equal psychic importance. This is of course not the case. If certain of the uses are of great importance, they will be attended to, even though it leads to the purchase of rather close substitutes. If a young lady goes to a great many dances, she may have many evening dresses, even if they are in a relationship of close substitution.

Drawing from our analysis of choice *between* substitutes, it can also be concluded that the cheaper the sum of the prices of a pair of complementary substitutes the more likely one is to purchase that combination, and, finally, the wealthier one is, the more likely one is to buy preferred but expensive combinations.

5. THE GENERAL THEORY OF CHOICE

WE are now in a position briefly to restate the general theory of choice. Our analysis of the problem of choice has thus far been wholly concerned with selection from and the formation of combinations among substitute goods. These are, I submit, the main forms in which the problem of selection appears to the consumer. However, the substitution theory outlined above must be related to the conventional (but exceptional) categories of unrelated goods (such as water, electric-light service, golf watches) and complementary goods (such as bread and butter). The revised formula—nothing more than a more specific form of the orthodox one, rewritten in terms of preference indices—is as follows. The individual will be in equilibrium when the preference indices of (1) unrelated goods, (2) the successful competitors in the choices between substitutes, (3) chosen groups of comple-

mentary substitutes, and (4) groups of complementary goods are to each other as their individual or joint prices.

What is the meaning, precisely, of this law? It is my opinion that both the preference index—which is here substituted for “utility”—and “cost” have often been thought of as too simple concepts.

Cost as it occurs in the formula given above should mean not only the initial outlays—the out-of-pocket costs, but also *all* money costs (properly discounted) which are attributable to the acquisition of a good. Take an automobile: we must assimilate with the original outlay all anticipated garage costs, insurance premiums, license fees, and gasoline and running expenses for our expected mileage when we compare it with alternative methods of travel. Practically all durable consumption goods require upkeep costs, since consumption is essentially a process of destruction. These must be taken into account when computing costs.

On the other side preference, even more than cost, has been oversimplified in the traditional treatment. Too often attention has been paid exclusively to the “want-satisfying power” of the good. The possession of commodities entails important handicaps, negative elements, and these must be taken into account. Preference as used in the formula is measured by the largest amount of money a consumer would spend for a good, taking *all* relevant factors into consideration.

It is easily understood why the negative aspects of ownership have been so largely neglected. For one thing, our culture attaches great prestige to ownership itself, and so helps us to overlook the very genuine cares of possession. Another explanation is to be found in the development of value theory itself. If one assumes that income remains constant and makes the focus of demand theory the reactions to changes in individual prices, then the consumer is obviously confronted with a fairly fixed mass of commodities. If this is the case, the problems and onus of ownership are at least static, and so may

reasonably escape attention. With the work of J. R. Hicks, however, I think that we must see how logically co-ordinate the "price-consumption" and the "income-consumption" curves really are.⁹ More attention in the future may be anticipated for income variations and their effects on demand. Certainly in any theory which attempts to treat enlarging combinations of complementary substitutes one cannot avoid discussing the unfavorable elements of such an enlargement of the consumption pattern, if there are any.

Services, as we have had occasion to point out above, are favorable events which occur to a person at a place and time. These dimensions are not accidental or irrelevant to a theory of value; they are exceedingly important. Consumption is not solely a matter of commanding, with one's purchasing power, the necessary goods; it is a matter also of seeing to it that they are in fit condition to render their appropriate service, and that they are physically at the point in space and at the right time to render the services desired. One must personally or by delegation attend to problems of purchasing and disposal, and of making the necessary monetary upkeep arrangements.

To digress briefly, as business enterprise grows in size we often see symptoms of the diseconomies of large-scale production.¹⁰ As size of enterprise increases, various devices can be tried to regain the flexibility, responsibility, and manageability of the small business—notably the rearrangement of the management elements of the concern—the subtraction or addition of foremen, the geographic redistribution of plants, the adding of specialists. E. A. G. Robinson has well described in *The Structure of Competitive Industry* some of the major possibilities.¹¹ But in the end management is an essentially unified thing. No matter what you do you cannot escape the problem of integrating the new elements. The ultimate decision-making in a business enterprise is indivisible.

9. Hicks, *op. cit.*, pp. 26-33.

10. Morris Ernst, *Too Big*, Boston, 1940.

11. London, 1931.

In the same sense the consumer is indivisible, and as consumption increases inconveniences of large-scale consumption arise. As the rate of consumption grows, more of one's limited time and energy must be spent in buying, transporting, guarding, servicing, and disposing of one's possessions. Certain types of goods—the bulky, the heavy, the delicate, the precious—involve especially heavy cares; but mere multiplication of any kind of goods causes the management of the consumption plant to become an onerous problem.

Some few persons there are who lead such empty lives that they feel little but relief that their time and energy are requisitioned by their possessions. I have at several times had occasion to observe such cases. With nothing to do, and keenly aware of the prestige which our culture accords to mere possession of goods, the persons in question worked out an existence of sorts keeping their various houses, boats, cars, and acres in shape to be used.

The typical consumer, however, after a certain point finds the accumulation of goods a drain upon time which is resented. He then attempts to mitigate the burden in several ways. He may hire servants—he almost *has* to once the quantity of consumption goods reaches a certain level. He may delegate the upkeep of his consumption plant to his wife. In spite of various expedients, life becomes more complex with more possessions. Creative artists—painters, musicians, writers—often lead what we refer to as a “bohemian” existence. In part this is involuntary because of the low rate of remuneration in many of these professions. It is also undoubtedly because of a desire to retain as much energy as possible for the vital creative activities. The preoccupation with great numbers of things is an enervating force in our culture. People who feel it to be such will find the above considerations important in determining what and how much they will buy.

In light of what has been said above, when the preference index of a good or group of goods is compared to that of an-

other, it should be understood that account is taken of both positive and negative aspects of ownership. Undoubtedly with larger incomes, the utility of the added goods decreases at the same time that the inconvenience elements increase. If one considers investment as a type of income-allotment which involves little care-costs, and hoarding one which involves practically *no* care-costs, then it is easily understood why the very wealthy increasingly invest, and under unsettled social conditions hoard their income, instead of buying additional goods which add but little to their enjoyment and much to their responsibilities.

In conclusion, I wish particularly to caution against the view that the consumer at any time actually brings all of his consumption pattern into any kind of equilibrium.¹² The formula stated above should be regarded as only a rough tendency. Many goods are not weighed carefully at any time—those below the margin of attention. Commodities that are bought with deliberation come up for re-examination relatively rarely. For major outlays only does the consumer exert himself to the extent of making a careful choice. Only now and then, and in a strictly successive form, does he consider whether a good is really worth to him the things he is forced to forego to buy it. Most of the time he takes his consumption pattern for granted, and he never revises it *in toto*. He moves with infinite slowness and with considerable inexpertness toward equilibrium.

6. THE SIGNIFICANCE OF THE FOREGOING THEORY

THE mathematical economists have long thought of the economic universe as composed of competing goods—the quantity of all goods purchased being a function not only of their prices but the prices of all other goods. No one has doubted for a long time, I think, that the concept of mutual solution

12. Paul M. Sweezy, "Demand under Conditions of Oligopoly," *Journal of Political Economy*, XLVII (1939), 572-573. Mr. Sweezy argues for partial rather than general equilibrium analyses under conditions of oligopoly. The writer heartily concurs in this view.

of numbers of simultaneous equations is the most philosophically satisfactory way of looking at the whole pricing process. With this approach Marshall was familiar, of course, but he felt that for the practical purpose of dealing with a single good the general equilibrium approach was too cumbersome. For particular goods, Marshall and orthodox economics built upon his work have made the simplifying assumption that the quantity sold of a good is a function of the price of the good alone. Other goods' prices have been held constant by assumption.

Now I suggest that we will get more realistic results if we view goods as predominantly presented to the consumer in a limited number of clusters of related goods. As a kind of half-way step between Marshall and Pareto we can investigate the demand for bacon, given the preference index and the cost of Cudahy's bacon, Swift's bacon, various brands of ham and sausage—a finite group of products regarded by the businessmen in the field as close substitutes. Professor Chamberlin and Mrs. Robinson have recently given us a theory of supply in terms of the interactions of a limited number of sellers. I submit that in most areas of demand the commodities which are closely related are relatively few in number and are susceptible to a simplified partial equilibrium analysis. It is in terms of related goods that demand, as well as supply theory, must be rewritten.

The emergence of a demand theory which puts its main stress on related goods is no accident. It not only parallels—it *flows from* the new monopolistic-competition analysis.

Let us retrogress briefly and assume that the market is composed of competitive and homogeneous goods only. Only one kind of hat is produced and it is the same for all producers. The same situation exists for radios, automobiles, corn. Under such highly unreal conditions the theory of demand would be written (as it has been written) in terms, largely, of unrelated goods. Substitution would be discussed but it would be considered exceptional. Such substitution as was

analyzed would be *interindustry* substitution—margarine versus butter.¹³ The problem of choice between qualitatively distinct brands or subtypes of the same good would not appear.

Complementary goods would also be encompassed by such a theory—as a not unusual phenomenon: bread complements butter. Here again, the complementation is interindustry only. The problem of combining differentiated substitutes to best provide a group of related services does not appear.

When we consider a world of closely competing brands, styles, grades of commodities, how does this analytical structure shift? We have unrelated goods as before, but far fewer of them. There are also examples of interindustry substitution, and interindustry complementation, but we also have intraindustry substitution and intraindustry complementation.

The category which I have called complementary substitutes is, I think, the one which should be contrasted with substitute goods in importance and frequency of occurrence. Complementary goods are common, true; but complementary substitutes are practically ubiquitous. The clusters of substitute goods from which complementary substitutes are selected are more pervasive than monopolistic competition itself. All groups of goods in monopolistic competition are clusters of substitutes. Only a few clusters of substitutes do not admit of the selection of complementary substitutes—the cases in which the buyer's want is indivisible (my demand for gasoline, e.g.). Outside of the clusters of monopolistically competitive products, all subgrades of competitive commodities—the various staples of cotton, the different cuts of beef—as well as the subgrades of branded goods—the Plymouth convertibles and the Plymouth coupes—constitute clusters of substitutes and place before the consumer exactly the same

13. In reference to rival goods, the term "industry" is used in the popular sense in this summary. See p. 80, above.

problems as does the choice between the brands themselves.

It will undoubtedly not have escaped the reader that much of what has been written above is more an attack upon the assumptions than upon the methods or logic of accepted doctrine. This appears often to have been the case in the evolution of economic theory. The monopolistic-competition school of thought has recently vitally changed our assumptions regarding the number of sellers and the homogeneity of the typical products of industry, with salutary results. Another revolution, it is here argued, urgently needs to be made in the analysis of demand. Let us recognize, as Chamberlin has said in his Preface to *The Theory of Monopolistic Competition*, that "economic theory is often remote and unreal, not because the method is wrong, but because the underlying assumptions are not as closely in accord with the facts as they might be." In demand theory let us assume that most goods are presented to the consumer in clusters of competing substitutes, partly because of the presence of monopolistic competition and partly because of the occurrence of standard subgrades in the marketing of products both competitive and monopolistic.

CHAPTER IX

LONG-RUN DEMAND CONCLUDED: ELASTICITY OF DEMAND

1. THE ELASTICITY OF THE INDIVIDUAL DEMAND CURVE

GENERATION after generation of economics students have been taught that, price lower, a person will buy more of the same commodities even though the importance of the "increments" is acknowledged to decrease because of taste satiation and because the commodities are put to successively less important uses. In this connection, the reader is urged to perform an experiment. Roam about your house and look critically at the things you possess. I submit, you will find very few identical commodities outside of the kitchen.

Why would a person want *more* of a good already possessed? What is the meaning in terms of well-being of this sort of acquisition? Let us examine more closely the two quite different reasons ordinarily given for such purchases: (1) to more fully satiate the same want that was met by the first units of the good or (2) to satisfy other wants of lesser importance. As an example of the first, gasoline has but one use from my point of view, to provide power for an automobile. If I buy more gasoline, it must be in order to run a car *more*: there is no other possibility, barring storage. On the other hand, Böhm-Bawerk's thrifty colonial farmer allocated his five sacks of corn as follows: (1) for the "sustenance of his life till the next harvest"; (2) to "supplement this bare living to the extent of keeping himself hale and vigorous"; (3) "to feed poultry"; (4) for "making of coarse spirits"; and (5) "to feed a number of parrots, whose antics amuse him."¹

Let us look carefully at the first possibility depicted above:

1. Eugen v. Böhm-Bawerk, *The Positive Theory of Capital* (William Smart, trans.) (New York, 1923), pp. 149-150.

buying more commodities for the same uses as those to which the first units have been put. Surely these words have a familiar ring. They suggest and in fact represent an example of pure or perfect substitution. If two commodities, identical or otherwise, satisfy the same wants, perform the same services, they are substitutes.² If they are, they by definition decrease each other's utility. Generically the acquisition of substitutes is the least likely kind of purchase that can be imagined.³

But surely we do buy more of a given commodity to put to less important uses? We do, *if* you make the unrealistic assumption of perfect competition and absence of qualitatively different grades among such commodities. If there *were* a simple catch-all good, "corn," with no subvariants—not corn-on-the-cob, Del Monte canned corn, feed-corn, etc., we would indeed be using corn for the variety of purposes depicted by Böhm-Bawerk. But the *typical* situation is that the commodity is offered in the form of a complex of substitutes, varying qualitatively and in price. With plenty of varieties to choose between you do not use the top grade for inferior purposes. To do so would be to violate the basic rule; the preference index in different lines should be made as nearly as possible proportional to price. You use less expensive varieties for less important purposes. In Böhm-Bawerk's illustration you use *feed-corn for the poultry*.

There are only a few types of cases when one tends substantially to buy more of the same good. One occurs when a want is so indivisible that the commodity which best serves the want serves it best under all conditions. This is charac-

2. Frank H. Knight, "Demand: Theory," *Encyclopedia of the Social Sciences*, V, 72.

3. Mrs. Robinson writes: "The demand of each individual buyer for any commodity is likely to be satiable—that is to say, for each individual buyer there is likely to be a certain price at which he will buy as much of the commodity as he requires, so that any reduction below this price will not tempt him to buy much more." Mrs. Robinson does not accompany this statement with any analysis. *The Economics of Imperfect Competition* (London, 1933), pp. 201–202.

teristic of my demand for gasoline described above.⁴ Another case is where, though wants may be divisible, the commodity is not offered in more than one variety. This is the case of the water supply and the phone service—the unrelated, independent commodities. Both of these cases are so rare as to be more like limiting extremes than representatives of a class. Both cases indicate of course that, when the necessary conditions for complementary substitution are absent, duplication increases in likelihood.

A third occasion when duplication occurs is concerned with what may be termed multiple goods. We buy customarily candlesticks in pairs and we place three identical pillows at the back of a studio couch. In such cases the pair or the triplet is *thought of* as a single good, just as a pair of shoes is.⁵ The characteristic of these multiple goods is that the preference index of successive increments remains very low until the completing unit is added. The phenomenon is a fairly rare one, and in any event there would be little tendency to buy more of such goods *in response to price changes*. One does not buy a fraction no matter how low price is; and after the multiple good is complete, one would be unlikely to buy a second identical one, as there would then emerge a relationship of pure substitution.

A fourth factor making for duplication is the depreciation of some types of goods.⁶ Certain commodities such as articles of clothing show wear and tear and yield services of gradually diminishing utility on that account.⁷ Many goods are not of this character, it is to be noted. Durable goods such as

4. See p. 138, chap. viii.

5. Henry Shultz, *The Measurement of Demand* (Chicago, 1938), p. 571.

6. I am indebted to Professor Bernard Haley of Stanford University for the suggestion that the depreciation of consumers' goods is a determinant of elasticity of demand.

7. The analysis is couched in terms of marginal utility for convenience. The preference index could be employed if it were possible to buy the services of the good in question as well as the good itself. This is rarely the case in the case of articles of clothing, although rentals are sometimes encountered.

the "wonderful one-hoss shay" yield services of unimpaired effectiveness until the fateful day of total collapse.⁸ If, however, a good's services perceptibly decline in utility, then the consumer must make a decision as to the point of discard. The situation can be depicted on a simple chart:

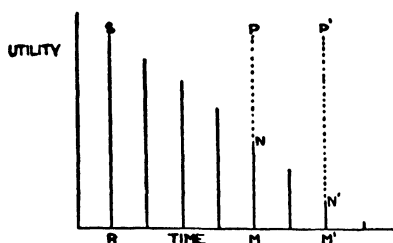


Chart 34. *The Declining Utility of Services.*

Shall the consumer discard the commodity at time M or at M' ? Let us assume that the goods available for purchase have not changed and that the same commodity of the many alternatives best meets the needs of the consumer throughout the time interval considered. Under

these circumstances it must be evident that the richer the consumer, the more likely he is to discard the good at time M . The amount of utility gained in the acquisition of a new (but identical) commodity is not a series of services starting with RS , but rather a series starting with the *difference* between RS and MN . The richer the consumer, the lower the marginal utility of money and therefore the sooner he is warranted in making the replacement, for a small increase in utility such as NP may compare favorably with the small additions to well-being which he could gain by spending money in other directions. If the marginal utility of money is high, then the consumer will wait until later—until time M' to purchase the new good.

By analogous reasoning, if the price of the commodity is low then any given consumer with a fixed income will be warranted in making the replacement at time M ; but if the price of the good is high, then a larger utility difference such as $M'P'$ will be required if the buyer is to keep his outlays

8. The owner of the "wonderful one-hoss shay" might well have decided to scrap the aging vehicle before complete obsolescence occurred, to avoid inconvenience or the danger of inconvenience.

for this commodity in relation to his expenditures for other things.

From the above it follows that one source of elasticity of demand will be the fact that the cheaper the good the earlier the point of discard, and therefore the more of such goods a buyer will purchase in an interval of time. It will be noted that this source of elasticity is confined to goods characterized by substantially diminishing utility for successive services. The importance of this factor is also much diminished by the fact that many goods which do fulfill this requirement are not duplicated. Change of model or style, while the condition of an acquired good is unimpaired, may operate to diminish the utility of services. In the event that neither "wear and tear" nor style change occurs, it is possible that the utility of a good's successive services might decline because of the fact that long use of the same good is monotonous; people may like change for change's sake. Also, in a culture which values highly the conspicuous display of wealth, people may lose prestige if seen to utilize the same commodity for a long period of time. All of the latter factors may cause the utility of services to decline and may hasten the point of discard. However, in these cases the same good will not be repurchased. Only wear and tear of a commodity which, if discarded, would be exactly replaced can be thought of as a true determinant of the elasticity of demand for that particular good.

For completeness it should be noted that we often make duplicating purchases of goods in the short run, for the purpose of stocking up. This is consumer speculation and has no connection with this analysis which is concerned with long-run changes in the rate of consumption.⁹

Return, for the last time I hope, to the larger examples in terms of which orthodox economic theory and particularly the theory of diminishing marginal utility has been written. Many basic foods are similar in character to the unrelated commodity, water, *if* you assume that there are no brand or

9. See chap. vi, pp. 104-105.

qualitative differentiations. If you illustrate with "apples," "eggs," or other homogeneous products, and assume away any subtypes such as "cider apples," "Grade A eggs," you may arrive at the conclusion that there is considerable response in individual purchases to changes in the prices of these goods. Each of these artificially simplified foods is typically used in a variety of dishes sufficiently distinct so that they decrease to only a minor extent each other's utility. Hence it would seem that economic theory both by selection and by assumption has been written in terms of commodities elastic to a quite unrepresentative extent.

If you get away from the baleful influence of the breakfast table and look at clothes, household goods, recreational equipment, etc., duplication of items as a response to price change is exceedingly rare. "Buying more of the same" is the most unlikely of all responses because you either get pure substitution or you find yourself using a superior and high-priced good for inferior purposes, when ubiquitous lower-priced goods would serve the purposes more economically. The purchase of perfect substitutes is rendered unlikely by the presence of complementary and particularly complementary substitute goods in the consumption pattern. Income spent in these categories generally raises the quality of services by permitting commodity specialization. When more goods are bought, more complementary substitutes are likely to be selected.

If the above analysis be accepted, we are back, after a half-century, in Böhm-Bawerk's much criticized horse market.¹⁰ Each buyer comes to market interested in a single horse.

2. COMMODITY DEMAND CURVES

FORTUNATELY for the consumer, largely at the mercy of price-setting competing monopolists, the total demand curve of a commodity does not possess the extreme inelasticity that most

10. Böhm-Bawerk, *op. cit.* p. 203; Jacob Viner, "The Utility Concept in Value Theory and Its Critics," *Journal of Political Economy*, XXXIII (1925), 385.

individual demand curves do. Different people will be induced to buy any one brand or grade of good at different prices, and consequently there may be a good deal of elasticity of demand for the whole, precisely as in Böhm-Bawerk's example.¹¹ Each person has a different inducement price and more and more *people* enter the market for any particular commodity, the lower the price. The typical lack of elasticity of individual demand schedules is one of the factors which, under monopolistic competition, leads to price discrimination.¹² If the monopolistic competitor shades the price sufficiently to induce purchase at any price above his variable costs, he stands to gain. The inducement level will presumably differ for different buyers. If each consumer characteristically could be led to buy *more units* at a lower price, then the motive to charge what the traffic would bear for a single unit would be somewhat attenuated.

Commodity elasticity of demand has long been regarded as a very important element conditioning the determination of price. Under conditions of monopolistic competition, one would suppose that it would occupy an even more important position, for now the seller has it in his power to set the price where he will in order to maximize profits. However, several contemporary developments are tending to make the elasticity of particular commodity demand curves a decreasingly important factor in the administration of price.

In the first place the world of monopolistic competition is a complex world. Orderly scientific study of it is exceedingly difficult. In it, selling policy is not necessarily centered upon price as it is under perfect competition. Nonprice competition—particularly the qualitative changing of the product,

11. Mrs. Robinson holds that since an individual's demand is satiable, ". . . a market composed of individual buyers who are all closely similar is likely to have a more or less definite saturation point, below which the demand is highly inelastic." *Op. cit.*, p. 202. No reason is given for supposing that the individuals in any particular market *would* be "similar" either in income or in taste.

12. Robinson, *op. cit.*, pp. 201-202. Mrs. Robinson made the statement cited in n. 3 in connection with her discussion of price discrimination.

the variations in the conditions of sale and the differentiation of demand—may be more important than price concessions in winning markets. Upon these nonprice aspects of competition, the attention of the businessman is concentrated to an ever greater extent.¹³

A second factor tending to render the elasticity of particular demands rather unimportant is the rise of the large business unit. If the typical products of industry are put out, singly, by individual enterprises, it is indeed not beyond the realm of possibility that each seller would know fairly accurately and set his price policy in accordance with his elasticity of demand. The writer was granted recently an interview with a wholesale seller of lobsters in a large Eastern city. The manager claimed to have a clear and concise notion of just how much lobster meat could be disposed of at various quotations which he might name. However, when enterprise is large-scale and many products are put out, this close familiarity with the market necessarily disappears. Professor Mason in an illuminating recent article has cited the fact that the International Harvester Company manufactures and stocks for sale some 250,000 separate parts.¹⁴ In such a set-up "bureaucratization of decision" is bound to occur. It would be impossible in many cases even to attempt a careful analysis of elasticity of demand and rival sellers' reactions, when such a large market and such a large number of products are involved. "Firms are not, regardless of what economic theory may suppose, undifferentiated profit maximizing agencies which react to given market situations in ways which are independent of their organization."¹⁵

In most concerns which offer many articles for sale, pricing is done without regard for the individual commodities' elas-

13. Temporary National Economic Committee, *Price Behavior and Business Policy*, Monograph No. 1 (Washington, 1940), *passim*; chap. v. See also A. R. Burns, *The Decline of Competition* (New York, 1936), pp. 412-417.

14. Edward S. Mason, "Price and Production Policies of Large-Scale Enterprise," *American Economic Review, Supplement*, XXIX (1939), 67.

15. *Ibid.*, p. 66.

ticity of demand. In department stores, for instance, price is set with an eye to the total net profits of many items rather than to maximum gain from particular commodities. In a certain large New York store, the writer has been told, the demand schedule for mink coats and diamond rings is extremely inelastic. Yet the pricing is not done in such a manner as to take full advantage of the inelasticity which is known to exist. Likewise with novelties of great consumer appeal. There is the reputation of the store for general reasonableness in price to be maintained. Consumer irritation and ill-will, loss of sales in other departments, and general falling off of consumer entry might occur if too high prices were charged in any single line. Hence general policies concerning mark-up; or guarantees with respect to "meeting competition" all over the market in every item priced. Here the seller is sometimes sacrificing a chance to make larger profits on a particular item in the interest of making larger profits for the store as a whole.

Another consideration militating against item-by-item current maximization of profits is that pricing under monopolistic competition is done with an eye to *long-run* profits. J. M. Clark has suggested that regardless of how inelastic the seller's demand for an object may seem to be at any given time, in the long run it is likely to be more elastic.¹⁶ Given time, better prices, if they exist, will be located and shifts away from a high-priced seller will occur.¹⁷ If this is the case, in the interests of administrative simplicity and low advertising costs a seller will sometimes forego the maximum prof-

16. "Toward a Concept of Workable Competition," *American Economic Review*, XXX (1940), 241-256. Professor Clark holds that the long-run demand curve is in fact so elastic that the final equilibrium is very much like that of perfect competition.

17. Burns, *op. cit.*, pp. 28, 41. Mr. Burns stresses that the consumer reacts slowly to a price reduction. This would imply that the short-run demand curve is more inelastic than the long-run. On the other hand he points out that "price reductions may merely redistribute business over time, an immediate response to a reduction in price being counterbalanced by a later decline." *Op. cit.*, p. 41. In the latter case a generally inelastic demand is to be deduced.

its of the moment. It may save him time, effort, money, and ill-will to set a price at the outset which he will be able to maintain after consumers have had ample opportunity to shop around.

For the reasons stated above the precise elasticity which is characteristic of any particular commodity demand at any given time is ceasing to have great influence in the determination of prices. It has less influence, notice, than it did under an assumption of perfect competition, for then, with the unadministered interaction of demand and supply, the equilibrium point would be strongly influenced by the precise character of both schedules. Under monopolistic competition and administration of prices, sellers have it in their power to *ignore* elasticity of demand, and, especially in large enterprises selling many products, they often do so.

Be that as it may, it is possible to lay down some general principles concerning commodity demand schedules. We have shown that the elasticity of commodity demand is determined by two general sets of factors—those which are related to buyers' attitudes toward the product and, under monopolistic competition, those related to rivals' reactions.¹⁸ These two elements are complexly intermingled and will not be discussed in turn, but rather will both be related to other major determinants. When will the commodity-demand schedule confronting the seller in monopolistic competition and the market under perfect, rivalrous competition be inelastic, when elastic? We cannot tell, by deductive methods, with accuracy. A few general conclusions, however, can be indicated.

3. THE CLASS STRUCTURE OF COMMODITIES¹⁹

THE analysis of Chapter VII can be drawn upon for the first important principle: goods bought by wealthy people

18. Benjamin Higgins, "Elements of Indeterminacy in the Theory of Non-Perfect Competition," *American Economic Review*, XXIX (1939), 468-479.

19. The resemblance between this analysis and the law, recently stressed by Harrod in *The Trade Cycle*, is very striking. Harrod holds that as income

tend to be characterized by inelastic demand schedules. This applies both to commodities within a single cluster of substitutes and to whole industries.

The most expensive and luxurious items in any cluster of substitutes will, on the whole, be bought more largely by wealthy persons who attach little importance to money. Since this is the case, we can deduce that the *differences* in cost between the various *expensive* alternatives are very unlikely to be conclusive for the wealthy buyer. Take watches, for example. In price they range from a dollar to several thousand. Of the vast number of types of watches in this cluster of substitutes, certain ones—marked off from others, conveniently, by cost—are addressed to the wealthy. Very few poor persons, it is safe to say, are interested in those inlaid with a profusion of diamonds or encased in solid platinum. The extra utility gained by buying such watches is not great enough to warrant the added outlay for the poor man. However, persons wealthy enough to be considering buying such luxury articles are, by virtue of this same wealth, exempt from the necessity of weighing carefully the cost differences between the costly alternatives. They make their final selection *on the basis of the preferences*, and are negligibly affected by the cost hierarchy. Hence, significantly *more* wealthy buyers will not be attracted to a given platinum model because of a drop in its price. Generically, the class of people interested in this article is not much interested in decreases in price.

rises in a period of recovery, the elasticity of demand for consumption goods generally diminishes. See R. F. Harrod, *The Trade Cycle* (Oxford, 1936), and Alvin H. Hansen, "Harrod on the Trade Cycle," *Quarterly Journal of Economics*, LI (1937), 509-531. Arguments against the law have been stated by H. W. Singer, "Another Note on the Law of Diminishing Elasticity of Demand," *Economic Journal*, XLVIII (1938), 138-141; and particularly forceful criticisms have been made by R. F. Bretherton, "A Note on the Law of Diminishing Elasticity of Demand," *Economic Journal*, XLVII (1937), 574-577. The interesting analysis of Mr. Bretherton is relevant as an attack upon Harrod, but it does not challenge, I think, the static form of this law which is developed in the text.

At the other extreme, the goods which, in the cluster of substitutes of which they are a part, are inexpensive are likely to enlist the attention of persons in the lower-income brackets. Watches selling from \$5 to \$20, for example, will be bought by people who are weighing every dollar difference in cost between the alternatives in this price range with great care. Consequently even a small drop in price will be conclusive for many of such buyers and will accordingly have a marked effect on total purchases.

An interview with an economist of one of New York's largest department stores gave empirical support to this proposition. He was able to cite case after case in which the store had attempted to "pep up" sales in luxury goods without success, by price concessions. Persons who buy costly diamonds and mink coats hardly respond at all to price appeals.

This leads to a related principle: *types* of goods which are bought chiefly by the upper-income groups will have a more inelastic demand than those bought characteristically by the lower-income groups. There are some commodities which are addressed, by their very nature, to a definite income group. Such, for instance are riding habits and crops, yacht flags, and such too are cotton hosiery and laundry soap. Persons below a certain income generically do not indulge in horseback riding or yachting, and above a certain income very few families wash their own clothes or wear cotton hosiery. Consequently we may deduce with a good deal of confidence that the demand schedule for riding habits and crops is very inelastic, while that for cotton hosiery is very elastic. For all wealthy persons, to recur to a former analysis, the margin of petty expenditures is very high, and all goods below this margin are exceedingly inelastic.²⁰ Considerations of conspicuous display enter in very forcefully to reduce inquiries or attention to costs. It is "bad manners" to discuss the cost of one's own or one's acquaintances' consumption

20. See chap. iv.

goods, and even while shopping the wealthy person insofar as possible will maintain his prestige by inquiring the price after decision has been made, as a kind of after-thought.²¹

It should be pointed out that the principle under discussion is directly contradictory to the familiar tenet that luxuries have elastic demands and necessities have inelastic demands.²² The concept of "necessity" becomes rather anachronistic in a world of competing alternatives; no commodity is necessary when it has a close substitute. Even goods "essential" for human life may be quite elastic in demand. In fact, under monopolistic competition, practically none of the factors traditionally mentioned as determinants of elasticity are relevant. Commodities in joint demand, for instance, such as doorknobs—needed in conjunction with building materials—may not be inelastic, if there are a number of doorknobs to choose between.

Thus far we have discussed what we may think of as the class structure of commodities only from the buyer's point of view. Suppose that the seller of a mink coat decides to take advantage of the extreme inelasticity of his market's demand by placing a very high price on the product. How will his rivals react? It does not matter greatly. Whatever they do will be of little consequence to him. His clientele, by virtue of their wealth, not only fail to take account of changes in *his* prices but also are largely oblivious to price *differences* between his and his rivals' quotations. His customers are unwilling to shop about painstakingly, even for large outlays. They choose stores because of prestige considerations or habit, and when they enter they are likely to make a decision then and there. On the other hand the lower-income groups—responsive and alert to price changes, are also more aware of rival sellers' reactions and are likely to seek out and patron-

21. In a short story in *The New Yorker* magazine (November 30, 1940, p. 22) a mother says to her daughter "It isn't considered very nice for little girls to talk about money. Don't you remember how I've told you *never* to ask what things cost? . . ."

22. Knight, *op. cit.*, p. 70.

ize the cheapest seller. Hence rivals' reactions in the lower-priced fields or for goods bought predominantly by the poorer sections of the population are extremely important. These considerations merely re-enforce the conclusions given above, obviously. Goods bought by the wealthy are inelastic; goods bought by the poor tend to be elastic in commodity demand.²³

4. THE EFFECT OF NUMBERS OF COMMODITIES IN THE INDUSTRY

THERE has been a prolonged and difficult controversy in the journals as to whether product differentiation itself would cause sellers' demand schedules to be less than perfectly elastic, regardless of the numbers of sellers. Professor Chamberlin has maintained that the entry of new producers would merely decrease demand but would not necessarily effect its elasticity, whereas Mrs. Robinson and Kaldor and others have argued that elasticity becomes greater, the greater the number of sellers, until the point is reached where the quantity offered by any single seller has no appreciable effect on the market and perfect competition is achieved.²⁴

23. Mrs. Robinson, *op. cit.*, p. 204, suggests very tentatively that "... members of the more elastic markets (for whom price is reduced) may be poorer than members of the less elastic markets." It is interesting that the poorer consumers are afforded some measure of protection against high prices by virtue of their very poverty.

24. Some of the following have addressed themselves specifically to the controversy, while others have taken a stand upon it, incidentally, in the course of discussing other matters. Chamberlin's position is set forth in two articles: "Monopolistic or Imperfect Competition?" *Quarterly Journal of Economics*, LI (1937), 557-580, and "Reply," *loc. cit.*, LII (1938), 530-538. A recent interesting but complicated analysis of this subject is that of Morris A. Copeland, "Competing Products and Monopolistic Competition," *Quarterly Journal of Economics*, LV (1940), 1-35. Leading the argument against Chamberlin's position is Nicholas Kaldor, "Professor Chamberlin on Monopolistic and Imperfect Competition," *Quarterly Journal of Economics*, LII (1938), 513-529. Taking much the same position can be cited: Joan Robinson, "What is Perfect Competition?" *Quarterly Journal of Economics*, XLIX (1934), 104-120, and *The Economics of Imperfect Competition*, p. 101; Fritz Machlup, "Monopoly and Competition: A Classification of Market Positions," *American Economic Review*, XXVII (1937), 446; Neil H. Borden, "Elasticity of Demand as a Useful Marketing Concept," *American Economic Review, Supplement*, XXII (1932), 116-120.

There is ample evidence in the contemporary literature of monopolistic competition that we are still thinking in a rather channelized way in terms of perfect competition. This controversy about the "entrance of sellers" has been engaged in largely *without reference to the type of good or the price policy of the entering seller or his rivals*! The problem of the effect on existing elasticities of the entry of a seller under monopolistic competition is quite different from and more complex than the similar problem when products are homogeneous. If the incoming product is like or unlike its competitors, if it is priced by its seller high or low, if that high or low price evokes reactions from rival sellers, all of these things will affect all of the elasticities in the market. Substitutes differ typically, although not universally, in three dimensions important for the current problem: in physical make-up, in cost, and in the extent to which cost changes evoke reactions on the part of rival sellers. For purposes of analysis we will hold some of these variables constant while examining the others. First, we will deal with a group of substitutes which are at the outset identical in price, but physically different. We will assume, further, that if a single chosen seller *did* raise or lower his prices to test his elasticity of demand, *no* changes in the prices of his rivals would occur.

In our examination of monopolistically competitive products which are priced identically we may distinguish several cases. First we will inquire into a few geographic illustrations in which goods differ solely in the distance from the buyer; then we will investigate the multiplication of goods which differ from each other in a single physical quality such as length or volume; and third, the most complex case in this class, when goods, priced identically, differ from each other in multidimensional ways. We may start, as many have before, with some geographical exercises. If all of the buyers of a commodity, infinitely numerous and evenly spread, are located on a straight line, and the sole consideration in buying is convenience, what will happen to the elasticity of

demand of each seller as more are added? If there are only four sellers, they will divide the field and there will be but two buyers who are intermediate between any seller and his two nearest rivals. The intermediate buyers' demand schedules for each seller will be infinitely elastic. All other buyers' schedules will be absolutely inelastic, assuming an extreme and rigid attitude of unwillingness to travel farther than to the nearest store. Now let us introduce four new sellers so that altogether eight sellers are equally spaced on the line. Each of the eight will have two buyers, as before, who are indifferent between him and his nearest rivals, but all other buyers will possess absolutely inelastic demand schedules, as before. The effect of the increase in sellers will clearly be to increase the elasticity of demand of all of the sellers, for the proportion of buyers who have elastic demands will be a larger proportion of their total clientele, the fewer the customers with inelastic schedules.

The above illustration is framed on the assumption that each buyer will buy at the nearest store regardless of price differentials. This is the logical extreme of what Chamberlin calls a fixed "valuation put upon convenience."²⁵ More reasonable for many buyers would be to suppose a kind of convenience—cost schedule such as the following (differing from buyer to buyer in its exact terms):

<i>distance from nearest store</i>	<i>cost differential under nearest store necessary to induce travel</i>
$\frac{1}{4}$ mile	10 % cheaper
$\frac{1}{2}$ mile	20 % cheaper
1 mile	50 % cheaper
2 mile	90 % cheaper

If such a flexible attitude prevails, sellers' demand schedules would become more elastic with the entrance of more sellers.

25. Chamberlin, "Monopolistic or Imperfect Competition?" *op. cit.*, 564

The rise in the price of any given seller would cause a larger proportionate fall off in sales, the nearer his customers are to other sellers. And the denser the sellers, the nearer his customers will be to other sellers.

Next consider an area illustration. In a certain square mile there are assumed to be numerous evenly spaced buyers who rigidly prefer to buy at the nearest store. This case differs from the straight-line case given above only in that, as more sellers enter, actually more people will be intermediate between the stores, so that there is an added source of elasticity. As above, the proportion of consumers who have elastic demands will be a larger part of the total clientele of each store, and if buyers may be supposed to be willing to go farther, the greater the price inducement, then elasticity becomes marked as any one store begins to raise its prices.

Now we may turn to the next simplest case—the “lines” of goods in a cluster of substitutes which differ in one dimension only.²⁶ These are occasionally found in practice, as when a firm such as General Electric puts out a series of iceboxes which differ solely in volume. Whole industries in which the commodities differ in only one dimension are, in actuality, rare. We will assume for purposes of analysis that cigarettes are put out in a number of brands differing only in length:

Cigarette A	2 inches
B	2 $\frac{1}{4}$ inches
C	2 $\frac{1}{2}$ inches
D	3 inches

If all are priced identically and if no reactions may be anticipated on the part of rival sellers, what will be the effect of introducing other cigarettes in this series? The geographical illustration of the straight line, given above, applies exactly,

²⁶ *Ibid.*, p. 563. Mr. Chamberlin seems to ignore the fact that among the physically diverse items in a group of differentiated products there is occasionally a line of goods which differs in one dimension only.

in my opinion. Buyers, on a pure chance basis, may be supposed (within limits) to be scattered evenly in potential "first choice" as to length. If no price differential is sufficient to cause them to change from their favorite length, then the demand of those utilizing each length will be inelastic. However, intermediate between each two lengths will be some indifferent consumers, with elastic demand schedules. No matter how many new-length cigarettes are interpolated, each new one will have the same number, presumably, of indifferent consumers with elastic demand schedules on either side of it. But the number of the inelastic individual demand schedules confronting each seller declines in number with more sellers. Hence the total demand schedule of each seller becomes more elastic in character. If, on the contrary, each buyer had a favorite length to start with but had a length-cost schedule similar to the following, then as sellers were added all along the line demand would become clearly more elastic:

<i>deviation from preferred length</i>	<i>compensation in cost to induce purchase</i>
$\frac{1}{4}$ inch	10 % cheaper
$\frac{1}{2}$ inch	20 % cheaper
1 inch	50 % cheaper

We pass now to the much more difficult task of ascertaining what happens to elasticity when the products are quite unlike each other. In this connection I think that the Robinsonian terminology in which a commodity is thought of as set off from other goods by a "gap" is most unfortunate.²⁷ It unavoidably gives one the impression that all clusters of substitutes can be arranged in a simple one-dimensional chain of some type. Such is not the case. Chamberlin is quite correct when he writes "The concept of 'in-between products' is not always easy to apply outside of geographical problems. Can gas refrigerators be regarded as 'in between' some other two varieties, say electric and natural ice? Are menthol

²⁷ Robinson, *op. cit.*, p. 17.

cigarettes 'in between' some other two brands?"²⁸ Physically they are not, of course; but in the rating of each individual consumer—in his preference index—the physical heterogeneity of products is destroyed. Let us consider the example of soda pops. Let us assume that they are all priced identically at 5¢ and that regardless of the price of any one of them no reactions on the part of rivals will take place. In these circumstances, each buyer might have a certain preference index for each of the drinks under consideration. When only a few competitors are in the field, there will be certain persons who will regard pairs of the goods with indifference and thereby increase the elasticity of demand for such goods, and there will always be a number whose preference is slight, and who would switch away from any given item if the price were raised. If the number of brands were increased, there is *every probability* that the number of persons with an indifferent attitude would be greatly increased, for there would be more pairs of goods to be indifferent between if for no other reason. This is analogous to the multiplication of sellers in an area discussed above. Also, as more goods are added, doubtless some of the new products will be nearer in preference to the favorite item than any of the alternatives formerly in the field. If preference indices narrow—because of close physical resemblance *or otherwise*—then a smaller rise in price than before will be necessary to cause a shift away from the previously chosen item.²⁹ This follows from the analysis given in Chapter VII. Professor Chamberlin holds that in discussing the entry of new products in a multi-dimensional nongeographic market, the "density" concept is misleading. An entering product may, he claims, really *enlarge* the market, and not affect elasticities, rather than making the "density" of a pre-existing market more marked. Employing the definitions laid down in Chapter V, we are thinking of an industry as composed of goods in especially

28. Chamberlin, "Monopolistic or Imperfect Competition?" *op. cit.*, p. 563.

29. See chap. vii.

close substitutional relationship to each other. In this discussion, therefore, we may properly suppose that the new sellers entering are putting out a product which is *in substitution* with the products in the field. If the entering products fulfill this requirement, then they will be comparatively rated by consumers who are making choices between the substitutes or combining them in complementary substitution. If they are rated, then addition of new members increases density in the sense that the hierarchy of preference in a single industry becomes more elaborate. In short, it is our conclusion that demand becomes more elastic in all probability as more sellers enter the field.³⁰ Chamberlin is quite right, however, in holding that as long as products are differentiated it can never become *absolutely* elastic.

We turn now to the second major factor in the analysis, the cost of the commodity entering the field. We will here assume a cluster of substitutes ranging widely in cost and also in physical characteristics. We will assume that rivals will take no account of the price to be charged. What happens when new items are interpolated into this series?

We have pointed out at length above that there is a strong presumption that the higher priced items in any cluster of substitutes have more inelastic demand schedules than the cheaper members of the same cluster. Also, any item which is priced high in the hierarchy is bound to draw most of its clientele from the high-priced field. For instance, if a new \$100 watch is put out by a jewelry firm, it will compete vigorously with other expensive watches and will affect only slightly the market for \$20 watches. But *in so far as there is any effect*, it will be to render the demand schedule for \$20 watches more elastic than before. This is because the purchasers of all high-cost goods are generically wealthier persons than the purchasers of all low-cost goods. Hence if there is more competition from the high-priced field, low-priced goods lose more of their luxury clientele and the people who

30. Robinson, *op. cit.*, pp. 100-101.

remain are generically persons who are greatly moved by price differences.

This principle is of very general application. An illustration came to the writer's attention recently. A certain drug-store on the edge of a college campus was doing a land-rush business. A competitor set up business near by, providing handsomer surroundings, leather seats, and more prestige. The result was a clear demarcation of customers. I have no doubt that the drugstore's demand schedules became more elastic as a result of the migration of its wealthier customers.

In general, then, we may say that the closer to any particular item entering competitors are in cost, the more likely demand is to be affected; and the entry of higher cost competitors tends to lower the elasticity of all lower-cost members of the same group of substitutes, while the entry of lower-cost entries tends to increase the inelasticity of all higher-cost products.

Finally we come to the question of rival's reactions. We will assume that differentiated goods are being sold at the same price. If more sellers enter the field, will any seller take more or less account of his rivals' reactions in setting his prices? A very little reflection leads to the conclusion that the more rivals, the less account is taken of them.³¹ If a seller feels that he is but one in hundreds, no one of them will be supposed by him to pay much attention to what he does. He can be guided, in price policy, wholly by the reactions of his customers, and ignore his rivals.

The two trends from the buyers' and sellers' sides can therefore be summarized in these terms: if buyers' demand is inelastic because of fewness of sellers, and a seller attempts to take advantage of the buyers by raising the price, he may be quite sure that his rivals will react to his change in policy. They are very likely to raise their prices, too, so that demand from the original seller's point of view is inelastic from two

31. R. F. Kahn, "The Problem of Duopoly," *Economic Journal*, XLVII (1937), 1.

co-operating reasons. At the other extreme, if there are many sellers as there are in the retail clothing industry, the demand of buyers will be very elastic. There are many sources of supply to choose between, so that buyers will not put up with high prices on the part of any single seller. On the other hand, a price cut is likely to enlist rather wide consumer interest, and yet not be supposed to be noticed very much by other sellers. If the seller puts up or down his price, he is such a small part of the industry that, as under conditions of perfect competition, his behavior passes unnoticed by other sellers. His customers, however, may react strongly to prices which are out of line with the industry. This situation is calculated to make for a rather unstable, price-cutting industry.

5. DISCONTINUITIES AND INFLECTIONS IN DEMAND CURVES

ORDINARILY demand schedules have been presented—regardless of the type of elasticity—as smooth curves. This is because, under pure competition, buyers' reactions alone are concerned and no reason can be advanced (barring a habitual price level—a condition almost never encountered under perfect competition) why marginal buyers or the marginal purchases of buyers should be concentrated at one point more than another.

Under monopolistic competition this assumption of smoothness must be abandoned. Buyers *are* more likely to be concentrated at one point than another, and sellers are more likely to react to rivals' policies at some prices than others.

We have already had occasion to outline the Chamberlin-Nichol-Smith controversy about marginal buyers.³² Briefly the conclusion there indicated was that, under conditions of monopolistic competition, prices may be held constant over periods of time. When this is the case, buyer habits are established and any change from the habitual position is likely to produce shock. This shows itself in horizontal plateaux in the

32. See chap. vi, pp. 102-104.

demand curve or by actual abrupt vertical drops in the curve.

When sellers' responses are taken into account, the discontinuities become more pronounced. It should be admitted at the outset that some of those most familiar with the practical functioning of the economic system believe that knowledge cannot be systematized concerning this subject. Professor Mason writes, for instance: "Elaborate speculation on the probable behavior of A on the assumption that B will act in a certain way, seems particularly fruitless."³³ Professor J. M. Clark on the whole has revealed a similar outlook.³⁴ Benjamin Higgins believes that sellers' demand curves are likely to be indeterminate for two reasons: first, because of the difficulty of estimating them, and second, because such curves as can be estimated may have multiple positions of equilibrium.

An estimated average revenue curve is likely to rise over certain ranges and fall over others. An entrepreneur may expect a reduction in his price to lead to a greater cut by a rival firm, thus leading to a reduction in his own sales; while a still further cut may drive out the competitor altogether, or drive him to the upper part of his demand curve, where he will content himself with the exploitation of his own "clientele-buyers," resulting in a large increase in the sales of our entrepreneur.³⁵

However, in spite of a realization of the extreme difficulty of the task, we will venture a few observations concerning rivals' reactions.

Dr. Paul Sweezy has argued that the seller who *raises* his price is much less likely to invite retaliation (under ordinary circumstances) than the seller who *lowers* his.³⁶ A reduction in price is calculated to attract customers away from rivals, and this causes them to slash prices also. On the other hand

³³ Mason, *op. cit.*, p. 64.

³⁴ *Op. cit.*, p. 243.

³⁵ Higgins, *op. cit.*, p. 476.

³⁶ Paul M. Sweezy, "Demand under Conditions of Oligopoly," *Journal of Political Economy*, XLVII (1939), 568-573.

if a seller raises his price, he tends to lose customers; his rivals will gratefully and amiably receive the new accretions and will not be moved thereby to alter their price policies. This is one possibility. Dr. Sweezy has not, however, made the mistake of stating this case as though it were universal. No one can study realistic descriptions of price policies such as those contained in the Temporary National Economic Committee's *Price Behavior and Business Policy* without gaining a vivid sense of the variety of price-policy structures under monopolistic competition.

It seems to the writer altogether probable that a rival might be stimulated to question his previous policy by a rise in his competitor's price. He might ask himself: "What is my rival gaining by raising his price, that I couldn't gain? If I keep my prices as they are, I get some of my rival's clientele, true; if I raise my prices, however, my own clientele will probably cleave to my product, for they cannot any more cheaply switch to my rival's product. If my rival thinks that he can gain by a higher price, knowing that he will lose sales to me, how much more may both he and I gain if both of our prices are higher!" These reflections lead obviously to a rise in the rival's price.

Further, it seems to me that there may be an area around current prevailing price which might be called the area of indifference. Suppose, in the following chart, that goods are being sold at OP. If a seller raises the price a little or depresses it a *little*, rivals may consider it too unimportant to bother about. After all, there is usually some loss attendant upon a change in price of any nature under monopolistic competition. Advertising material has been printed citing prices, and sales forces have been instructed. Hence there is a certain lethargy which militates against change. After the indifference area has been passed, however, rivals will be induced to react.

Following Dr. Sweezy, the upper limit of the "indifference area" may be higher above current price than the lower limit

is below it, somewhat like the reverse of the gold shipping points around par.³⁷

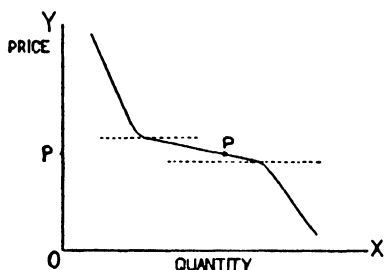


Chart 35. *Sellers' Demand Curve (Showing an Area of Indifference in Which Rivals Do Not React).*

In general we may say that rivals tend to react by moving prices in the same direction as that of an initiator of a change, although occasional cases of the opposite occur. When rivals do follow suit, then the demand of the originator of the price change becomes more inelastic than as though no reaction had occurred.³⁸ Sellers tend to react to a rival's change in

price policy when the change is a big one, when it is one which is known to the rivals, and when the industry is highly integrated. If there are a few big concerns, any change in price policy which occurs in the business is sure to be felt. If, on the other hand, there are thousands of competitors a change in the price policy of any one seller may very likely pass unnoticed by other sellers.

6. CONCLUSION

WE may well end this analysis with a caution that the sporadic, the seasonal, the cyclical, and occasional factors which permeate the workaday world and which are omitted here because of their multiplicity and unpredictability may be more important quantitatively at any one time than the factors mentioned above. As one of the economists for a large New York department store said to the writer, "Price policy

37. A. C. Whitaker, *Foreign Exchange* (New York, 1933), pp. 378-380.

38. Copeland, *op. cit.* Throughout, Professor Copeland's apportioned genus demand (drawn upon the assumption of identical prices of all rivals) is more inelastic than the species demand (drawn on the assumption that other prices than the one under consideration remain the same).

is an art and not a science." He pictured the expert in each department of merchandising as having all of the relevant factors concerning the reactions of both buyers and rivals so at his fingertips that upon receiving a piece of merchandise he could "heft it a bit and come out with \$1.29." The practical merchant is contemptuous of (and ignorant of) the reasoning of the theoretician and the sooner the latter goes out and interviews and studies the behavior of the practicing price setter, the better for economic theory. It is high time that economists, like sociologists, took to the field. Possibly such an exposure would render theoretical economists unable longer to pursue their calling. It is the writer's very definite impression that among the theoreticians now writing, it is those who know the most directly and realistically about the functioning of the business world who are the least sanguine about our being able to reduce the diversities of monopolistically competitive markets to some kind of order. Even if the effort to do so leads to chaos, however, that condition is better than an orderly state of ignorance.

CHAPTER X

SOCIAL OBJECTIVES RELATED TO CONSUMER'S DEMAND

THE CONCLUDING chapter in this book is an essay in social criticism. Thus far everything that has been said has been divorced as far as possible from considerations of social desirability or from evaluation of tools for achieving desired ends. For intellectual clarity it is of the utmost importance to distinguish these different aspects of knowledge. But in the end it is the duty and the pleasure of the scientist to indicate directions and to pass judgments.

Some of the major defects in the way our society—America today—meets its consumers' demands will be suggested. These criticisms seem to the writer to be highly integral to the foregoing material. Nothing is discussed here of which the writer has not been compellingly reminded in the development of the analytical sections of this book.

1. THE DISTRIBUTION OF THE NATIONAL INCOME

It has long been almost a truism among social scientists that the differences in incomes between consumers should be reduced and tools have been found to make a start in that direction.¹ A democratic state should concern itself with the well-being of all. It is far more important that many people should be enabled to command the cheaper items of many substitute clusters than that a few may enjoy exceedingly precious and elaborate items in those clusters. Concretely it is more conducive to social welfare that two hundred people enjoy chromium-encased, seven-jewel watches for \$20 a watch than that one person enjoys a diamond-encrusted, seventeen-jewel watch selling for \$4,000.

1. Plato, *The Dialogues of Plato* (Jowett, trans.; New York, 1893), p. 319.

In this connection the reader is advised to scrutinize carefully and ponder deeply the advertisements which appear in the *New York Times* during the Christmas shopping season. The inconsequential character of the consumption of the rich is brilliantly and concretely set forth there. *The New Yorker* magazine also contains much relevant material. In the issue of December 14, 1940, the following were cited:

- \$15 A little compass to fit the end of one's door key.
- \$100 A clock that tells the time in all parts of the world simultaneously.
- \$65 A clock with five dials—time, calendar, thermometer, barometer, and hygrometer.
- \$15 A pair of miniature riding boots, made by a regular bootmaker, to be used as book ends.

The point needs no great elaboration. A good deal of the consumption of the wealthy has little significance for social well-being, or indeed for the well-being of the wealthy. Numerically there are not many rich people in our total population, of course. Prior to the 1940 Federal income tax revision, only 5 per cent of the American people reached the moderate income levels of the Federal income tax.² But the psychological effect of the consumption of the income-tax payers, and especially the more spectacular incomes, is exceedingly baleful. Luxurious consumption has become a major goal of our culture—a goal which most people can never achieve, in all probability, and which therefore must result in a good deal of frustration.³

At the bottom of our society, tremendously numerous, are the poor. These are the people for whom each dollar counts, as it is generically spent on what amounts to the most basic items in the most vital clusters of substitutes. The goods bought by this group are indispensable, but they are very

2. Mabel Newcomer, *You Are a Taxpayer* (Poughkeepsie, 1939), p. 30.

3. Dr. Karen Horney, *The Neurotic Personality of Our Time* (New York, 1937), ch. xv.

low-grade in quality and not very accurately adjusted to the wide varieties of uses to which they perforce must be put. This is the group which by and large is estopped from enjoying the benefits of commodity specialization inherent in complementary substitution.

From the point of view of well-being, the problem of society is to increase the numbers of persons in the happy middle-income brackets. It has been indicated above that as one adds more complementary substitutes to the consumption pattern, the goods are more highly competent in the services they render, and so well-being is increased. As one gets wealthier, however, wants of a lower order of importance are attended to, and the element of substitution becomes ascendant in the complementary-substitution relationship.

2. CONSUMER INFORMATION

As was pointed out in Chapter VII, there are usually a certain number of members of any substitute cluster which simply escape the attention of the individual buyer. There is no organized way of seeing to it that people know the alternatives open to them, even though it is to the interests of each seller that his particular commodity be considered by each buyer. Sometimes it seems to be such fortuitous factors as which billboards one happens to pass, and which magazines one happens to see, which determine the goods one seriously weighs when making a choice. This is much truer of some commodities than others. In buying suitcases one cannot begin to canvass the dozens of styles and materials available; likewise handbags, hats, pencils, pillows, lamps, neckties. In buying typewriters, automobiles, or cigarettes, on the other hand, one has a fairly accurate idea of the field. Where the industry has become highly integrated and there *are* only a few brands and styles from which to select, knowledge of the possibilities is of course much more complete than in industries marked by numerous sellers. On the whole, also, it can

be said that the more costly the good, the more it pays the consumer to familiarize himself with the varieties of goods which are available. Goods below the margin of petty expenditures, for instance, it is safe to say, are very incompletely investigated by the consumer.

As far as the quality of any given alternative is concerned, the buyer is forced to rely almost wholly upon the allegations of sellers. Social criticism of advertising has been so ample that here all that is necessary is to refer to the point. Advertising generically is neither true nor false; its scientific accuracy is simply irrelevant.⁴ It is, as our institutions are now framed, at one and the same time both the major medium of information for consumers and the major method of misinformation. The consumer should be assisted by every instrumentality that can be devised to know scientific fact from sellers' fiction, for only when he is well informed can he hope to choose intelligently.

3. THE PAUCITY OF MINIMUM-COST GOODS

A LITTLE reflection will reveal that in many lines of goods the least expensive representative on the market is not of the utmost possible degree of simplicity. A few years ago there was such a thing as the Ford Model-T car, which was hundreds of dollars cheaper and a much plainer automobile than its nearest rivals.⁵ Today there is no counterpart of this classic vehicle, nor can one buy phone service on, say, a fifty-party line.⁶ A few further possibilities can be listed:

4. W. D. Moriarty, "An Appraisal of the Present Status of Advertising," *American Economic Review, Supplement*, XV (1925), 23-35.

5. The extreme cheapness of the old Model-T Ford relative to the other automobiles then produced was doubtless only in part to be accounted for by the relative simplicity of the product. Ford was the first to introduce mass-production techniques, and had a larger market which enabled him to use low-cost methods not open to his rivals.

6. There has recently been some effort particularly in the refrigeration and washing-machine industries to introduce so-called "stripped" lines. Temporary National Economic Committee, *Price Behavior and Business Policy*, Monograph No. 1 (Washington, 1940), pp. 110, 142.

<i>commodity</i>	<i>suggested new low-cost item</i>
1. newspaper	A one-cent newspaper of only a few pages (such as the Coty newspaper in France) covering in abbreviated form only the news highlights.
2. books	Editions of current best sellers in cheap paper and with light paper covers.
3. cigarettes	A plain cigarette to be sold in bulk in grocery stores at so much per pound.
4. radio	A radio without an outer case, designed to be kept in a desk or bureau drawer.
5. bridges	A classification of bridge tolls so that one can pass at half fare at off-peak times.

If the reader will try his hand at expanding this list he will, undoubtedly, concede that the first reason that can be distinguished for the lack of rock-bottom alternatives in the cost hierarchy is that it takes energy to conceive of them. Great potentialities of social service, and indeed great profits in some cases, await the business experimentalist.⁷ Electric-light companies, under pressure from the Federal Government, in certain sections have been trying new low rates and to their surprise have found them amazingly lucrative. Klein's dress shop on Union Square, New York, and the ubiquitous Automat are examples of how richly social experimentation at the bottom of the cost ladder may pay. To venture a prediction, there are still great fortunes to be made in many commodities now considered rather completely covered by our production facilities.

Closely allied to the foregoing consideration of the uninventive and channelized nature of our thinking processes (not excepting the American businessman) is the fact that, in most enterprises, the risk of going off the beaten track is very great. If one is a capitalist thinking of entering a busi-

7. Morris A. Copeland, "Competing Products and Monopolistic Competition," *Quarterly Journal of Economics*, LV (1940), 26.

ness, and there is abundant evidence that one *could* imitate existing products in the field, with perhaps minor changes, that is a far surer thing than to try to penetrate the dangerous area beneath the existing commodity structure. The advertising campaigns of existing brands create a market and increase the sales of all competitors, no matter how small or unknown, as long as they are *like* their large neighbors. New sellers—to use a familiar figure in the field of price policy—love to huddle under the umbrella of successful and established firms. The heavier the cost of entering any business and the larger the losses to be expected in the formative years, the slower the entrepreneur will be in trying commodity variation of a radical nature. New and strange businesses may spring up, based on personal service, overnight—the airing of dogs and the washing of baby clothes; but new departures in automobiles and typewriters, cigarettes and radios are few and far between.

Another consideration leading to the same conclusion is that a business actually is likely to sell more if it is *just* on the edge of the field than if it is remote.⁸ After the Democratic platform is out, the problem of the Republicans is not to divine the average opinion of the Republican voters—to do so would be to forego unnecessarily independent votes; rather it is to write a platform *just* to the right of the Democratic one. The theory of location of industry affords another parallel in this matter. If there is a single plant in a field—the field symbolized by a straight line—we may suppose that single plant A will locate in the middle:

B'

AB

B''

If a second plant B is added, it will settle just to the right or left of A, in order to maximize its market, assuming that distance is the conclusive factor in sales. However, if consumers' convenience was the determining element, and firm A is con-

8. Harold Hotelling, "Stability in Competition," *Economic Journal*, XXXIX (1929), 41-57.

sidered fixed, firm B should locate at one sixth of the line from the ends at B' or B''. Hence if an automobile manufacturer, for example, contemplated entering the low-priced field, he would be much more likely to devise a product just cheaper than existing cars than to place his commodity \$200 or \$300 below the field. The former is less risky and in either case he enlists the attention of all prospective buyers of cheap cars.

In certain commodities, and very rarely, public policy will itself intervene and terminate an inexpensive mutation. Thus New York City residents until 1933 were able to purchase milk in bulk, but the practice was discontinued because of the danger of unhealthfulness.⁹ Sometimes, undoubtedly, pressure of an organized nature from within the trade prevents the entry of rivals at the bottom of the cost ladder. It has recently been suggested, for instance, that the American public is unable to purchase rock-bottom plumbing fixtures because of the deliberate intervention of the industry.¹⁰ Various kinds of "cheap" medical service have certainly not been looked upon with enthusiasm by the organized medical profession. It is easy to see why a trade association, acting in the interests of established producers, might look with especial disapproval upon the entry of a business aiming to undercut the field.¹¹ How important this kind of pressure has in fact been in limiting low-cost experimentation has not been established.

Perhaps as important a factor as any of these is that the American culture is shot through with considerations of prestige. Many of us are ashamed to be seen smoking a cigarette known to be well below the standard brands in price. The

9. Unpublished letter in the writer's possession from Jerome Trichter, Acting Director, Bureau of Food and Drugs, Department of Health, City of New York, dated October 24, 1940.

10. Temporary National Economic Committee, *op. cit.*, pp. 103-105.

11. Dr. Thorp holds that new items which are cheap have an unsettling effect upon industry. Willard L. Thorp, "Price Theories and Market Realities," *American Economic Review, Supplement*, XXVI (1936), 16.

concept of "standard brands" is, among other things, an implicit recognition of a habitual cost level. Who of us has escaped the feeling that people who rode around in the old Model-T's were somehow "cheap" people? It is a pity that we feel this way, but we do.

On the demand side, finally, we must observe that the consumer has from long custom, and from sheer bewilderment at the array of selling appeals, learned to associate quality with price. Macy's experience with cold cream is exceedingly illuminating in this connection. The store put out a cream which it believed to be the technical equivalent of \$1 jars of well-known brands and offered it for 49¢. Demand was unresponsive. When the price was raised successively to 54¢ and 69¢ sales increased very substantially.¹² This fact involves no violation of the "law of demand" as might at first sight appear. The low price caused a marked shifting of the demand schedule. If a new low-priced car were put upon the market, might we not wonder what was wrong with it? These reactions in the buyers' mind powerfully deter sellers from trespassing far into the troubled and unknown waters which surround his commodity cluster. It is unfortunate that the consumer knows enough economics to suspect that "cost of production determines price." It will take a major educational campaign to teach him rather that in many instances cheaper goods, with a smaller mark-up and high turnover, may very well be of higher quality than more expensive alternatives. "A little knowledge is a dangerous thing."

Let the nature of this criticism now be reviewed. If people *wish* to buy their cigarettes wrapped in three coverings, their perfumes in bottles costing more than the perfume, their taxicab rides in cabs with glass sky-view windows and radios, that is their right and (within limits) no criticism is made of such consumers. What is stressed here, however, is the desira-

12. Unpublished letter in the writer's possession from Q. Forrest Walker, economist for Macy & Co. Not all of these facts are matters of record, but the situation is presented here as recalled by Mr. Walker.

bility that it be possible for persons who want to buy the minimum service, unadulterated and unadorned, to do so. Consumers have a wide range of intensity of desire for different goods, and they have a wide range of purchasing power. Paralleling these there should be a wide range of qualitatively different goods at a wide range of prices, from which to choose. This is true throughout the entire cost hierarchy, but it is of special social concern at the bottom of the ladder.

In the realm of luxury goods there is likewise a tendency for the varieties available to be few and far between. There may be only a handful of \$5,000 diamond watches available in the typical upper-class jewelry store. This is of slight social concern, for persons interested in such articles are quite capable of buying on order. As has been indicated above, social policy should move toward the elimination of incomes which are trifled away on superluxuries. The major problem of commodity composition is in the bottom and not the top of the cost hierarchy: how can we produce more minimum-cost representatives of the clusters of substitutes, together with the social approval necessary for their utilization?

4. EXCESSIVE DUPLICATION AND INSUFFICIENT INNOVATION IN THE MIDDLE-COST BRACKETS

THE distribution of items within a cluster of substitutes, in the middle-cost area, is dictated by considerations remote from the best interests of consumers. Take cigarettes, for instance. Let us say for illustration that there are the following brands in the field:

- A short-length, with no special features
- B short-length, mentholated
- C short-length, cork tipped
- D long-length, with no special features

A new firm is attracted to the industry and decides to start production. It will produce the commodity which it thinks

will yield the greatest profit. What shall its physical features be? Very often, I believe, a concern will elect merely to imitate closely the features of a very successful, existing brand. The explanation of this behavior involves some of the same factors mentioned in the last section and some distinctive factors.

In the first place duplication occurs from sheer lack of imagination. In the cigarette field I have often wondered why it is that no American imitation of the Russian cigarette has been developed—a cigarette with the fine flavor of most American brands, but with a cardboard cigarette holder extending an inch or two at one end, fashioned into the cigarette. This device means a cooler smoke, less nicotine (judging from an examination of the inside of the holders), and no waste butts. Yet one cigarette with a filter end and another which incorporates the holder in the habitual, short cigarette are as near as we have come to these desirable qualities.

In most commodity clusters, by taking thought one can perceive numerous rearrangements of existing qualitative differences, which are not offered. Thus in the automobile field convertibles are expensive not only because the features which make the cars convertible are expensive but because these elements have been rigidly coupled with *de luxe* trimmings. Now I submit that many of the people who like to have the wind and the sun in their faces are precisely the kind who would prefer to have equipment of Spartan simplicity. This combination of elements is simply not made by the industry, however. Since the people able to afford convertibles are *able* to afford *de luxe* trimmings, they are forced to do so. The more critically one looks at the ladders of substitutes the more one perceives that there are, indeed, many rungs missing.

The risk of introducing new elements, or of recombining accepted elements in a new pattern, is great, and with large sums of money at stake there is the strongest kind of tendency "not to rock the boat." If a firm has a tremendous

clientele and if one thinks one can poach on the field, there is a much stronger inclination to do so than to try something new. Especially is this true where costs of entry and experiment are high. The problem of the businessman is to maximize profits and it is quite possible that he may be able, by a reasonably effective sales appeal, to win away more customers from some of the concerns in the field than he might discover in some of the untraveled interstices.

Customers, as we have had occasion to point out, are creatures of habit. This fact constantly militates against experiment. Perhaps the strongest single factor which would jeopardize the success of the Russian-style cigarette described above is that, to American eyes, it *looks* effete. An attitude of this type might well require millions of dollars' worth of publicity to break down.

Finally it might perhaps be thought that sellers would be deterred from duplication by fear of the retaliation of the firms whose products they are imitating. Such is not likely to be the case, however. Pepsi-Cola enters the field and directly challenges Coca-Cola by putting out a competitive product, in larger size, for the same price and by an intensive advertising campaign. Yet Coca-Cola sales continue to increase.¹³ Certainly there have been no signs of price cutting, qualitative changes, or retaliatory advertising by the older concern. The advertising campaign of promotional nature put on by a new product tends to be institutional advertising for all similar goods. Furthermore, if two commodities are practically identical and a situation of almost pure duopoly emerges, there is a maximum probability of price collusion or of price policies independently developing which take full account of the rival's reactions. This of course leads to the same effect: no price cutting need be feared.¹⁴ It is the entry

13. Unpublished letter to the author from Ralph Hayes, vice-president of the Coca-Cola Co., dated November 12, 1940. The Coca-Cola Co. is strongly resentful of the close imitation of its name and trademark which has occurred in the soft-drink industry, and frequent lawsuits have been instituted.

14. Hotelling, *op. cit.*, p. 54, has written that "when a new merchant or

of a product sufficiently new in form so that it draws from different sellers in unpredictable ways which is most likely to lead to price wars. I am not trying to suggest that the established sellers of a good view with equanimity the entry of a rival; they do not. But I believe that in a good many respects sellers in a field would prefer to see a competitor, if they must have one, follow existing patterns than pursue a revolutionary course.

The evil of the tendency toward duplication instead of experimentation is a simple one. It means that consumers are not offered the range of choice, qualitatively, which they might otherwise have. The more numerous the varieties of a good, the greater the possibility of a satisfactory selection. This is true for any income level. The higher the income, the more complementary substitutes can be commanded, and the more accurately each good is specialized to its task. At the same time, given any income, the more different kinds of goods there are in a cluster of substitutes the more competent the goods chosen can be, whether one or a number of representatives of the cluster are selected.

Multiplication of the varieties of a good, however, is not without cost. Neither is duplication. Both are aspects of the same problem: how many separate items in a cluster of substitutes can society afford? That problem will now be considered.

5. EXCESSIVE PRODUCT DIFFERENTIATION

In the course of Chapter VIII there was no occasion to remark that were we able to get cheap unhygienic water for the low-grade uses, we would undoubtedly use it. Why does not the

manufacturer sets up shop he must not produce something exactly like what is already on the market or he will risk a price war. . . . But there is an incentive to make the new product very much like the old, applying some slight change which will seem an improvement to as many buyers as possible without ever going far in this direction." In light of the development of the theory of price setting by sellers aware of each other's reactions since Mr. Hotelling's article, I believe that there is even less danger of price wars when goods are identical than when they are slightly different.

municipality supply us with a dual water system—or, for that matter, multiple water systems to accord with the specifications of purity required for various purposes? To ask the question is to answer it. The cost of heavy duplicate mains, to say nothing of the inconvenience to the public, would not warrant it.

It may be that in many lines we already have more product differentiation than we can afford.¹⁵ Let us approach the problem by supposing that we are an economic planning board. Let us say that we have a population of several hundred thousand people of given income, for whom we are attempting to provide hats. We might estimate that in the course of a year we would be able to dispose of 1,000,000 hats in the price range of \$2–\$3 per hat. One of the most crucial problems before us would be: will it cost more to produce the million hats if only one model is provided, or 100, 1,000, 10,000 or 100,000? What is the nature of the law of costs as the amount of product differentiation is increased, assuming the number of items in the total production to remain the same?

The answer depends upon the behavior of the cost curves for the various factors of production involved. It seems to me that almost all of the costs of production would be of the increasing average cost variety, as numbers of models are increased. The more varieties are produced, the more complex management problems would be, the greater the designing costs per hat, the more diversified the advertising materials which would have to be printed. The direct labor might at first thought be supposed not to differ very greatly, but if only one model were put out workers would be able to attain a high level of dexterity because of repetition. For example, when sleeves of women's cotton dresses come in large lots, homogeneous in size, material, and in the process to be

15. Donald H. Wallace, "Monopolistic Competition and Public Policy," *American Economic Review, Supplement*, XXVI (1936), 81; Walter Rautenstrauch, *The Economics of Business Enterprise* (New York, 1939), p. 18.

done, a stitcher can produce far more than when the bundles come in half-dozen lots. When the latter is the case, constant shifts of thread are necessary, frequent trips to the counter to obtain and return bundles, interruptions for instructions, pauses for record keeping of quantities done, and shifts of actual process. There are psychic disadvantages to the worker resulting from monotony, it is true; but in terms of actual achievement, there is no doubt that repetitious work is enormously productive.

The only place, in all probability, where decreasing average costs would be encountered would be in connection with factors limited by nature, when substantial quantities (relative to the total demand for such factors) were involved, and further, when the use of the factor was not essential to the making of the good in *all* of its subvarieties. As an example of all these prerequisites, if only one hat model were to be put out and a "beaver felt" was selected, and the amount of beaver felt was limited by nature, increasing costs would be encountered if all hats were made from this one material. If only one vase were to be offered for sale and that one involved etching, society might experience high costs because of a rise in the price of that rare factor—etchers' skilled labor. Alto-

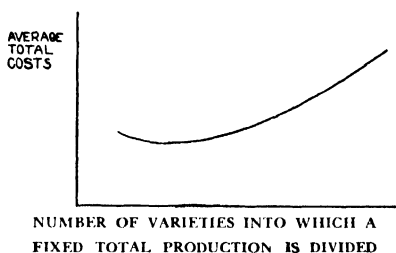


Chart 36. *The Cost of Product Differentiation.*

gether this possible cause of decreasing costs could probably be avoided, operates only at the extreme, and is so exceptional in nature that we may for practical purposes ignore it. The general law of costs for goods as product differentiation is increased is that of increasing costs, as is illustrated in

the accompanying diagram.

If the above analysis is correct, then lowest average costs would be obtained with at most a few models of every line of

goods.¹⁶ However, social policy would of course take into account also less material factors—the monotony endured by labor; our desire for variety in consumption goods, and the advantages of complementary substitution.

Even though repetitious work is enormously productive, it might be wise so to arrange industrial processes that the individual laborer is enabled to perform his work with greater psychic health. As things are now arranged remuneration in many lines of work is on a piecework basis and doubtless if a vote were taken in, say, the clothing industry, workers would enthusiastically endorse the single-model idea. The question should not be put to them in this form. It is of social concern if the employees in industry emerge drained of energy, and psychically debilitated after the day's work. The psychic costs of our goods—and they are heavy costs in American society today—are simply not counted. Possibly workers should be rotated in a number of the processes found in the typical plant, at the cost of some efficiency, or a variety of sizes and types of models should be retained at a higher cost per unit. The most likely solution to the problem, perhaps, would be the submission of labor to extreme monotony, with a shorter workday or week to compensate for it. A study of the psychic effect of these alternatives upon the worker might appropriately be made by the medical profession. In any event the problem of monotony must be faced, and might quite possibly lead to the retention of more variety in goods produced than would be indicated by the lowest average-cost point.

A society in which all of the women possessed but one style of hat would leave, from the point of view of many, something to be desired. Variety and individualization are certainly values of our society and we would probably be willing to pay a good deal, if necessary, to retain them. Most house-builders, it is safe to say, would be horrified if we were to

16. A. R. Burns, "The Organization of Industry and the Theory of Prices," *Journal of Political Economy*, XLV (1937), 676. The need for an analysis of the cost of style is pointed out here, but little concrete help is given.

present them with only a dozen different home models from which to select. If only a small number of homes were to be produced, far more of the house fixtures—to say nothing of the possibilities of prefabrication—would be susceptible to mass production, with resulting economies. We pay highly indeed for our insistence upon individuality in this field. In the writer's opinion individuality is a far overrated virtue, and one which is strongly bound to considerations of conspicuous consumption. We apply it irrationally, in any event—insisting upon it in some fields and ignoring it in others. In spite of our very general demand for handicraft treatment of houses, it does not seem to repress our personalities in the least to ride about in automobiles produced by the millions. The sight of another car identical with our own is likely only to evoke a slight glow of admiration for the other's taste. Men's clothes, in contrast to women's, are said to be in "the best taste" when indistinguishable from other men's clothes.

To do justice to style, it should be pointed out here that it is undoubtedly a force making for fewer models than might otherwise be the case. One year "style" dictates that women wear bustles, another that dresses have side drapes. This means that the possible range of variation at any given time is limited, and probably fewer items are produced than would be the case were product variation not delimited in this way. Burns writes: "Where buyers like change, style sometimes limits the range of choice . . . by prescribing limits on the subvarieties of products sold at any given time."¹⁷

A second factor which would mitigate reduction to a minimum of the varieties produced is that society gains positive advantages from complementary substitution. As has been indicated at length above, the more goods we purchase in any given line, the more specialized they tend to be in the services which they are able to render. This specialization raises the quality of the services of goods generally. A variety of goods being enjoyed by a variety of people is colorful and pleasant

17. *Ibid.*, p. 676.

to our sight. Much more important from the point of view of well-being are the psychic gains which accrue when a variety of goods is enjoyed by a single individual.

A wise board of planners would, then, be up against the necessity of effecting a compromise between the desire for low cost and the desire for variety of style. This would have to be done with a good deal of public discussion, for the kind of *direct* comparisons which an individual occasionally makes can hardly be achieved in that form by a whole society.¹⁸ Leadership in the formation of taste and custom concerning style would probably be indispensable for, according to the view of wants set forth in Chapter IV, people's entire attitude toward variety and style in goods is itself culturally determined, and therefore mutable.

Under private enterprise, firms enter and withdraw from business, pay their costs and fix their prices without consideration for the nature of the total costs of obtaining a given quantity of goods. The curve drawn above is one which possesses actuality, for it rests upon the nature of the actual costs of the factors of production as used by the businessman, yet it is a cost analysis ordinarily neither known to nor considered by the individual enterprise. The cost increase which is associated with a multiplication of models appears to the individual firm largely in the guise of external diseconomies associated with conditions in his industry, and entirely out of his control. The costs characteristic of his industry have no more tendency not to be covered by price than as though the costs were at a level more favorable to the consumer.

The factors which *are* considered by a firm when attempting to decide how many subvarieties to produce are often quite unrelated to the abovementioned elements. This problem, looked at from the point of view of the private enter-

18. Nicholas Kaldor points out that consumers are never in a position to choose between ". . . either a smaller range of commodities at lower prices or a larger range at higher prices." "Market Imperfections and Excess Capacity," *Economica*, II (1935), 50. See also Chamberlin, *op. cit.*, p. 94.

prise, has been interestingly discussed recently by Professor Copeland. Particularly he calls attention to the fact that price discrimination encourages product diversification. "Price discrimination may make it profitable for Seller *B* to enter an opening too small to make the establishment of a new firm profitable, provided the new line of goods covers its direct cost."¹⁹ As a firm adds new varieties to its sales line, Copeland stresses that *sales* costs would increase whereas, as the most profitable openings are exploited, the marginal net revenue would decline. Also, general rising diseconomies of large-scale production and production diseconomies of *complex* production (because of multiplicity of models within the single concern) would arise, in all probability, limiting the number of separate products a firm would tend to put out. However, there is no ground for the optimistic view that this limit would coincide with lowest average social costs. As price competition declines, the competitive energies of our industrialists seem to be redirected in the form of quality competition with the result of much unnecessary differentiation among products.²⁰ A. R. Burns claims that changes in quality are sometimes made solely for the purpose of providing salesmen with talking points.²¹ As Mr. Wallace has stated, "There is, of course, no more reason to expect that the extent of variation which comes into existence is automatically restricted by competition to the ideal amount, than there is to suppose that competition never permits combination to exceed a size which is just right for maximum efficiency. It is quite possible that the aggregate of monopolistic wastes in what would formerly have been called the general body of competitive industries greatly exceeds the wastes of trustified industries."²² This is, I think, an illuminating point of view for it indicates

19. Copeland, *op. cit.*, p. 27.

20. Fred E. Clark, "An Appraisal of Certain Criticisms of Advertising," *American Economic Review, Supplement*, XV (1925), 5-13.

21. A. R. Burns, *op. cit.*, p. 675.

22. Wallace, *op. cit.*, p. 81.

one of the great advantages of monopoly under capitalistic free enterprise. An industry which is highly monopolistic will find many of the costs subject to its control which are presented to it as external data under competition. The cost curve drawn on Chart 36, which would be taken account of by a board of planners, would also be relevant to the business policy of a private monopolist and in the interests of competing effectively with other kinds of goods for the consumer's dollar he would tend to reduce the number of differentiated products to something like the point of maximum social advantage.

It is probably one of the great chronic wastes of our society that we have in many lines of production an excess of product differentiation. It is a waste which has received far too little attention from social critics, as it is one which is not readily revealed statistically. It could persist in very high degree, it should be stressed, without giving rise to large profits or to excess capacity or to glutted markets. Each firm of a hundred firms in a line of business, for instance, could be making normal profits, each fully utilized, and yet the whole level of costs might be far higher than would be the case were there but ten firms. Waste has too long been thought of in terms of excess capacity—which is, fundamentally, a short-run concept. Here the allusion is to chronic, substantial, long-run diseconomies of excessive product differentiation. The multiplication of items in our clusters of substitutes is irrational and fortuitous in the extreme under present conditions.

This is not the place to attempt inductive verification of the above analysis, were it possible to do so. Two indications will be cited of a semi-inductive nature, however. In the field of public utilities it has long been the practice to issue "certificates of public convenience and necessity" to attest the social need of extra facilities. Without this approval new public utilities or extensions of old ones cannot be constructed in our more advanced jurisdictions. This,

inferentially, would not be a part of our law were there no tendency for excessive product differentiation in this field.

A second, rather significant development is the work of the Commercial Standards section of the United States Bureau of Standards.²³ During the World War, when efficiency was of paramount importance, the Conservation Division of the War Industries Board achieved a good deal of simplification of styles and models put out by industrialists. After the war, with the coming of depression, a reversion to diversity again became marked. At this time the Federated American Engineering Societies, with Herbert Hoover as president, made a survey of six important industries and reported sensational wastes. This study stimulated the setting up of Government-sponsored simplification campaigns which were prosecuted vigorously by Mr. Hoover as Secretary of Commerce.²⁴ The Department of Commerce, especially during the years from 1920 to 1930, made surveys and called for suggestions concerning models from businessmen in an industry, drew up a set of tentative commodity specifications, and then resubmitted them to the industry. When a substantial part of the industry indicated approval, the Department issued a purely advisory "Simplified Practice Recommendation." By this means, for instance, the paving-brick industry voluntarily reduced the styles of paving brick from 64 to 4, the wire industry cut down the types of woven-wire fences from 552 to 69. The fact that business was willing voluntarily to adopt the recommendations in the great majority of cases suggests that the reduction does not put any particular seller at a competitive disadvantage. It is to be noted that the program has never been applied to consumption goods where competition on the basis of style is more marked.

23. Ray M. Hudson, "Organized Effort in Simplification," *Annals of the American Academy of Political and Social Science*, CXXXVII (1928), 1-8. This entire volume is devoted to "Standards in Industry" and contains much useful material on this subject. In 1941, an investigation of the possibilities of simplification is being carried on by the Consumer Division of OPACS.

24. A. R. Burns, *The Decline of Competition* (New York, 1936), p. 68.

At least in the cases of producers' and industrial goods it would appear to be largely a matter of *indifference* to private business if the number of styles and subtypes of goods is reduced, and the reduction is bound to result in substantial external economies for lines of goods considered as a whole. And it is the external economies which are *most* likely to be passed on to the consuming public.

GLOSSARY OF IMPORTANT OR UNFAMILIAR TERMS AS USED IN THIS WORK

- area of indifference*: the price range in which a seller can raise or lower his price without occasioning reactions on the part of his rivals. See pp. 175-176
- cluster of substitutes*: a group of commodities which are substitutes in a sufficient number of consumers' estimations so that prices (under perfect competition) and policies (under imperfect competition) are more closely interdependent than are the great mass of commodities. See pp. 76-77
- commitment*: an allocation of current income which is made without free choice because of a binding decision in the past. See pp. 98-99
- commodity*: a group of saleable objects regarded as homogeneous by all parties in the market. See chap. V
- commodity specialization*: the combining of substitutes in an individual's consumption pattern in order that each commodity may perform what the individual regards as differentiated services. (Synonym: want division.) See pp. 136 ff.
- complementary goods*: two or more commodities for which a consumer would pay more if they were to be used in combination than he would pay if they were to be used separately. See p. 130
- complementary substitutes*: two or more members of a cluster of substitutes for which a consumer would pay more if they were to be used in combination than he would pay if they were to be used separately. See p. 134
- demand differentiation*: the granting of different prices, terms or conditions of sale to different buyers of the same commodity. (Synonym: market parcellation; discount structure.) See pp. 90-91
- income period*: the span of time between one payday and the next. See p. 100 n.13
- industry*: the producers of a cluster of substitutes; a group of sellers who must take account of each other as rivals or who find that their sales are particularly affected by changes in consumer purchases of the others' goods. See pp. 79-80
- interval*: in a cost or utility hierarchy, the span between the commodity which is next lowest and next highest to any particular commodity. See p. 122

long-run demand: demand during a period of time long enough so that rates of consumption can be revised and income can expand or contract. See pp. 97-98

monopolistic competition: a market situation in an industry in which the sellers' demand schedules are less than perfectly elastic as a result of the paucity of sellers and the differentiation of the commodities in the industry. (Synonym: imperfect competition.) See p. 108

multiple goods: a group of identical commodities which are regarded by the consumer as a single good. See p. 154

petty: regarded by a consumer as of such slight importance that he makes no effort to purchase with deliberation. See p. 100

pure competition: a market situation in an industry in which the sellers' demand schedules are perfectly elastic as a result of the multiplicity of sellers and the homogeneity of the commodity. (Synonym: perfect competition.) See p. 108

short-run demand: demand during a period of time so short that income and rates of consumption do not change. See p. 97

substitutes: two or more commodities for which a consumer would pay less if they were to be used in combination than he would pay if they were to be used separately. See pp. 75 ff.

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