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EXCHANGE

What is exchange?

Does it take two people to make an exchange? Not when one and the same person has before him a choice of this or that. If he takes *this*, he will in effect be giving *that* in exchange for it. He will be giving up one thing, in order to have another. Exchange is choice, and choice is the act of a particular person. What he chooses may be such that he needs another person's agreement, another person's choice. But we can look at the action of exchange through the eyes of one person at a time. It involves preference and sacrifice. It is deliberate. It gives advantage.

How much advantage does exchange give? Are not things which can be exchanged for each other by publicly offering one of them for sale in a market, and publicly buying the other for the same price in the market, equal in price? Are they not then exchanged without gain or loss? But does it follow that price measures preference? Gain will be in terms of preference, for a person is only a gainer if he thinks himself a gainer. These questions can all be disentangled and made to yield a coherent scheme of ideas.

How can I measure the strength of a person's wish to have a particular thing, an ounce of tea or of butter? By seeing how much of something else he will exchange for it. This is the only way. And if this is the only *operation for measuring* the strength of the wish, this also is the only *meaning* of 'the strength of the wish'. The length or the mass of, say, a brick remains virtually constant in all ordinary circumstances. But the strength of the wish for an ounce of tea does not remain constant. It varies with circumstance. The measurement we get by seeing how

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much of something else he will give up varies according to whose wish we measure, what other kind of thing is to be exchanged, what other things he is already provided with and how well or badly provided, and in especial, how well or badly he is *already* provided with tea.

What does *provided with* mean? If I have an ounce of tea, I am provided with tea, for today or this week, but not for this month or year. *Supply* cannot be measured just in ounces or litres. It needs also a reference to an interval of time. 'Four ounces per week' is a supply. Five ounces per week is more desirable, the object of a stronger wish, than four ounces. But how much stronger is this wish? What *extra* quantity of butter would a person give up in order to have five ounces of tea, instead of four? Would he offer the same extra quantity of butter, in exchange for one extra ounce of tea, no matter whether the *extra one ounce* of tea was the difference between four ounces per week and five ounces, or the difference between sixteen ounces per week and seventeen?

When he is very comfortably off for tea, with an assured supply of sixteen ounces a week, what difference to his comfort does an extra ounce make? Though it is the *same* extra quantity of tea, will it be worth the sacrifice of as much extra butter as if the supply of tea were meagre? The strength of the wish for a larger supply seems to depend on the size of the existing supply.

What is a market?

How does a person choose one course of action out of many which suggest themselves? To choose a particular course is to reject all the others. How can we classify the elements of his situation, which push him towards one course rather than another? He has *interests*, purposes which he desires to achieve. Their character is influenced or settled by his tastes, his qualities of mind inborn or born of experience and education. How far can he attain his desires? This depends upon his circumstances. Every element of his situation, which we do not classify as part of his tastes, we classify as part of his circumstances. Within

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that latter comprehensive class, what kinds of thing are included?

First, his endowments. These comprise his capacities of brain and hands, and his material possessions. Secondly, the whole scheme of things, both in the general sense of what the world is and how it works, and in the more particular sense of the immediate state of that world. Under this second heading there is a sub-class of special interest. It consists of the intended actions of other people. For as in a game of cricket, the result of a batsman's stroke depends on the actions of the fielders, so in life at large my actions, your actions, have their sequel shaped by what other people do. Choice of conduct, then, seems to arise from the confrontation of a man's tastes and his circumstances. But this leaves out a vital matter. He cannot adapt his conduct to make best use of his circumstances, unless he knows what those circumstances are. How can he know?

And in especial, how can he know what actions of other people will occur at the same time as his own action is eliciting its consequences, its sequel? For some at least of those actions of others are being chosen now, at the moment when he is choosing his own action. And since the 'he' and 'him' of whom we speak is the general member of society, anybody and everybody, how can we suppose that *everybody* knows what the others are choosing before he makes his own choice? It is this enigma that is solved, for a particular kind of action, by the market. The market solves the paradox of simultaneous inter-dependent choices, when those choices are concerned with *exchange*.

General pre-reconciliation of actions. General equilibrium

The answer to my problem, what action of mine will best serve my interests, best satisfy my desires (and those desires may be selfish or unselfish) depends upon the answer to questions such as: What is your action going to be? The answer to my problem will be a , b or c , according as your action is going to be x , y or z . I can write down a list of different actions (for example, different quantities of my farm-crop that I would put on the market),

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one for each of your possible actions (for example, different prices per bushel you would offer for my crop). If each member of a society (a village or a nation) makes such a list of conditional actions, and all these lists are collected and compared, it may be possible to find out one action for each person, such that this would be his preferred action provided that each other person performed some stated action similarly prescribed for him. This *pre-reconciliation of conditional intentions* solves the paradox of rational inter-dependent choice, the problem how each person can choose his action in the light of *reason fully informed*, the information having to include the choices made by others at the same time as his. Such pre-reconciliation is what the market, in a rough practical way, achieves. When the market works perfectly and brings the totals of all quantities offered and demanded into balance in this way, the result is called a *General Equilibrium*.

How does the market pre-reconcile choices?

When the actions to be chosen are those of exchanging some quantities of some goods for some quantities of others, the chooser does not need to know the itemized lists of conditional intentions of all other people, but only the total effect of these offers. How much can I get of this good and that, in exchange for this or that quantity of the good which I can offer? is what he needs to know. These rates of exchange, or prices, are summaries of the effect of the pre-dispositions of the people composing the market. Thus the market has three duties. It must gather information, distil it into knowledge, and deliver that knowledge to every person in the market. These three duties are all done at one stroke, by means of one notion, that of *price* expressed in terms of a single good. Each good on the market is assigned a price in terms of one and the same good for all of them. In a perfect market, each good has only one such price at any one moment, and a person will not be able to get more beer for his butter by exchanging it first into cloth and then the cloth into beer. If he could get a better price by round-about

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exchanges, this would mean that pre-reconciliation, the assignment to every person of his best action, given a similar best for everyone else, would not have been carried through.

How does the market discover the right prices?

A price is not right, if it induces more offers to buy than to sell, or the opposite. For in such a case, there will be *unsatisfied* choosers of action. Some people will be led to choose actions which are not available to them. 'Wrong' prices mean that the market has failed in its duty of gathering information and distilling it into knowledge. If a price is 'too low' it will seem attractive to 'too many' would-be buyers. They will try to buy more than sellers are offering. There will be a gap between the higher price they would pay for this too-small offered quantity, and the price at which it is apparently offered. Some of them will march into this gap, offering somewhat higher prices than the ostensible market price. The market price itself is thus raised. And this raised price will induce some larger offers to sell than heretofore. The price will be 'right' when it equalizes the total quantity offered of the good, and the total quantity demanded. For then it will be allotting to each person such actions, and only such actions, as he can in fact take.

Is there bound to be a solution?

The notion of an equilibrium is the notion of a solution, a solution to the problem: Can individuals choose rationally their inter-active conduct? By rationally we mean here 'In such a way that each can rigorously demonstrate his chosen course of conduct to be the one, of all those available, that goes furthest in achieving his aims.' 'Those available' will be a list constrained (limited) by the condition that every member of the society, the market, has equal freedom and equal relevant knowledge of his own circumstances. In speaking of *inter-active* conduct we remind ourselves that every person's choice of his own conduct contributes to shaping the circumstances of every

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other person's choice of conduct. Is there, then, bound to be an equilibrium? It is plain that in the most general setting of this question the answer must be no. Obstacles from many sources could, in general, block the existence (the logical possibility) of a solution. But we can list those restrictive assumptions, those limitations of generalness, that will give the best chance of the existence of a solution.

One of these conditions is the operation of the principle: The larger your supply of a good, the less acute (in given circumstances) will be your need to increase it. 'Acuteness of need', 'strength of desire' we have decided to measure by the quantity of one good that would be surrendered in exchange for a *given extra* quantity of another. The quantity of *A* which must be surrendered for an extra unit of *B* is the market price of *B* in terms of *A*. The quantity of *A* which a person is *willing* to surrender for an extra unit of *B* need not be the same as the market price. Suppose it is greater? Then he will be the gainer by making the exchange. When he has thus increased his supply of *B* by one unit, his need for a further extra unit of *B* will, by our supposition, be less acute. In the course of further such exchanges, the stage will be reached when the quantity of *A* which he is *willing* to give up, and the quantity of *A* which it is *necessary* to give up, to get an extra unit of *B*, are *equal*. That is the point for him to stop the process, the process of increasing his supply of *B* by reducing his supply of *A*.

When he, and every other member of the society, or the market, has thus considered every good in his list and effected an all-round adjustment, the General Equilibrium will have been achieved. It will have been achieved for exchanges of goods on one particular occasion. But life does not consist of one particular occasion, we look forward to others. And this is the greatest of all obstacles to a meaningful General Equilibrium.

If we confine ourselves to 'one occasion', we are not involved with the question whether supply is a stock, so-and-so many barrels, tons, *et cetera*, or a flow, so-and-so many barrels *per day* or tons *per year*. But if we insist that supply is a flow, this is

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because we look forward. We have a practical conscience, which compels us to think of dates which are still remote. Or we have a restless imagination, which recognizes its freedom to fill the future. But if such deferred dates are real to us, so also must be the notion of choices which will be made at those dates. And deferred choices cannot be pre-reconciled, the notion of *anticipating a choice* is a contradiction in terms. It follows that, in the ultimate analysis, strict rationality is not compatible with thoughts of tomorrow.

When all members of the market have so adjusted amongst themselves the quantities per week of the goods that each gets from other people, and the quantities per week of other goods that he gives in exchange to other people, that the ratios of exchange which he is willing to adopt for *small extra* quantities given up or received are the same as those which the market prescribes, then it follows that all members of the market have become *unanimous* in accepting these market prices as the right ones. Public (that is, market) prices thus seem to be not merely personal judgements made by individuals but also objective facts external to their thoughts, facts as unarguable as the weather. And thus it might seem that market prices make possible those calculations which the economist is constantly engaging in, the measuring of the size, in some useful sense, of vast, inexpressibly various collections of things, the things which make up the year's general 'national product', or the amount of goods-in-general which society uses up in a year, and so on. For if everything has a publicly agreed and established market price, the values of all the different kinds of thing, according to their price and quantity, can be worked out and added up. And does not price express and measure desirability, usefulness?

Does market price, then, express usefulness, the very kind of thing that the economist is interested in? In claiming to do so, it practises two illusions in which two truths are neglected. One truth is that market price expresses the desirability of a little *extra* supply of something, and not the desirability of the entire supply, as a whole, which an individual is receiving. If I have enough air to breathe, a little extra air is of no consequence.

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If I do not have enough air to breathe, some air is worth all I possess. The second truth is, that the ostensible unanimity of the market concerns the relative values of goods to each person individually, not their relative value, in a basic sense, to *different* persons. The comparison of values between persons is not a thing which can be done publicly, 'objectively'. It can be done only by the individual conscience of each person for himself. If he has such a conscience, he will vote for laws which put right, in some degree, the obvious harshness of life for some by taking a little away from others.

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INTER-NECESSITY

What good is exchange?

If it benefits *A* to give butter and get beer, how can it benefit *B* to give beer and get butter? It can do so if *A* has too much butter in proportion to his beer, and *B* has too much beer in proportion to his butter. What is the right proportion of beer to butter, for *A*? It is that proportion which leaves him indifferent between those *small extra* quantities, which can be had in exchange for each other. How does *A* come to have the wrong quantities, in relation to each other, of butter and beer, and *B* also the wrong quantities, though quite different ones? It may be that *A* is a dairy-farmer and *B* a brewer. They belong to a system which provides for the desires of all its members by *specialized activities*.

The activities which compose such a system are *inter-necessary*. Each sustains, and is sustained by, the system as a whole. They are like the organs and activities which compose a living creature: breathing, heart-beat, digestion and so on. It was the likeness of economic society to a living organism which struck François Quesnay, the royal physician at the Court of King Louis XV, and inspired his *Tableau Economique*. The Economic Picture showed a society composed of Farmers, Landowners and Artisans. The Landowners provided the Farmers with fields and the Farmers tilled them. A part of the crop was seed-corn, the rest was divided between sustaining the Farmers, paying rent to the Landowners, and buying manufactures for the Farmers from the Artisans. The Artisans received their share of the crop, not only direct from the Farmers, but partly also from the Landowners, who ate a part of their share and passed the rest on to the Artisans in exchange

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for manufactures. The share received by the Artisans was used by them partly as food and partly as raw materials of their manufactures. Thus the system maintained itself, and each of its three sectors, perpetually in being; the flow of goods into and out of each sector being technologically appropriate to maintain each other without deficit or surplus. This technological balance was symbolized in Quesnay's *Tableau* by assigning equal values to the inward and outward total flow of each sector taken by itself.

Quesnay's *Tableau* in itself constrains, but does not determine, the size of the flows of goods between its sectors. The flows into and the flows out of any sector must be able to support each other technologically. But this condition would be satisfied by a great range of different sets of flows. How can the *Tableau* be made self-sufficient as an account of economic society, able to answer all questions which can be put to it in its own terms? The *Tableau* is a picture of an unchanging society. It does not pretend to answer the question: How has this unchangingness come about? What preserves the unchangingness? If we insist on asking those questions, we must provide some such answer as: The people do not look further ahead than to the next harvest, they are content with their settled arrangements and feel no wish to change them. The society which Quesnay described is in a sense a momentary society, one where past and future are meaningless. In this hand-to-mouth, year-to-year society, effectively timeless as we saw the General Equilibrium to be, the conception of General Equilibrium is elaborated into a society where *exchange* is not merely exchange of goods between persons, but also exchange of means for ends, exchange of the powers of fields, farmers and their tools for food and manufactures. It includes *production*. Thus the *Tableau* helps to enrich the representation of an economic society offered by General Equilibrium. In return, General Equilibrium offers a possibility that the system of inter-necessary activities described by the *Tableau* may be shown to be in suitable conditions *determinate*, that is, having flows of goods of a size which reflects the tastes and endowments of the individuals composing its sectors.

The *Tableau Economique* has a modern version. The purpose