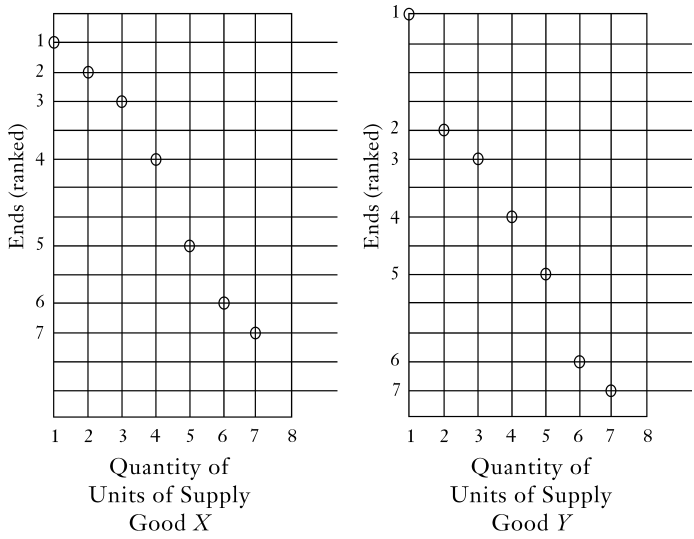


FIGURE 4. VALUE SCALES

that his stock is: 3*Y* (cows) and 4*X* (horses). He is faced with the alternative of giving up *either one cow or one horse*. He will choose the alternative that will deprive him of the least valued end possible. Since the marginal utility of each good is equal to the value of the least important end of which he would be deprived, *he compares the marginal utility of X with the marginal utility of Y*. In this case, the marginal unit of *X* has a rank of *X*-4, and the marginal unit of *Y* has a rank of *Y*-3. But the end *Y*-3 is ranked higher on his value scale than *X*-4. Hence, the marginal utility of *Y* is in this case higher than (or greater than) the marginal utility of *X*. Since he will give up the lowest possible utility, he will give up one unit of *X*. *Thus, presented with a choice of units of goods to give up, he will give up the good with units of lowest marginal utility on his value scale*. Suppose another example: that his stock is three horses and two cows. He has the alternative of giving up 1*X* or 1*Y*. In this case, the marginal utility of *Y* is ranked at *Y*-2, and that of *X* is ranked at *X*-3. But *X*-3 occupies a higher position on his value scale than *Y*-2, and therefore

the marginal utility of *Y* is at this point lower than the marginal utility of *X*. He gives up a unit of *Y*.

The converse occurs if the man must choose between the alternative of *increasing* his stock by either one unit of *X* or one unit of *Y*. Thus, suppose that his stock is four units of *X* and four units of *Y*. He must choose between adding one horse or one cow. He then compares the marginal utility of increase, i.e., the value of the most important of the not yet satisfied wants. The marginal utility of *X* is then ranked at *X*-5; of *Y* at *Y*-5. But *X*-5 ranks higher than *Y*-5 on his value scale, and he will therefore choose the former. *Thus, faced with the choice of adding units of goods, he will choose the unit of highest marginal utility on his value scale.*

Another example: Previously, we saw that the man in a position of (4*X*, 3*Y*) would, if faced with the choice of giving up one unit of either *X* or *Y*, give up the unit of *X*, with a lower marginal utility. In other words, he would prefer a position of (3*X*, 3*Y*) to (4*X*, 2*Y*). Now suppose he is in a position of (3*X*, 3*Y*) and faced with the choice of adding one unit of *X* or one unit of *Y*. Since the marginal utility of the increased *X* is greater than that of *Y*, he will choose to add the unit of *X* and to arrive at a position of (4*X*, 3*Y*) rather than (3*X*, 4*Y*). The reader can work out the hypothetical choices for all the possible combinations of the actor's stock.

It is evident that in the act of choosing between giving up or adding units of either *X* or *Y*, the actor must have, in effect, placed both goods on a *single, unitary value scale.* Unless he could place *X* and *Y* on *one* value scale for comparison, he could not have determined that the marginal utility of the fourth unit of *X* was higher than that of the fourth unit of *Y*. The very fact of action in choosing between more than one good implies that the units of these goods must have been ranked for comparison on one value scale of the actor. The actor may not and cannot *measure* differences in utility, but he must be engaged in ranking all the goods considered on one value scale. Thus, we

should actually consider the ends served by the two means as ranked on one value scale as follows:

Ends (Ranked)

1 — *Y*-1
2 — *X*-1
3 — *X*-2
4 — *X*-3
5 — *Y*-2
6 — *Y*-3
7 — *X*-4
8 — *Y*-4
9 — *X*-5
10 — *Y*-5
11 — *X*-6
12 — *X*-7
13 — *Y*-6
14 — *Y*-7

These principles permit of being extended from two to any number of goods. Regardless of the number of goods, any man will always have a certain combination of units of them in his stock. He may be faced with the choice of giving up one unit of any good that he might choose. By ranking the various goods and the ends served by the relevant units, the actor will give up the unit of that good of which the marginal utility to him is the lowest. Similarly, with any given combination of goods in his stock, and faced with the choice of adding one unit of any of the goods available, the actor will choose that good whose marginal utility of increase will be highest. In other words, all the goods are ranked on one value scale in accordance with the ends they serve.

If the actor has no units of some goods in his possession, this does not affect the principle. Thus, if he has no units of *X* or *Y* in his possession, and he must choose between adding a unit of

X or one unit of *Y*, he will choose the marginal unit of greatest utility, in this case, *Y*. The principle is easily extended to the case of *n* goods.

It must be reiterated here that value scales do not exist in a void apart from the concrete choices of action. Thus, if the actor has a stock of (3*X*, 4*Y*, 2*Z*, etc.), his choices for adding and subtracting from stock take place in this region, and there is no need for him to formulate hypothetical value scales to determine what his choices would have been if his stock were (6*X*, 8*Y*, 5*Z*, etc.). No one can predict with certainty the course of his choices except that they will follow the law of marginal utility, which was deduced from the axiom of action.

The solution of the value paradox mentioned above is now fully clear. If a man prefers one ounce of platinum to five loaves of bread, he is choosing between units of the two goods based on the supply available. On the basis of the available supply of platinum and of bread, the marginal utility of a unit of platinum is greater than the marginal utility of a unit of bread.[24]

6. Factors of Production: The Law of Returns

We have concluded that the value of each unit of any good is equal to its marginal utility at any point in time, and that this value is determined by the relation between the actor's scale of wants and the stock of goods available. We know that there are two types of goods: consumers' goods, which directly serve human wants, and producers' goods, which aid in the process of production eventually to produce consumers' goods. It is clear that the utility of a consumers' good is the end directly served. The utility of a producers' good is its contribution in producing consumers' goods. With value imputed backward from ends to consumers' goods through the various orders of producers'

---

[24]On the whole subject of marginal utility, *see* Eugen von Böhm-Bawerk, *The Positive Theory of Capital* (New York: G.E. Stechert, 1930), pp. 138–65, especially pp. 146–55.

goods, the utility of any producers' good is its contribution to its product—the lower-stage producers' good or the consumers' good.

As has been discussed above, the very fact of the necessity of producing consumers' goods implies a scarcity of factors of production. If factors of production at each stage were not scarce, then there would be unlimited quantities available of factors of the next lower stage. Similarly, it was concluded that at each stage of production, the product must be produced by *more than one* scarce higher-order factor of production. If only one factor were necessary for the process, then the process itself would not be necessary, and consumers' goods would be available in unlimited abundance. Thus, at each stage of production, the produced goods must have been produced with the aid of more than one factor. These factors *co-operate* in the production process and are termed *complementary factors.*

Factors of production are available as units of a homogeneous supply, just as are consumers' goods. On what principles will an actor evaluate a unit of a factor of production? He will evaluate a unit of supply on the basis of the least importantly valued product which he would have to forgo were he deprived of the unit factor. In other words, he will evaluate each unit of a factor as equal to the satisfactions provided by its marginal unit—in this case, *the utility of its marginal product.* The marginal product is the product forgone by a loss of the marginal unit, and its value is determined either by *its* marginal product in the next stage of production, or, if it is a consumers' good, by the utility of the end it satisfies. Thus, the value assigned to a unit of a factor of production is equal to the *value of its marginal product*, or its *marginal productivity*.

Since man wishes to satisfy as many of his ends as possible, and in the shortest possible time (see above), it follows that he will strive for the *maximum product from given units of factors at each stage of production.* As long as the goods are composed of homogeneous units, their quantity can be measured in terms of

these units, and the actor can know when they are in greater or lesser supply. Thus, whereas value and utility cannot be measured or subject to addition, subtraction, etc., quantities of homogeneous units of a supply can be measured. A man knows how many horses or cows he has, and he knows that four horses are twice the quantity of two horses.

Assume that a product *P* (which can be a producers' good or a consumers' good) is produced by three complementary factors, *X*, *Y*, and *Z*. These are all higher-order producers' goods. Since supplies of goods are quantitatively definable, and since in nature quantitative causes lead to quantitatively observable effects, we are always in a position to say that: *a* quantities of *X*, combined with *b* quantities of *Y*, and *c* quantities of *Z*, lead to *p* quantities of the product *P*.

Now let us assume that we hold the quantitative amounts *b* and *c* unchanged. The amounts *a* and therefore *p* are free to vary. The value of *a* yielding the maximum *p/a*, i.e., the maximum average return of product to the facto, is called the *optimum* amount of *X*. The *law of returns states that with the quantity of complementary factors held constant, there always exists some optimum amount of the varying factor.* As the amount of the varying factor decreases or increases from the optimum, *p/a*, the *average unit product* declines. The quantitative extent of that decline depends on the concrete conditions of each case. As the supply of the varying factor increases, just below this optimum, the average return of product to the varying factor is increasing; after the optimum it is decreasing. These may be called states of *increasing returns* and *decreasing returns* to the factor, with the maximum return at the optimum point.

The law that such an optimum must exist can be proved by contemplating the implications of the contrary. If there were no optimum, the average product would increase indefinitely as the quantity of the factor *X* increased. (It could not increase indefinitely as the quantity *decreases*, since the product will be zero when the quantity of the factor is zero.) But if *p/a* can always be

increased merely by increasing *a*, this means that any desired quantity of *P* could be secured by merely increasing the supply of *X*. This would mean that the proportionate supply of factors *Y* and *Z* can be ever so small; any decrease in their supply can always be compensated to increase production by increasing the supply of *X*. This would signify that factor *X* is perfectly substitutable for factors *Y* and *Z* and that the scarcity of the latter factors would not be a matter of concern to the actor so long as factor *X* was available in abundance. But a lack of concern for their scarcity means that *Y* and *Z* would *no longer be scarce factors.* Only one scarce factor, *X*, would remain. But we have seen that there must be more than one factor at each stage of production. Accordingly, the very existence of various factors of production implies that the average return of product to each factor must have some maximum, or optimum, value.

In some cases, the optimum amount of a factor may be the *only* amount that can effectively co-operate in the production process. Thus, by a known chemical formula, it may require precisely two parts of hydrogen and one part of oxygen to produce one unit of water. If the supply of oxygen is fixed at one unit, then any supply of hydrogen under two parts will produce no product at all, and all parts beyond two of hydrogen will be quite useless. Not only will the combination of two hydrogen and one oxygen be the optimum combination, but it will be the only amount of hydrogen that will be at all useful in the production process.

The relationship between *average product* and *marginal product* to a varying factor may be seen in the hypothetical example illustrated in Table 1. Here is a hypothetical picture of the returns to a varying factor, with other factors fixed. The average unit product increases until it reaches a peak of eight at five units of *X*. This is the optimum point for the varying factor. The *marginal product is the increase in total product provided by the marginal unit.* At any given supply of units of factor *X*, a loss of one unit will entail a loss of total product equal to the marginal product.

TABLE 1

FACTOR *Y* *b* UNITS	FACTOR *X* *a* UNITS	TOTAL PRODUCT *p* UNITS	AVERAGE UNIT PRODUCT *p/a*	MARGINAL PRODUCT $\Delta p/\Delta a$
3	0	0	0	...
3	1	4	4	4
3	2	10	5	6
3	3	18	6	8
3	4	30	7.5	12
3	5	40	8	10
3	6	45	7.5	5
3	7	49	7	4

Thus, if the supply of *X* is increased from three units to four units, total product is increased from 18 to 30 units, and this increase is the marginal product of *X* with a supply of four units. Similarly, if the supply is cut from four units to three units, the total product must be cut from 30 to 18 units, and thus the marginal product is 12.

It is evident that the amount of *X* that will yield the optimum of average product is not necessarily the amount that maximizes the marginal product of the factor. Often the marginal product reaches its peak before the average product. The relationship that always holds mathematically between the average and the marginal product of a factor is that *as the average product increases (increasing returns), the marginal product is greater than the average product. Conversely, as the average product declines (diminishing returns), the marginal product is less than the average product.*[25]

---

[25]For algebraic proof, *see* George J. Stigler, *The Theory of Price* (New York: Macmillan & Co., 1946), pp. 44–45.

It follows that when the average product is at a maximum, it equals the marginal product.

It is clear that, with one varying factor, it is easy for the actor to set the proportion of factors to yield the optimum return for the factor. But how can the actor set an optimum combination of factors if all of them can be varied in their supply? If one combination of quantities of *X*, *Y*, and *Z* yields an optimum return for *X*, and another combination yields an optimum return for *Y*, etc., how is the actor to determine which combination to choose? Since he cannot quantitatively compare units of *X* with units of *Y* or *Z*, how can he determine the optimum proportion of factors? This is a fundamental problem for human action, and its methods of solution will be treated in subsequent chapters.

7. *Factors of Production: Convertibility and Valuation*

Factors of production are valued in accordance with their anticipated contribution in the eventual production of consumers' goods. Factors, however, differ in the *degree of their specifity*, i.e., the variety of consumers' goods in the production of which they can be of service. Certain goods are *completely specific*—are useful in producing only one consumers' good. Thus, when, in past ages, extracts from the mandrake weed were considered useful in healing ills, the mandrake weed was a completely specific factor of production—it was useful purely for this purpose. When the ideas of people changed, and the mandrake was considered worthless, the weed lost its value completely. Other producers' goods may be relatively nonspecific and capable of being used in a wide variety of employments. They could never be perfectly nonspecific—equally useful in all production of consumers' goods—for in that case they would be general conditions of welfare available in unlimited abundance for all purposes. There would be no need to economize them. Scarce factors, however, including the relatively nonspecific ones, must be employed in their most urgent uses. Just as a supply of consumers' goods will go first toward satisfying the

most urgent wants, then to the next most urgent wants, etc., so a supply of factors will be allocated by actors first to the most urgent uses in producing consumers' goods, then to the next most urgent uses, etc. The loss of a unit of a supply of a factor will entail the loss of the least urgent of the presently satisfied uses.

The less specific a factor is, the more *convertible* it is from one use to another. The mandrake weed lost its value because it could not be converted to other uses. Factors such as iron or wood, however, are convertible into a wide variety of uses. If one type of consumers' good falls into disuse, iron output can be shifted from that to another line of production. On the other hand, once the iron ore has been transformed into a machine, it becomes less easily convertible and often completely specific to the product. When factors lose a large part of their value as a result of a decline in the value of the consumers' good, they will, if possible, be converted to another use of greater value. If, despite the decline in the value of the product, there is no better use to which the factor can be converted, it will stay in that line of product or cease being used altogether if the consumers' good no longer has value.

For example, suppose that cigars suddenly lose their value as consumers' goods; they are no longer desired. Those cigar machines which are not usable in any other capacity will become, valueless. Tobacco leaves, however, will lose some of their value, but may be convertible to uses such as cigarette production with little loss of value. (A loss of all desire for tobacco, however, will result in a far wider loss in the value of the factors, although part of the land may be salvaged by shifting from tobacco to the production of cotton.)

Suppose, on the other hand, that some time after cigars lose their value this commodity returns to public favor and regains its former value. The cigar machines, which had been rendered valueless, now recoup their great loss in value. On the other hand, the tobacco leaves, land, etc., which had shifted from

cigars to other uses will reshift into the production of cigars. These factors will gain in value, but their gain, as was their previous loss, will be less than the gain of the completely specific factor. These are examples of a general law that *a change in the value of the product causes a greater change in the value of the specific factors than in that of the relatively nonspecific factors.*

To further illustrate the relation between convertibility and valuation, let us assume that complementary factors 10*X*, 5*Y*, and 8*Z* produce a supply of 20*P*. First, suppose that each of these factors is completely specific and that none of the supply of the factors can be replaced by other units. Then, if the supply of one of the factors is lost (say 10*X*), the entire product is lost, and the other factors become valueless. In that case, the supply of that factor which must be given up or lost equals in value the value of the entire product—20*P*, while the other factors have a zero value. An example of production with purely specific factors is a pair of shoes; the prospect of a loss of one shoe is valued at the value of the entire pair, while the other shoe becomes valueless in case of a loss. Thus, *jointly*, factors 10*X*, 5*Y*, and 8*Z* produce a product that is valued, say, as rank 11 on the actor's value scale. Lose the supply of one of the factors, and the other complementary factors become completely valueless.

Now, let us assume, secondly, that each of the factors is nonspecific: that 10*X* can be used in another line of production that will yield a product, say, ranked 21st on the value scale; that 5*Y* in another use will yield a product ranked 15th on the actor's value scale; and that 8*Z* can be used to yield a product ranked 30th. In that case, the loss of 10*X* would mean that instead of satisfying a want of rank 11, the units of *Y* and *Z* would be shifted to their next most valuable use, and wants ranked 15th and 30th would be satisfied instead. We know that the actor preferred the satisfaction of a want ranked 11th to the satisfaction of wants ranked 15th and 30th; otherwise the factors would not have been engaged in producing *P* in the first place. But now the loss of value is far from total, since the other factors can still yield a return in other uses.

Convertible factors will be allocated among different lines of production according to the same principles as consumers' goods are allocated among the ends they can serve. Each unit of supply will be allocated to satisfy the most urgent of the not yet satisfied wants, i.e., where the value of its marginal product is the highest. A loss of a unit of the factor will deprive the actor of only the least important of the presently satisfied uses, i.e., that use in which the value of the marginal product is the lowest. This choice is analogous to that involved in previous examples comparing the marginal utility of one good with the marginal utility of another. This lowest-ranked marginal product may be considered the value of the marginal product of any unit of the factor, with all uses taken into account. Thus, in the above case, suppose that *X* is a convertible factor in a myriad of different uses. If one unit of *X* has a marginal product of say, 3*P*, a marginal product in another use of 2*Q*, 5*R*, etc., the actor ranks the values of these marginal products of *X* on his value scale. Suppose that he ranks them in this order: 4*S*, 3*P*, 2*Q*, 5*R*. In that case, suppose he is faced with the loss of one unit of *X*. He will give up the use of a unit of *X* in production of *R*, where the marginal product is ranked lowest. Even if the loss takes place in the production of *P*, he will not give up 3*P*, but shift a unit of *X* from the less valuable use *R* and give up 5*R*. Thus, just as the actor gave up the use of a horse in pleasure riding and not in wagon-pulling by shifting from the former to the latter use, so the actor who (for example) loses a cord of wood intended for building a house will give up a cord intended for a service less valuable to him—say, building a sled. Thus, the value of the marginal product of a unit of a factor will be equal to its value in its marginal use, i.e., that use served by the stock of the factor whose marginal product is ranked lowest on his value scale.

We now can see further why, in cases where products are made with specific *and* convertible factors, the general law holds that the value of convertible factors changes less than that of specific factors in response to a change in the value of *P* or in the conditions of its production. The value of a unit of a

convertible factor is set, not by the conditions of its employment in *one* type of product, but by the value of its marginal product when *all* its uses are taken into consideration. Since a specific factor is usable in only one line of production, its unit value is set as equal to the value of the marginal product in that line of production alone. Hence, in the process of valuation, the specific factors are far more responsive to conditions in *any given process of production* than are the nonspecific factors.[26]

As with the problem of optimum proportions, the process of value imputation from consumers' good to factors raises a great many problems which will be discussed in later chapters. Since one product cannot be measured against other products, and units of different factors cannot be compared with one another, how can value be imputed when, as in a modern economy, the structure of production is very complex, with myriads of products and with convertible and inconvertible factors? It will be seen that value imputation is easy for isolated Crusoe-type actors, but that special conditions are needed to enable the value-imputing process, as well as the factor-allocating process, to take place in a complex economy. In particular, the various units of products and factors (*not* the values, of course) must be made commensurable and comparable.

8. Factors of Production: Labor versus Leisure

Setting aside the problem of allocating production along the most desired lines and of measuring one product against another, it is evident that every man desires *to maximize his production of consumers' goods per unit of time*. He tries to satisfy as many of his important ends as possible, and at the earliest possible time. But in order to increase the production of his consumers' goods, he must relieve the scarcity of the scarce factors of production; he must increase the available supply of these

---

[26]For further reading on this subject, *see* Böhm-Bawerk, *Positive Theory of Capital*, pp. 170–88; and Hayek, *Counter-Revolution of Science*, pp. 32–33.

scarce factors. The *nature-given* factors are limited by his environment and therefore cannot be increased. This leaves him with the choice of increasing his supply of *capital goods* or of increasing his *expenditure of labor*.

It might be asserted that another way of increasing his production is to improve his technical knowledge of how to produce the desired goods—to improve his recipes. A recipe, however, can only set *outer limits* on his increases in production; the actual increases can be accomplished solely by an increase in the supply of productive factors. Thus, suppose that Robinson Crusoe lands, without equipment, on a desert island. He may be a competent engineer and have full knowledge of the necessary processes involved in constructing a mansion for himself. But without the necessary supply of factors available, this knowledge could not suffice to construct the mansion.

One method, then, by which man may increase his production per unit of time is by increasing his expenditure of labor. In the first place, however, the possibilities for this expansion are strictly limited—by the number of people in existence at any time and by the number of hours in the day. Secondly, it is limited by the ability of each laborer, and this ability tends to vary. And, finally, there is a third limitation on the supply of labor: whether or not the work is directly satisfying in itself, labor always involves the forgoing of *leisure*, a desirable good.[27]

We can conceive of a world in which leisure is not desired and labor is merely a useful scarce factor to be economized. In such a world, the total supply of available labor would be equal to the total quantity of labor that men would be capable of expending.

---

[27]This is the first proposition in this chapter that has not been deduced from the axiom of action. It is a subsidiary assumption, based on empirical observation of actual human behavior. It is not deducible from human action because its contrary is conceivable, although not generally existing. On the other hand, the assumptions above of quantitative relations of cause and effect were logically implicit in the action axiom, since knowledge of definite cause-and-effect relations is necessary to any decision to act.

Everyone would be eager to work to the maximum of capacity, since increased work would lead to increased production of desired consumers' goods. All time not required for maintaining and preserving the capacity to work would be spent in labor.[28] Such a situation could conceivably exist, and an economic analysis could be worked out on that basis. We know from empirical observation, however, that such a situation is very rare for human action. For almost all actors, *leisure is a consumers' good*, to be weighed in the balance against the prospect of acquiring other consumers' goods, including possible satisfaction from the effort itself. The more a man labors, the less leisure he can enjoy. Increased labor therefore reduces the available supply of leisure and the utility that it affords. Consequently, "people work only when they value the return of labor higher than the decrease in satisfaction brought about by the curtailment of leisure."[29] It is possible that included in this "return" of satisfaction yielded by labor may be satisfaction in the labor itself, in the voluntary expenditure of energy on a productive task. When such satisfactions from labor do not exist, then simply the expected value of the product yielded by the effort will be weighed against the *disutility* involved in giving up leisure—the utility of the leisure forgone. Where labor does provide intrinsic satisfactions, the utility of the product yielded will include the utility provided by the effort itself. As the quantity of effort increases, however, the utility of the satisfactions provided by labor itself declines, and the utility of the successive units of the final product declines as well. Both the marginal utility of the final product and the marginal utility of labor-satisfaction decline with an increase in their quantity, because both goods follow the universal law of marginal utility.

In considering an expenditure of his labor, man not only takes into account which are the most valuable ends it can serve

---

[28]Cf. Mises, *Human Action*, p. 131.

[29]*Ibid*., p. 132.

(as he does with all other factors), these ends possibly including the satisfaction derived from productive labor itself, but he *also* weighs the prospect of abstaining from the expenditure of labor *in order* to obtain the consumers' good, leisure. Leisure, like any other good, is subject to the law of marginal utility. The first unit of leisure satisfies a most urgently felt desire; the next unit serves a less highly valued end; the third unit a still less highly valued end, etc. The marginal utility of leisure decreases as the supply increases, and this utility is equal to the value of the end that would have to be forgone with the loss of the unit of leisure. But in that case, the marginal disutility of work (in terms of leisure forgone) *increases* with every increase in the amount of labor performed.

In some cases, labor itself may be positively disagreeable, not only because of the leisure forgone, but also because of specific conditions attached to the particular labor that the actor finds disagreeable. In these cases, the marginal disutility of labor includes both the disutility due to these conditions and the disutility due to leisure forgone. The painful aspects of labor, like the forgoing of leisure, are endured for the sake of the yield of the final product. The addition of the element of disagreeableness in certain types of labor may reinforce and certainly does not counteract the increasing marginal disutility imposed by the cumulation of leisure forgone as the time spent in labor increases.

Thus, for each person and type of labor performed, the balancing of the marginal utility of the product of prospective units of effort as against the marginal disutility of effort will include the satisfaction or dissatisfaction with the work itself, in addition to the evaluation of the final product and of the leisure forgone. The labor itself may provide positive satisfaction, positive pain or dissatisfaction, or it may be neutral. In cases where the labor itself provides positive satisfactions, however, *these are intertwined with and cannot be separated from the prospect of obtaining the final product.* Deprived of the final product, man will

consider his labor senseless and useless, and the labor itself will no longer bring positive satisfactions. Those activities which are engaged in *purely* for their own sake are not labor but are pure *play*, consumers' goods in themselves. Play, as a consumers' good, is subject to the law of marginal utility as are all goods, and the time spent in play will be balanced against the utility to be derived from other obtainable goods.[30]

In the expenditure of any hour of labor, therefore, man weighs the disutility of the labor involved (including the leisure forgone plus any dissatisfaction stemming from the work itself) against the utility of the contribution he will make in that hour to the production of desired goods (including future goods and any pleasure in the work itself), i.e., with the *value of his marginal product.* In each hour he will expend his effort toward producing *that* good whose marginal product is highest on his value scale. If he must give up an hour of labor, he will give up a unit of that good whose marginal utility is lowest on his value scale. At each point he will balance the utility of the product on his value scale against the disutility of further work. We know that a man's marginal utility of goods provided by effort will decline as his expenditure of effort increases. On the other hand, with each new expenditure of effort, the marginal disutility of the effort continues to increase. Therefore, a man will expend his labor as long as the marginal utility of the return *exceeds* the marginal disutility of the labor effort. A man will stop work when the marginal disutility of labor is greater than the marginal utility of the increased goods provided by the effort.[31]

---

[30]Leisure is the amount of time not spent in labor, and play may be considered as one of the forms that leisure may take in yielding satisfaction. On labor and play, cf. Frank A. Fetter, *Economic Principles* (New York: The Century Co., 1915), pp. 171–77, 191, 197–206.

[31]Cf. L. Albert Hahn, *Common Sense Economics* (New York: Abelard-Schuman, 1956), pp. 1 ff.

Then, as his consumption of leisure increases, the marginal utility of leisure will decline, while the marginal utility of the goods forgone increases, until finally the utility of the marginal products forgone becomes greater than the marginal utility of leisure, and the actor will resume labor again.

This analysis of the laws of labor effort has been deduced from the implications of the action axiom and the assumption of leisure as a consumers' good.

9. The Formation of Capital

With the nature-given elements limited by his environment, and his labor restricted both by its available supply and its disutility, there is only one way by which man can increase his production of consumers' goods per unit of time—by increasing the quantity of capital goods. Beginning with unaided labor and nature, he must, to increase his productivity, mix his labor energy with the elements of nature to form capital goods. These goods are not immediately serviceable in satisfying his wants, but must be transformed by further labor into lower-order capital goods, and finally into the desired consumers' goods.

In order to illuminate clearly the nature of capital formation and the position of capital in production, let us start with the hypothetical example of Robinson Crusoe stranded on a desert island. Robinson, on landing, we assume, finds himself without the aid of capital goods of any kind. All that is available is his own labor and the elements given him by nature. It is obvious that without capital he will be able to satisfy only a few wants, of which he will choose the most urgent. Let us say that the only goods available without the aid of capital are berries and leisure. Say that he finds that he can pick 20 edible berries an hour, and, on this basis, works 10 hours in berry-picking and enjoys 14 hours a day of leisure. It is evident that, without the aid of capital, the only goods open to him for consumption are goods with the *shortest period of production*. Leisure is the one good that is produced almost instantaneously, while berries have a very

short production period. Twenty berries have a production period of one hour. Goods with longer periods of production are not available to him unless he acquires capital goods.

There are two ways in which longer processes of production through the use of capital may increase productivity: (1) they may provide a greater production of the *same* good per unit of time; or (2) they may allow the actor to consume goods that are *not available at all* with shorter processes of production.

As an example of the first type of increase in productivity, Robinson may decide that if he had the use of a long stick, he could shake many berries off the trees instead of picking them by hand. In that way he might be able to step up his production to 50 berries an hour. How might he go about acquiring the stick? Obviously, he must expend labor in getting the materials, transporting them, shaping them into a stick, etc. Let us say that 10 hours would be necessary for this task. This means that to obtain the stick, Crusoe must *forgo* 10 hours' production of consumers' goods. He must either sacrifice 10 hours of leisure or 10 hours of berries at 20 per hour (200 berries), or some combination of the two. He must sacrifice, for 10 hours, the enjoyment of consumers' goods, and expend his labor on producing a *capital good*—the stick—which will be of no *immediate* use to him. He will be able to begin using the capital good as an indirect aid to future production only after the 10 hours are up. In the meantime, he must forgo the satisfaction of his wants. He must *restrict his consumption* for 10 hours and *transfer his labor* for that period from producing immediately satisfying consumers' goods into the production of capital goods, which will prove their usefulness only *in the future*. The restriction of consumption is called *saving*, and the transfer of labor and land to the formation of capital goods is called *investment*.

We see now what is involved in the process of capital formation. The actor must decide whether or not to restrict his consumption and invest in the production of capital goods, by weighing the following factors: Does the utility yielded by the

increased productivity of the longer process of production outweigh the sacrifice that I must make of *present* goods to acquire consumers' goods in the *future*? We have already seen above the universal fact of *time preference*—that a man will always prefer obtaining a given satisfaction earlier than later. Here, the actor must balance his desire to acquire *more satisfactions per unit of time* as against the fact that, to do so, he must give up satisfactions in the *present* to increase his production in the *future*. His time preference for present over future accounts for his *disutility of waiting*, which must be balanced against the utility that will be eventually provided by the capital good and the longer process of production. How he chooses depends on his scale of values. It is possible, for example, that if he thought the stick would provide him with only 30 berries an hour and would take 20 hours to make, he would not make the saving-investment decision. On the other hand, if the stick took five hours to make and could provide him with 100 berries an hour, he might make the decision readily.

If he decides to invest 10 hours in adding to his capital goods, there are many ways in which he might restrict his consumption. As mentioned above, he can restrict any combination of berries or leisure. Setting aside leisure for purposes of simplification, he may decide to take a whole day off at once and produce no berries at all, completing the stick in one day. Or, he may decide to pick berries for eight hours instead of 10, and devote the other two hours a day to making the stick, in which case the completion of the stick will take five days. Which method he will choose depends on the nature of his value scale. In any case, he must restrict his consumption by 10 hours' worth of labor—200 berries. The *rate* of his restriction will depend on how urgently he wants the increased production, as compared with the urgency with which he desires to maintain his present supply of berries.

Analytically, there is little difference between working on consumers' goods, accumulating a stock of them, and *then* working full time on the capital good, and working on the capital

good and consumer goods simultaneously. Other things being equal, however, it is possible that one of the methods will prove more productive; thus, it may be that the actor can complete the task in less time if he works on it continuously. In that case, he will tend to choose the former method. On the other hand, the berries might tend to spoil if accumulated, and this would lead him to choose the latter route. A balance of the various factors on his value scale will result in his decision.

Let us assume that Robinson has made his decision, and, after five days, begins to use the stick. On the sixth day and thereafter, then, 500 berries a day will begin to pour forth, and he will harvest the fruits of his investment in capital goods.

Crusoe can use his increased productivity to *increase his hours of leisure* as well as to increase his output of berries. Thus, he might decide to cut his daily labor from 10 hours to eight. His output of berries will then be increased, because of the stick, from 200 to 400 berries per day, while Crusoe is able to increase his hours of leisure from 14 to 16 per day. Obviously, Crusoe can choose to take his increased productivity in various combinations of increased output of the good itself and of increased leisure.[32]

Even more important than its use in increasing output per unit of time is the function of capital in enabling man to acquire goods which he could not *at all* obtain otherwise. A very short period of production enables Crusoe to produce leisure and at least some berries, but without the aid of capital he cannot attain *any* of his other wants at all. To acquire meat he must have a bow and arrows, to acquire fish he must have a pole or net, to acquire shelter he must have logs of wood, or canvas, and an axe to cut the wood. To satisfy any such wants, he must restrict his

[32]In this sense, the stick might be called a "labor-saving device," although the terminology is misleading. It is "labor-saving" only to the extent that the actor chooses to take the increased productivity in the form of leisure.

consumption and invest his labor in the production of capital goods. In other words, he must embark on lengthier processes of production than had been involved in culling berries; he must take time out to produce the capital goods themselves before he can use them to enjoy consumers' goods. In each case, the decisions that he makes in embarking on capital formation will be a result of weighing on his value scale the utility of the expected increased productivity as against the disutility of his time preference for present as compared to future satisfactions.

It is obvious that the factor which holds every man back from investing more and more of his land and labor in capital goods is his time preference for present goods. If man, other things being equal, did not prefer satisfaction in the present to satisfaction in the future, he would never consume; he would invest all his time and labor in increasing the production of future goods. But "never consuming" is an absurdity, since consuming is the end of all production. Therefore, at any given point in time, all men will have invested in all the *shorter* periods of production to satisfy the most urgently felt wants that their knowledge of recipes allows; *any further formation of capital will go into longer processes of production*. Other things being equal (i.e., the relative urgency of wants to be satisfied, and the actor's knowledge of recipes), any further investment will be in a longer process of production than is now under way.

Here it is important to realize that "a period of production" does not involve only the amount of time spent on making the actual capital good, but refers to the amount of waiting-time from the start of producing the capital good until the *consumers' good* is produced. In the case of the stick and the berries, the two times are identical, but this was so only because the stick was a first-order capital good, i.e., it was but one stage removed from the output of consumers' goods. Let us take, for example, a more complex case—the building by Crusoe of an axe in order to chop wood to produce a house for himself. Crusoe must decide whether or not the house he will gain will be worth the

consumers' goods forgone in the meantime. Let us say it will take Crusoe 50 hours to produce the axe, and then a further 200 hours, with the help of the axe, to chop and transport wood in order to build a house. The longer process of production which Crusoe must decide upon is now a three-stage one, totaling 250 hours. First, labor and nature produce the axe, a second-order capital good; second, labor, plus the axe, plus nature-given elements, produces logs-of-wood, a first-order capital good; finally, labor and the logs of wood combine to yield the desired consumers' good—a house. The length of the process of production is the entire length of time from the point at which an actor must begin his labor to the point at which the consumers' good is yielded.

Again, it must be observed that, in considering the length of a process of production, the actor is not interested in past history as such. The length of a process of production for an actor is the *waiting-time from the point at which his action begins.* Thus, if Crusoe were lucky enough to find an axe in good condition left by some previous inhabitant, he would reckon his period of production at 200 hours instead of 250. The axe would be given to him by his environment.

This example illustrates a fundamental truth about capital goods: Capital is a way station along the road to the enjoyment of consumers' goods. He who possesses capital is that much *further advanced in time* on the road to the desired consumers' good. Crusoe without the axe is 250 hours away from his desired house; Crusoe with the axe is only 200 hours away. If the logs of wood had been piled up ready-made on his arrival, he would be that much closer to his objective; and if the house were there to begin with, he would achieve his desire immediately. He would be further advanced toward his goal without the necessity of further restriction of consumption. Thus, the role of capital is to advance men in time toward their objective in producing consumers' goods. This is true for both the case where *new* consumers' goods are being produced and the case where *more old*

goods are being produced. Thus, in the previous case, without the stick, Crusoe was 25 hours away from an output of 500 berries; with the stick, he is only 10 hours away. In those cases where capital enables the acquisition of new goods—of goods which could not be obtained otherwise—it is an *absolutely indispensable*, as well as convenient, way station toward the desired consumers' good.

It is evident that, for any formation of capital, there must be *saving*—a restriction of the enjoyment of consumers' goods in the present—and the investment of the equivalent resources in the production of capital goods. This enjoyment of consumers' goods—the satisfaction of wants—is called *consumption*. The saving might come about as a result of an increase in the available supply of consumers' goods, which the actor decides to save in part rather than consume fully. At any rate, consumption must always be less than the amount that could be secured. Thus, if the harvest on the desert island improves, and Crusoe finds that he can pick 240 berries in 10 hours without the aid of a stick, he may now save 40 berries a day for five days, enabling him to invest his labor in a stick, without cutting back his berry consumption from the original 200 berries. Saving involves the restriction of consumption compared to the amount that *could* be consumed; it does not always involve an actual reduction in the amount consumed over the previous level of consumption.

All capital goods are perishable. Those few products that are not perishable but permanent become, to all intents and purposes, part of the *land*. Otherwise, all capital goods are perishable, used up during the processes of production. We can therefore say that capital goods, during production, are *transformed* into their products. With some capital goods, this is physically quite evident. Thus, it is obvious, for example, that when 100 pounds of bread-at-wholesale are combined with other factors to produce 100 pounds of bread at retail, the former factor is immediately and completely transformed into the latter factor.

The using up of capital goods is dramatically clear. The whole of the capital good is used up in each production-event. The other capital goods, however, are also used up, but not as suddenly. A truck transporting bread may have a life of 15 years, amounting to, say, 3,000 of such conversions of bread from the wholesale to the retail stage. In this case, we may say that 1/3,000 of the truck is used up each time the production process occurs. Similarly, a mill converting wheat into flour may have a useful life of 20 years, in which case we could say that 1/20 of the mill was used up in each year's production of flour. Each particular capital good has a different useful life and therefore a different rate of being used up, or, as it is called, of *depreciation*. Capital goods vary in the duration of their serviceableness.

Let us now return to Crusoe and the stick. Let us assume that the stick will have a useful life of 10 days, and is so estimated by Crusoe, after which it wears out, and Crusoe's output reverts to its previous level of 20 berries per hour. He is back where he started.

Crusoe is therefore faced with a choice, after his stick comes into use. His "standard of living" (now, say, at 500 berries a day plus 14 hours of leisure) has improved, and he will not like the prospect of a reduction to 200 when the stick gives out. If he wishes to maintain his standard of living intact, therefore, he must, during the 10 days, work on building another stick, which can be used to replace the old one when it wears out. This act of building another stick involves a *further act of saving*. In order to invest in a replacement for the stick, he must again save—restrict his consumption as compared to the production that might be available. Thus, he will again have to save 10 hours' worth of labor in berries (or leisure) and devote them to investing in a good that is only indirectly serviceable for future production. Suppose that he does this by shifting one hour a day from his berry production to the labor of producing another stick. By doing so, he restricts his berry consumption, for 10 days, to 450 a day. He has restricted consumption from his

maximum, although he is still much better off than in his original, unaided state.

Thus, the *capital structure* is renewed at the end of the 10 days, by saving and investing in a replacement. After that, Crusoe is *again* faced with the choice of taking his maximum production of 500 berries per day and finding himself back to a 200-per-day level at the end of 10 more days, or of making a *third* act of saving in order to provide for replacement of the second stick when it wears out.[33]

If Crusoe decides *not* to replace the first or the second stick, and accepts a later drop in output to avoid undergoing present saving, he is *consuming capital.* In other words, he is electing to consume instead of to save and maintain his capital structure and future rate of output. Consuming his capital enables Crusoe to increase his consumption *now* from 450 to 500 berries per day, but at some point in the future (here in 10 days), he will be forced to cut his consumption back to 200 berries. It is clear that what has led Crusoe to consume capital is his *time preference*, which in this case has led him to prefer more present consumption to greater losses in future consumption.

Thus, any actor, at any point in time, has the choice of: (*a*) adding to his capital structure, (*b*) maintaining his capital intact, or (*c)* consuming his capital. Choices (*a*) and (*b*) involve acts of saving. The course adopted will depend on the actor's weighing his disutility of waiting, as determined by his time preference, against the utility to be provided in the future by the increase in his intake of consumers' goods.

At this point in the discussion of the wearing out and replacement of capital goods we may observe that a capital good rarely retains its full "powers" to aid in production and then

---

[33]It is necessary to emphasize that independent acts of saving are necessary for replacement of goods, since many writers (e.g., J.B. Clark, Frank H. Knight) tend to assume that, once produced, capital, in some mystical way, reproduces itself without further need for acts of saving.

suddenly lose all its serviceability. In the words of Professor Benham, "capital goods do not usually remain in perfect technical condition and then suddenly collapse, like the wonderful 'one-hoss shay.'"[34] Crusoe's berry output, instead of remaining 500 for 10 days and then falling back to 200 on the 11th day, is likely to decline at some rate before the stick becomes completely useless.

Another method of maintaining capital may now prove available. Thus, Crusoe may find that, by spending a little time repairing the stick, breaking off weaker parts, etc., he may be able to prolong its life and maintain his output of berries longer. In short, he may be able to add to his capital structure via *repairs*.

Here again he will balance the added increase in future output of consumers' goods against the *present* loss in consumers' goods which he must endure by expending his labor on repairs. Making repairs therefore requires an independent act of saving and a choice to save. It is entirely possible, for example, that Crusoe will decide to replace the stick, and spend his labor on that purpose, but will not consider it worthwhile to repair it. Which course he decides to take depends on his valuation of the various alternative outputs and his rate of time preference.

An actor's decision on what objects to invest in will depend on the expected utility of the forthcoming consumers' good, its durability, and the length of his waiting-time. Thus, he may first invest in a stick and then decide it would not be worthwhile to invest in a second stick; instead, it would be better to begin building the axe in order to obtain a house. Or he may first make a bow and arrows with which to hunt game, and after that begin working on a house. Since the marginal utility of the stock of a good declines as the stock increases, the more he has of the stock of *one* consumers' good, the more likely he will be

[34]Cf. Frederic Benham, *Economics* (New York: Pitman Publishing, 1941), p. 162.

to expend his new savings on a different consumers' good, since the second good will now have a higher marginal utility of product to his invested labor and waiting, and the marginal utility of the first will be lower.

If two consumers' goods have the same expected marginal utility in daily serviceability and have the same period of waiting time, but one is more durable than the other, then the actor will choose to invest in production of the former. On the other hand, if the total serviceableness of two expected consumers' goods is the same, and their length of period of production is the same, the *less* durable good will be invested in, since its total satisfactions arrive earlier than the other. Also, in choosing between investing in one or the other of two consumers' goods, the actor will, other things being equal, choose that good with the shorter period of production, as has been discussed above.

Any actor will continue to save and invest his resources in various expected future consumers' goods as long as the utility, considered in the present, of the marginal product of each unit saved and invested is greater than the utility of present consumers' goods which he could obtain by not performing that saving. The latter utility—of present consumers' goods forgone—is the "disutility of waiting." Once the latter becomes greater than the utility of obtaining more goods in the future through saving, the actor will cease to save.

Allowing for the relative urgency of wants, man, as has been demonstrated above, tends to invest first in those consumers' goods with the shortest processes of production. Therefore, any given saving will be invested either in maintaining the present capital structure or in adding to it capital in *more and more remote* stages of production, i.e., in longer processes of production. Thus, any new saving (beyond maintaining the structure) will tend to lengthen production processes and invest in *higher and higher orders* of capital goods.

In a modern economy, the capital structure contains goods of almost infinite remoteness from the eventual consumers'

goods. We saw above some of the stages involved in the production of a comparatively very simple good like a ham sandwich. The laborer in an iron mine is far removed indeed from the ham sandwich in Jones' armchair.

It is evident that the problems of measurement that arose in previous sections would be likely to pose a grave difficulty in saving and investing. How do actors know when their capital structure is being added to or consumed, when the types of capital goods and consumers' goods are numerous? Obviously, Crusoe knows when he has more or fewer berries, but how can a modern complex economy, with innumerable capital goods and consumers' goods, make such decisions? The answer to this problem, which also rests on the commensurability of different goods, will be discussed in later chapters.

In observing the increased output made possible by the use of capital goods, one may very easily come to attribute some sort of independent productive power to capital and to say that three types of productive forces enter into the production of consumers' goods: labor, nature, and capital. It would be easy to draw this conclusion, but completely fallacious. Capital goods have no independent productive power of their own; in the last analysis they are completely reducible to labor and land, which produced them, and time. Capital goods are "stored-up" labor, land, and time; they are intermediate way stations on the road to the eventual attainment of the consumers' goods into which they are transformed. At every step of the way, they must be worked on by labor, in conjunction with nature, in order to continue the process of production. Capital is not an independent productive factor like the other two. An excellent illustration of this truth has been provided by Böhm-Bawerk:

> The following analogy will make it perfectly clear. A man throws a stone at another man and kills him. Has the stone killed the man? If the question is put without laying any special emphasis it may be answered without hesitation in the affirmative. But how if the murderer, on his trial, were to defend

> himself by saying that it was not he but the stone that had killed the man? Taking the words in this sense, should we still say that the stone had killed the man, and acquit the murderer? Now it is with an emphasis like this that economists inquire as to the independent productivity of capital. . . . We are not asking about dependent intermediate causes, but about ultimate independent elements. The question is not whether capital plays a part in the bringing about of a productive result—such as the stone does in the killing of the man—but whether, granted the productive result, some part of it is due to capital so entirely and peculiarly that it simply cannot be put to the credit of the two other recognized elementary factors, nature and labor.

Böhm-Bawerk replies in the negative, pointing out that capital goods are purely way stations in the process of production, worked on at every possible stage by the forces of labor and land:

> If, today, by allying my labor with natural powers, I make bricks out of clay, and tomorrow, by allying my labor with natural gifts, I obtain lime, and the day after that make mortar and so construct a wall, can it be said of any part of the wall that I and the natural powers have *not* made it? Again, before a lengthy piece of work, such as the building of a house, is quite finished, it naturally must be at one time a fourth finished, then a half finished, then three-quarters finished. What now would be said if one were to describe these inevitable stages of the work as independent requisites of house-building, and maintain that, for the building of a house, we require, besides building materials and labor, a quarter-finished house, a half-finished house, a three-quarters finished house? In form perhaps it is less striking, but in effect it is not a whit more correct, to elevate those intermediate steps in the progress of the work, which

> outwardly take the shape of capital, into an independent agent of production by the side of nature and labor.[35]

And this holds true regardless of how many stages are involved or how remote the capital good is from the ultimate consumers' good.

Since investment in capital goods involves looking toward the future, one of the risks that an actor must always cope with is the *uncertainty* of future conditions. Producing consumers' goods directly involves a very short period of production, so that the uncertainty incurred is not nearly as great as the uncertainty of longer processes of production, an uncertainty that becomes more and more important as the period of production lengthens.[36]

Suppose that Crusoe, while deciding on his investment in the stick, believes that there is a good possibility of his finding a grove where berries are in abundance, giving him an output of 50 or more berries per hour without the aid of a stick, and also where the berries would be so close as to render the stick useless. In that case, the more likely he thinks are the chances of finding the grove, the less likely he is to make the decision to invest in the stick, which would then be of no help to him. The greater the doubt about the usefulness the stick will have after it is ready, the less likelihood of investing in it, and the more likelihood of either investing in another good or of consuming instead of saving. We can consider that there is a sort of "uncertainty discount" on the expected future utility of the investment that may be so large as to induce the actor not to make the

---

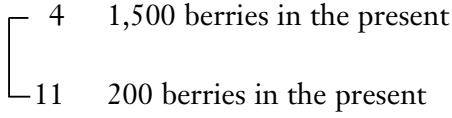
[35]Böhm-Bawerk, *Positive Theory of Capital*, pp. 95–96. *Also see* Mises, *Human Action*, pp. 480–90, and pp. 476–514.

[36]This uncertainty is a subjective feeling ("hunch" or estimate) and cannot be measured in any way. The efforts of many popular writers to apply mathematical "probability theory" to the uncertainty of future historical events are completely vain. Cf. Mises, *Human Action*, pp. 105–18.

investment. The uncertainty factor in this case works with the time-preference factor to the disadvantage of the investment, against which the actor balances the expected utility of future output.

On the other hand, uncertainty may work as an added spur to making the investment. Thus, suppose that Crusoe believes that a blight may strike the berries very shortly and that if this happens, his unaided berry-output would dangerously decline. If the blight struck, Crusoe would be in great need of the stick to even maintain his output at the present low level. Thus, the possibility that the stick may be of even greater use to him than he anticipates will add to the expected utility of his investment, and the greater the chance of this possibility in Crusoe's view, the more likely he will be to invest in the stick. Thus, the uncertainty factor may work in either direction, depending on the specific situation involved.

We may explain the entire act of deciding whether or not to perform an act of capital formation as the balancing of relative utilities, "discounted" by the actor's rate of time preference and also by the uncertainty factor. Thus, first let us assume, for purposes of simplification, that Crusoe, in making the stick, forgoes 10 hours' worth of present goods, i.e., 200 berries, and has acquired 1,500 berries three days later as a result of the investment decision. If the 1,500 berries had been immediately available, there would be no doubt that he would have given up 200 berries to acquire 1,500. Thus, 1,500 berries in the present might have a rank of four on his value scale, while 200 berries have a rank of 11:



Now, how will Crusoe decide between 200 berries in the present and 1,500 berries three days from now? Since all choices

have to be made on one value scale, Crusoe must grade the utility of 1,500 berries three days from now as against the utility of 200 berries now. If the former is greater (higher on his value scale) he will make the decision to save and invest in the stick. If the latter is greater, and his 200 berries forgone have a greater value than the expectation of 1,500 berries three days from now, then his time preference has conquered the increased utility of stock, and he will not make the saving-investment decision. Thus, the actor's value scale may be:

(*a*)

4	1,500 berries in the present
11	200 berries now
12	1,500 berries three days from now

or it may be:

(*b*)

4	1,500 berries in the present
9	1,500 berries three days from now
11	200 berries now

In case (*b*) he will make the decision to invest; in case (*a*) he will not. We can say that the value of 1,500 berries three days from now is the *present value of the future good.* The expected future good is discounted by the actor according to his *rate of time preference.* The present value of his expected future good is compared to the present value of the present good on the actor's value scale, and the decision to save and invest is made accordingly. It is clear that the higher the rate of discount, the lower the present value of the future good will be, and the greater the likelihood of abstaining from the investment. On the other hand, the lower the rate of discount, the higher the present

value of future goods will be on the actor's value scale, and the greater the likelihood of its being greater than the value of present goods forgone, and hence of his making the investment.

Thus, the investment decision will be determined by which is greater: the present value of the future good or the present value of present goods forgone. The present value of the future good, in turn, is determined by the value that the future good would have if immediately present (say, the "expected future value of the future good"); and by the rate of time preference. The greater the former, the greater will be the present value of the future good; the greater the latter (the rate of discount of future compared to present goods), the lower the present value.

At any point in time, an actor has a range of investment decisions open to him of varying potential utilities for the products that will be provided.[37] He also has a certain rate of time preference by which he will discount these expected future utilities to their present value. How much he will save and invest in any period will be determined by comparing these present values with the value of the consumers' goods forgone in making the investment decision. As he makes one investment decision after another, he will choose to allocate his resources first to investments of highest present value, then to those of next highest, etc. As he continues investing (at any given time), the present value of the future utilities will decline. On the other hand, since he is giving up a larger and larger supply of consumers' goods in the present, the utility of the consumers' goods that he forgoes (leisure and others) will increase—on the basis of the law of marginal utility. He will cease saving and investing at the

---

[37]That such a range of investment decisions enabling him to achieve greater future output must always be open to him is a fundamental truth derived from the assumption of human action. If they were not open to him, it would mean that man could not (or rather, believed that he could not) act to improve his lot, and therefore there would be no possibility of action. Since we cannot even conceive of human existence without action, it follows that "investment opportunities" are always available.

point at which the value of goods forgone exceeds the present value of the future utilities to be derived. This will determine an actor's *rate* of saving and investing at any time.

It is evident that the problem again arises: How can actors decide and compare time-preference rates for innumerable possible goods and in a complex, modern economy? And here too, the answer for a complex economy lies in establishing commensurability among all the various commodities, present and future, as will be discussed in later chapters.

Now, the uncertainty factors enter into the actor's decision in one way or the other. The delicate procedure of weighing all the various factors in the situation is a complex process that takes place in the mind of every actor according to his understanding of the situation. It is a decision depending purely on the individual judgment, the subjective estimates, of each actor. The "best" decision cannot be exactly, or quantitatively, decided upon in advance by objective methods. This process of *forecasting* the future conditions that will occur during the course of his action is one that must be engaged in by every actor. This necessity of guessing the course of the relevant conditions and their possible change during the forthcoming action is called the *act of entrepreneurship*. Thus, to some extent at least, every man is an entrepreneur. Every actor makes his estimate of the uncertainty situation with regard to his forthcoming action.

The concepts of *success* or *failure* in entrepreneurship are thus deducible from the existence of action. The relatively successful entrepreneur is the one who has guessed correctly the changes in conditions to take place during the action, and has invested accordingly. He is the Crusoe who has decided not to build the stick because his judgment tells him that he will soon find a new grove of berries, which he then finds. On the other hand, the relatively unsuccessful entrepreneur is the one who has been badly mistaken in his forecast of the relevant changes in conditions taking place during the course of his action. He is the Crusoe who has failed to provide himself with a stick against

the blight. The successful actor, the successful entrepreneur, makes correct estimates; the unsuccessful entrepreneur is the one who makes erroneous estimates.

Suppose now that an investment has already been made, and capital goods have already been built with a goal in view, when changing conditions reveal that an error has been made. The actor is then faced with the problem of determining what to do with the capital good. The answer depends on the *convertibility* of the capital good. If the good becomes worthless in the use for which it is intended, the actor, though having made an error in investing in it in the first place, now has it on his hands and has to make the best of it. If there is another use to which the actor can conveniently transfer the capital good, he will do so. Thus, if Crusoe finds that a new grove has rendered his stick useless for berry-picking, he may use it as a walking stick. He would not have invested in it originally if he had known it would be useless for berry-picking, but now that he has it, he turns it to its most urgent available use. On the other hand, he may feel that it is hardly worthwhile to spend time replacing the stick, now that it is usable only for walking purposes. Or, after working 50 hours and building an axe, he may find a house left by some previous inhabitant. The axe, however, may be convertible to use in something just a bit lower in value—say, building a bow and arrows for hunting or building a boat for fishing. The axe may be so valuable in these uses that Crusoe will still work to replace and maintain it in operation.

It is clear that the accumulated stock of capital goods (or, for that matter, durable consumers' goods) imposes a conservative force on present-day action. The actor in the present is influenced by his (or someone else's) actions in the past, even if the latter were to some extent in error. Thus, Crusoe might find an axe already available, built by a previous inhabitant. It might not be the sort of axe that Crusoe would consider the best available. However, he may decide, if it is a serviceable axe, to use it as a capital good and to wait until it wears out before replacing it

with one of his choosing. On the other hand, he may feel that it is so blunt as to be of little use, and begin immediately to work on an axe of his own.

The conservatism of the past exercises a similar influence on the question of *location*, another aspect of the same problem. Thus, Crusoe may already have built his house, cleared a field, etc., in one portion of the island. Then, one day, in walking around the island, he might find a section at the other end with far greater advantages in fishing, fruits, etc. If he had not invested in any capital goods or durable consumers' goods, he would immediately shift his location to this more abundant area. However, he has already invested in certain capital goods: some, such as the axe, are easily convertible to the new location; others, such as the cleared field and the house, cannot be converted in their location. Therefore, he has to decide on his value scale between the advantages and disadvantages of moving: the more abundant fish and fruits versus the necessity of working to build a new house, make a new clearing, etc. He might decide, for example, to stay in the house and clearing until they have worn down to a certain point, without working on a replacement, and then shift to the new location.

If an actor decides to abandon nonconvertible capital, such as the stick or the cleared field, in favor of producing other capital and consumers' goods, he is *not*, as some may think, wasting his resources by allowing the emergence of "unused capacity" of his resources. When Crusoe abandons his clearing or stick or house (which may be considered in this connection as equivalent to capital), he is abandoning nonconvertible capital for the sake of using his labor in combination with natural elements or capital goods that he believes will yield him a greater utility. Similarly, if he refuses to go deep into a jungle for berries, he is not "wasting" his nonconvertible supply of land-and-berries, for he judges doing so of far less utility than other uses that he could make of his labor and time. The existence of a capital good not in use reveals an error made by this or by some previous

actor *in the past*, but indicates that the actor expects to acquire a greater utility from other uses of his labor than he could obtain by continuing the capital good in its originally intended use or by converting it to some other use.[38]

This discussion provides the clue to an analysis of how actors will employ the original nature-given factors of production. In many cases, actors have their choice among the varying elements provided by nature. Thus, suppose that Crusoe, in his explorations of the island, finds that among the possible locations where he can settle, some are abundant in their output of berries (setting aside their production of other consumers' goods), some less so, and some useless and barren. Clearly, other considerations being equal, he will settle on the most fertile—the "best" land—and employ this factor as far as is determined by the utility of its product, the possibility of investing in useful capital goods on the land, the value he places on leisure, etc. The poorer areas of land will remain unused. As stated above, this development is to be expected; there is no reason to be surprised at such evidence of "unused resources." On the other hand, if the better areas are used up, then Crusoe will go on to utilize some of the next best areas, until the utility of the supply produced fails to exceed the utility of his leisure forgone. ("Next best" includes all the relevant factors, such as productivity, convenient access to the best land, etc.)

Areas of potential use, but which the actor chooses *not* to bring into use because it would not "pay" in terms of utilities forgone, are called submarginal areas. They are not objects of action at the moment, but the actor has them in mind for possible future use.

On the other hand, Crusoe's island may be so small or so barren that all his available useful land or water areas must be pressed into use. Thus, Crusoe might have to explore the whole island for his daily output of 200 berries. In that case, if his

[38]On the "unused capacity" bogey, *see* Benham, *Economics*, pp. 147–49.

resources are such that he must always employ all the possibly useful nature-given factors, it is obvious that the actor is pretty close to the bare survival level.

In those cases where nature-given factors are worked on, "improved," and maintained by human labor, these are, in effect, thereby changed into capital goods. Thus, land that has been cleared, tilled, plowed, etc., by human labor has become a capital good. This land is a produced good, and not an originally given good. Decisions concerning whether and how much to improve the soil, or whether to maintain it or extract the maximum present consumers' goods at the expense of future losses ("erosion"), are on exactly the same footing as all capital-formation decisions. They depend on a comparison of the expected utility of future production as against the utility of present consumers' goods forgone.

It is clear that capital formation and the concomitant lengthening of the period of production prolong the *period of provision* of the actor. Capital formation lengthens the period in the future for which he is providing for the satisfaction of wants. *Action* involves the anticipation of wants that will be felt in the future, an estimate of their relative urgency, and the setting about to satisfy them. The more capital men invest, the longer their period of provision will tend to be. Goods being directly and presently consumed are *present goods*. A *future good* is the present expectation of enjoying a consumers' good at some point in the future. A future good may be a claim on future consumers' goods, or it may be a capital good, which will be transformed into a consumers' good in the future. Since a capital good is a way station (and nature-given factors are original stations) on the route to consumers' goods, capital goods and nature-given factors are both future goods.

Similarly, the period of provision can be prolonged by lengthening the duration of serviceableness of the consumers' goods being produced. A house has a longer durability than a crop of berries, for example, and Crusoe's investment in a house

considerably lengthens his period of provision. A durable consumers' good is consumed only partially from day to day, so that each day's consumption is that of a present good, while the stock of the remainder is a future good. Thus, if a house is built and will last 3,000 days, one day's use will consume 1/3,000 of it, while the remainder will be consumed in the future. One three-thousandth of the house is a present good, while the remaining part is a future good.[39]

It may be added that another method of lengthening the period of production is the simple accumulation of stocks of consumers' goods to be consumed in the future instead of the present. For example, Crusoe might save a stock of 100 berries to be consumed a few days or a week later. This is often called *plain saving*, as distinguished from *capitalist saving*, in which saving enters into the process of capital formation.[40] We shall see, however, that there is no essential difference between the two types of saving and that plain saving is also capitalist saving in that it too results in capital formation. We must keep in mind the vital fact that the concept of a "good" refers to a thing the units of which the actor believes afford equal serviceability. It does not refer to the physical or chemical characteristics of the good. We remember our critique of the popular fallacious objection to the universal fact of time preference—that, in any given winter, ice the next summer is preferred to ice now.[41] This was not a case of preferring the consumption of the *same* good in the future to its consumption in the present. If Crusoe has a stock of ice in the winter and decides to "save" some until next summer, this means that "ice-in-the-summer" is a *different* good, with a different intensity of satisfaction, from "ice-in-the-winter," despite their

---

[39]Cf. Böhm-Bawerk, *Positive Theory of Capital*, pp. 238–44.

[40]Plain saving is not to be confused with an earlier example, when Crusoe saved stocks of consumers' goods to be consumed while devoting his labor to the production of capital.

[41]See note 15 above.

physical similarities. The case of berries or of any other good is similar. If Crusoe decides to postpone consuming a portion of his stock of berries, this must mean that this portion will have a greater intensity of satisfaction if consumed later than now—enough greater, in fact, to overcome his time preference for the present. The reasons for such difference may be numerous, involving anticipated tastes and conditions of supply on that future date. At any rate, "berries-eaten-a-week-from-now" become a more highly valued good than "berries-eaten-now," and the number of berries that will be shifted from today's to next week's consumption will be determined by the behavior of the diminishing marginal utility of next week's berries (as the supply increases), the increasing marginal utility of today's berries (as the supply decreases), and the rate of time preference. Suppose that as a resultant of these factors, Crusoe decides to shift 100 berries for this purpose. In that case, these 100 berries are removed from the category of consumers' goods and shifted to that of capital goods. These are the sort of capital goods, however, which, like wine, need only *maturing time* to be transferred into consumers' goods, without the expenditure of labor (except the possible extra labor of storing and unstoring the berries).

It is clear, therefore, that the accumulation of a stock of consumers' goods is also saving that goes into capital formation.[42] The saved goods immediately become capital goods, which later mature into more highly valued consumers' goods. There is no essential difference between the two types of saving.

10. Action as an Exchange

We have stated that all action involves an exchange—a giving up of a state of affairs for what the actor expects will be a

[42]The period of production will be equal to the time difference between the act of saving and the act of future consumption, as in all other cases of investment.

more satisfactory state.[43] We may now elaborate on the implications of this truth, in the light of the numerous examples that have been given in this chapter. Every aspect of action has involved a *choice* among alternatives—a giving up of some goods for the sake of acquiring others. Wherever the choice occurred—whether among uses of durable consumers' goods, or of capital goods; saving versus consumption; labor versus leisure; etc.—such choices among alternatives, such renouncing of one thing in favor of another, were always present. In each case, the actor adopted the course that he believed would afford him the highest utility on his value scale; and in each case, the actor gave up what he believed would turn out to be a lesser utility.

Before analyzing the range of alternative choices further, it is necessary to emphasize that *man must always act*. Since he is always in a position to improve his lot, even "doing nothing" is a form of acting. "Doing nothing"—or spending all of his time in leisure—is a choice that will affect his supply of consumers' goods. Therefore, man must always be engaged in choosing and in action.

Since man is always acting, he must always be engaged in trying to attain the *greatest height on his value scale*, whatever the type of choice under consideration. There must *always* be room for improvement in his value scale; otherwise all of man's wants would be perfectly satisfied, and action would disappear. Since this cannot be the case, it means that there is always open to each actor the prospect of improving his lot, of attaining a value higher than he is giving up, i.e., of *making a psychic profit.* What he is giving up may be called his *costs*, i.e., the utilities that he is forgoing in order to attain a better position. Thus, an actor's costs are his forgone opportunities to enjoy consumers' goods. Similarly, the (greater) utility that he expects to acquire because of the action may be considered his *psychic income*, or *psychic revenue*, which in turn will be equal to the utility of the goods he

[43]See page 19 above.

will consume as a result of the action. Hence, at the inauguration of any action, the actor will believe that this course of action will, among the alternatives, *maximize his psychic income or psychic revenue*, i.e., attain the greatest height on his value scale.

Appendix A
Praxeology and Economics

This chapter has been an exposition of part of *praxeological analysis*—the analysis that forms the body of economic theory. This analysis takes as its fundamental premise the existence of human action. Once it is demonstrated that human action is a necessary attribute of the existence of human beings, the rest of praxeology (and its subdivision, economic theory) consists of the elaboration of the logical implications of the concept of action. Economic analysis is of the form:

(1) Assert A—action axiom.
(2) If *A*, then *B*; if *B*, then *C*; if *C*, then *D*, etc.—by rules of logic.
(3) Therefore, we assert (the truth of) *B*, *C*, *D*, etc.

It is important to realize that economics does not propound any laws about the *content* of man's ends. The examples that we have given, such as ham sandwich, berries, etc., are simply illustrative instances, and are not meant to assert anything about the content of a man's goals at any given time. The concept of action involves the use of scarce means for satisfying the most urgent wants at some point in the future, and the truths of economic theory involve the formal relations between ends and means, and not their specific contents. A man's ends may be "egoistic" or "altruistic," "refined" or "vulgar." They may emphasize the enjoyment of "material goods" and comforts, or they may stress the ascetic life. Economics is not concerned with their content, and its laws apply regardless of the nature of these ends.

Praxeology, therefore, differs from *psychology* or from the *philosophy of ethics*. Since all these disciplines deal with the subjective decisions of individual human minds, many observers have believed that they are fundamentally identical. This is not the case at all. Psychology and ethics deal with the content of human ends; they ask, *why* does the man choose such and such ends, or *what* ends *should* men value? Praxeology and economics deal with *any* given ends and with the formal implications of the fact that men have ends and employ means to attain them. Praxeology and economics are therefore disciplines separate and distinct from the others.

Thus, all explanations of the law of marginal utility on psychological or physiological grounds are erroneous. For example, many writers have based the law of marginal utility on an alleged "law of the satiation of wants," according to which a man can eat so many scoops of ice cream at one time, etc., and then becomes satiated. Whether or not this is true in psychology is completely irrelevant to economics. These writers erroneously concluded that, at the beginning of the supply, a second unit may be more enjoyable than the first, and therefore that marginal utility may increase at first before declining. This is completely fallacious. The law of marginal utility depends on no physiological or psychological assumptions but is based on the praxeological truth that the first unit of a good will be used to satisfy the most urgent want, the second unit the next most urgent want, etc. It must be remembered that these "units" must be of equal potential serviceability.

For example, it is erroneous to argue as follows: Eggs are the good in question. It is possible that a man needs four eggs to bake a cake. In that case, the second egg may be used for a less urgent use than the first egg, and the third egg for a less urgent use than the second. However, since the fourth egg allows a cake to be produced that would not otherwise be available, the marginal utility of the fourth egg is greater than that of the third egg.

This argument neglects the fact that a "good" is not the physical material, but any material whatever of which the units will constitute an equally serviceable supply. Since the fourth egg is not equally serviceable and interchangeable with the first egg, the two eggs are *not* units of the same supply, and therefore the law of marginal utility does not apply to this case at all. To treat eggs in this case as homogeneous units of one good, it would be necessary to consider *each set of four eggs* as a unit.

To sum up the relationship and the distinctions between praxeology and each of the other disciplines, we may describe them as follows:

- Why man chooses various ends: *psychology*.
- What men's ends should be: *philosophy of ethics.* also: *philosophy of aesthetics*.
- How to use means to arrive at ends: *technology*.
- What man's ends are and have been, and how man has used means in order to attain them: *history*.
- The formal implications of the fact that men use means to attain various chosen ends: *praxeology*.

What is the relationship between praxeology and economic analysis? Economics is a subdivision of praxeology—so far the only fully elaborated subdivision. With praxeology as the general, formal theory of human action, economics includes the analysis of the action of an isolated individual (Crusoe economics) and, especially elaborate, the analysis of interpersonal exchange (catallactics). The rest of praxeology is an unexplored area. Attempts have been made to formulate a logical theory of war and violent action, and violence in the form of government has been treated by political philosophy and by praxeology in tracing the effects of violent intervention in the free market. A theory of games has been elaborated, and interesting beginnings have been made in a logical analysis of voting.

The suggestion has been made that, since praxeology and economics are logical chains of reasoning based on a few universally known premises, to be really scientific it should be elaborated according to the symbolic notations of mathematical logic.[44] This represents a curious misconception of the role of mathematical logic, or "logistics." In the first place, it is the great quality of verbal propositions that *each one* is meaningful. On the other hand, algebraic and logical symbols, as used in logistics, are not in themselves meaningful. Praxeology asserts the action axiom as true, and from this (together with a few empirical axioms—such as the existence of a variety of resources and individuals) are deduced, by the rules of logical inference, all the propositions of economics, each one of which is verbal and meaningful. If the logistic array of symbols were used, each proposition would not be meaningful. Logistics, therefore, is far more suited to the physical sciences, where, in contrast to the science of human action, the conclusions rather than the axioms are known. In the physical sciences, the premises are only hypothetical, and logical deductions are made from them. In these cases, there is no purpose in having meaningful propositions at each step of the way, and therefore symbolic and mathematical language is more useful.

Simply to develop economics verbally, then to translate into logistic symbols, and finally to retranslate the propositions back into English, makes no sense and violates the fundamental scientific principle of Occam's razor, which calls for the greatest

---

[44]Cf. G.J. Schuller, "Rejoinder," *American Economic Review*, March, 1951, p. 188. For a reply, *see* Murray N. Rothbard, "Toward a Reconstruction of Utility and Welfare Economics" in Mary Sennholz, ed. *On Freedom and Free Enterprise: Essays in Honor of Ludwig von Mises* (Princeton, N.J.: D. Van Nostrand, 1956), p. 227. *Also see* Boris Ischboldin, "A Critique of Econometrics," *Review of Social Economy*, September, 1960, pp. 110–27; and Vladimir Niksa, "The Role of Quantitative Thinking in Modern Economic Theory," *Review of Social Economy*, September, 1959, pp. 151–73.

possible simplicity in science and the avoidance of unnecessary multiplication of entities or processes.

Contrary to what might be believed, the use of verbal logic is not inferior to logistics. On the contrary, the latter is merely an auxiliary device based on the former. For formal logic deals with the necessary and fundamental laws of thought, which must be verbally expressed, and logistics is only a symbolic system that uses this formal verbal logic as its foundation. Therefore, praxeology and economics need not be apologetic in the slightest for the use of verbal logic—the fundamental basis of symbolic logic, and meaningful at each step of the route.[45]

Appendix B
On Means and Ends

It is often charged that any theory grounded on a logical separation of *means* and *ends* is unrealistic because the two are often amalgamated or fused into one. Yet if man acts purposively, he therefore drives toward *ends*, and whatever route he takes, he must, *ipso facto*, employ *means* to achieve them. The distinction between means and ends is a necessary logical distinction rooted in all human—indeed, all purposive—action. It is difficult to see the sense in any denial of this primordial truth. The only sense to the charge concerns those cases where certain *objects*, or rather certain *routes of action*, become ends in themselves as well as means to other ends. This, of course, can often happen. There is no difficulty, however, in incorporating them into an analysis, as has been done above. Thus, a man may work at a certain job not only for the pay, but also because he enjoys the work or the location. Moreover, any desire for money is a desire for a means to other ends. The critics of praxeology

[45]Cf. René Poirier, "Sur Logique" in André Lalande, *Vocabulaire technique et critique de la philosophie* (Paris: Presses Universitaires de France, 1951), pp. 574–75.

confuse the necessary and eternal separation of ends and means as *categories* with their frequent coincidence in a particular concrete resource or course of action.

2

DIRECT EXCHANGE

1. Types of Interpersonal Action: Violence

THE ANALYSIS IN CHAPTER 1 WAS based on the logical implications of the assumption of action, and its results hold true for all human action. The *application* of these principles was confined, however, to "Crusoe economics," where the actions of isolated individuals are considered by themselves. In these situations, there are no interactions between persons. Thus, the analysis could easily and directly be applied to *n* number of isolated Crusoes on *n* islands or other isolated areas. The next task is to apply and extend the analysis to consider interactions between individual human beings.

Let us suppose that Crusoe eventually finds that another individual, say Jackson, has also been living an isolated existence at the other end of the island. What types of interaction may now take place between them? One type of action is *violence*. Thus, Crusoe may entertain a vigorous hatred toward Jackson and decide to murder or otherwise injure him. In that case, Crusoe would gain his end—murder of Jackson—by committing violence. Or Crusoe may decide that he would like to expropriate Jackson's house and collection of furs and murder Jackson as a means to that end. In either case, the result is that Crusoe gains in satisfaction at the expense of Jackson, who, to say the least, suffers great psychic loss. Fundamentally similar is action

based on a *threat of violence*, or *intimidation*. Thus, Crusoe may hold up Jackson at the point of a knife and rob him of his accumulated furs and provisions. Both examples are cases of *violent action* and involve gain for one at the expense of another.

The following factors, singly or in combination, might work to induce Crusoe (or Jackson) to *refrain* from any violent action against the other:

(1) He may feel that the use of violence against any other human being is *immoral*, i.e., that refraining from violence against another person is an end in itself, whose rank in his value scale is higher than that of any advantages in the form of capital or consumers' goods that he might gain from such action.

(2) He may decide that instituting violent action might well establish an unwelcome precedent, causing the other person to take up arms against him, so that he may end by being the victim instead of the victor. If he begins a type of action where one must gain at the expense of another, then he must face the fact that *he* might turn out to be the loser as a result of the action.

(3) Even if he feels that his violent action eventually will result in victory over the other, he may conclude that the "costs of the war" would exceed his net gain from the victory. Thus, the disutility of time and labor-energy spent in *fighting the war* (war may be defined as violent action used by two or more opponents), in accumulating *weapons* for the war (capital goods for war uses), etc., might, in prospect, outweigh the spoils of conquest.

(4) Even if Crusoe feels reasonably certain of victory and believes that the costs of fighting will be far less than the utility of his spoils of victory, this short-run gain may well be outweighed in his decision by long-run losses. Thus, his conquest of Jackson's furs and house may add to his satisfaction for a while after the "period of production" (= preparing for the war + the length of time of the war itself), but, after a time, his house will decay and his furs will become worthless. He may then conclude that, by his murder of Jackson, he has lost permanently many services which Jackson's continued existence might have furnished.

This might be companionship or other types of consumers' or capital goods. *How* Jackson might have served Crusoe without resort to violence will be indicated below, but, at any rate, Crusoe may be detained from using violence by estimating the disutility of the long-run consequences more highly than the utility of the expected short-run gains. On the other hand, his time preference may be so high as to cause his short-run gains to override the long-run losses in his decision.

It is possible that Crusoe may institute violent action without taking into consideration the costs of the war or the long-run consequences, in which case his actions will turn out to be erroneous, i.e., the means he used were not the appropriate ones to maximize his psychic revenue.

Instead of murdering his opponent, Crusoe might find it more useful to *enslave* him, and, under continual threat of violence, to force Jackson to agree to expend his labor for the satisfaction of Crusoe's wants rather than his own.[1] Under *slavery*, the master treats the slaves as he does his livestock, horses, and other animals, using them as factors of production to gratify his wants, and feeding, housing them, etc., just enough to enable them to continue in the master's service. It is true that the slave agrees to this arrangement, but this agreement is the result of a choice between working for the master and injury through violence. Labor under these conditions is qualitatively different from labor not under the threat of violence, and may be called *compulsory labor* as compared to *free labor* or *voluntary labor*. If Jackson agrees to continue working as a slave under Crusoe's dictates, it does *not* mean that Jackson is an enthusiastic advocate of his own slavery. It simply means that Jackson does not believe that *revolt* against his master will better his condition, because of the *costs* of the revolt in terms of possible violence inflicted on him, the labor of preparing and fighting, etc.

---

[1]For a discussion of the transformation from murder to slavery, cf. Franz Oppenheimer, *The State* (New York: Vanguard Press, 1914, reprinted 1928), pp. 55–70 and *passim*.

The argument that the slave might be an enthusiastic supporter of the system because of the food, etc., provided by his master ignores the fact that, in that case, violence and the threat of violence by the master would not be necessary. Jackson would simply voluntarily place himself in Crusoe's service, and this arrangement would not be slavery, but another type considered in the next section.[2,3] It is clear that the slave is always worse off than he would be without the threat of violence by the master, and therefore, that the master always gains at the expense of the slave.

The interpersonal relation under slavery is known as *hegemonic.*[4] The relationship is one of command and obedience, the commands being enforced by threats of violence. The master uses the slaves as instruments, as factors of production, for gratifying his wants. Thus, slavery, or hegemony, is defined as a system in which one must labor under the orders of another under the threat of violence. Under hegemony, the man who does the obeying—the "slave," "serf," "ward," or "subject"—makes only one choice among two alternatives: (1) to subject himself to the master or "dictator"; or (2) to revolt against the regime of violence by use of his own violence or by refusing to obey orders. If he chooses the first course, he submits himself to

---

[2]It is true that man, being what he is, cannot absolutely guarantee lifelong service to another under a voluntary arrangement. Thus, Jackson, at present, might agree to labor under Crusoe's direction for life, in return for food, clothing, etc., but he cannot guarantee that he will not change his mind at some point in the future and decide to leave. In this sense, a man's own person and will is "inalienable," i.e., cannot be given up to someone else for any future period.

[3]Such an arrangement is *not* a *guarantee* of "security" of provisions, since no one can guarantee a steady supply of such goods. It simply means that A *believes* that B is better able to furnish a supply of these goods than he is himself.

[4]Cf. Mises, *Human Action*, pp. 196–99, and, for a comparison of slaves and animals, *ibid.*, pp. 624–30.

the hegemonic ruler, and all the other decisions and actions are made by that ruler. The subject chooses *once* in choosing to obey the ruler; the other choices are made by the ruler. The subject acts as a passive factor of production for use by the master. After that one act of (continual) choice made by the slave, he engages in coerced or compulsory labor, and the dictator alone is free to choose and act.

Violent action may result in the following developments: (*a*) inconclusive fighting, with neither opponent the victor, in which case the war may continue intermittently for a long period of time, or violent action may cease and *peace* be established (the absence of war); (*b*) the victor may kill the victim, in which case there is no further interpersonal action between the two; (*c*) the victor may simply rob the victim and leave, to return to isolation, or perhaps with intermittent violent forays; or (*d*) the victor may establish a continuing hegemonic tyranny over the victim by threats of violence.

In course (*a*), the violent action has proved abortive and erroneous; in (*b*), there is no further interpersonal interaction; in (*c*), there is an alternation between robbery and isolation; and in (*d*), a continuing hegemonic bond is established.

Of these results, only in (*d*) has a continuing pattern of interpersonal relationship been constituted. These relations are compulsory, involving the following coerced "exchanges": the slaves are treated as factors of production in exchange for food and other provisions; the masters acquire factors of production in exchange for supplying the provisions. Any continuing pattern of interpersonal exchanges is called a *society*, and it is clear that a society has been established only in case (*d*).[5] In the case of Crusoe's enslavement of Jackson, the society established is a totally hegemonic one.

---

[5]There is, of course, no judgment at this point concerning whether the establishment of a society or such a society is a good, bad, or indifferent development.

The term "society," then, denotes a pattern of interpersonal exchanges among human beings. It is obviously absurd to treat "society" as "real," with some independent force of its own. There is no reality to society apart from the individuals who compose it and whose actions determine the type of social pattern that will be established.

We have seen in chapter 1 that all action is an exchange, and we may now divide exchanges into two categories. One is *autistic exchange*. Autistic exchange consists of any exchange that does not involve some form of interpersonal exchange of services. Thus, all of isolated Crusoe's exchanges were autistic. On the other hand, the case of slavery did involve *interpersonal exchange*, in which each gives up some goods in order to acquire other goods from the other. In this form of compulsory exchange, however, only the ruler benefits from the exchange, since he is the only one who makes it of his own free choice. Since he must impose the threat of violence in order to induce the subject to make the exchange, it is clear that the latter loses by the exchange. The master uses the subject as a factor of production for his own profit at the latter's expense, and this hegemonic relationship may be called *exploitation*. Under hegemonic exchange, the ruler exploits the subject for the ruler's benefit.[6]

2. *Types of Interpersonal Action: Voluntary Exchange and the Contractual Society*[7]

From this point on, we shall develop an analysis of the workings of a society based purely on voluntary action, entirely *unhampered* by violence or threats of violence. We shall examine

---

[6]This system has sometimes been called "compulsory co-operation," but we prefer to limit the term "co-operation" to the result of voluntary choices.

[7]For an analysis of exchange, *see* Menger, *Principles of Economics*, pp. 175–90. For a vivid discussion of exchange, *see* Frédéric Bastiat, *Harmonies of Political Economy* (Santa Ana, Calif.: The Register Publishing Co., 1944), I, 96–130.

interpersonal actions that are purely voluntary, and have no trace of hegemonic relations. Then, after working out the laws of the *unhampered market*, we shall trace the nature and results of hegemonic relations—of actions based on violence or the threat of violence. We shall note the various effects of violent interference with voluntary actions and shall consider the consequences of approaches to a regime of total hegemony, of pure slavery or subjection. At present, we shall confine our discussion to an analysis of actions unhampered by the existence of violence of man against man.

The major form of voluntary interaction is voluntary interpersonal exchange. A gives up a good to B in exchange for a good that B gives up to A. The essence of the exchange is that *both people make it because they expect that it will benefit them; otherwise they would not have agreed to the exchange.* A necessary condition for an exchange to take place is that the *two goods have reverse valuations on the respective value scales of the two parties to the exchange.* Thus, suppose A and B are the two exchangers, and A gives B good *X* in exchange for good *Y*. In order for this exchange to take place, the following must have been their value scales before making the exchange:

A	B
1—(Good *Y*)	1—(Good *X*)
2—Good *X*	2—Good *Y*

(Parentheses around the good indicate that the party does not have it in his stock; absence of parentheses indicates that he has.) A possesses good *X*, and B possesses good *Y*, and each evaluates the good of the other more highly than his own. After the exchange is made, both A and B have shifted to a higher position on their respective value scales.

Thus, the conditions for an exchange to take place are that the goods are valued in reverse order by the two parties and that each of the parties *knows* of the existence of the other and the goods that he possesses. Without knowledge of the other person's assets, no exchange of these assets could take place.

It is clear that the things that must be exchanged are *goods*, which will be useful to the receiving party. The goods may be present or future goods (or claims to future goods, which may be considered as equivalent to future goods), they may be capital goods or consumers' goods, labor or nature-given factors. At any rate, the objects of an exchange must be *scarce means* to human ends, since, if they were available in abundance for all, they would be general conditions of human welfare and not objects of human action. If something were a general condition of human welfare, there would be no need to give something up to acquire it, and it would not become the object of exchange.

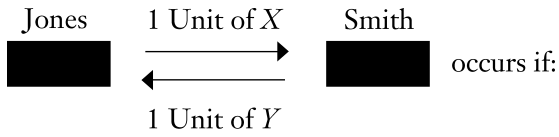
If the goods in question are unique goods with a supply of one unit, then the problem of when exchanges will or will not be made is a simple one. If A has a vase and B a typewriter, if each knows of the other's asset, and if A values the typewriter more highly, and B values the vase more highly, there will be an exchange. If, on the other hand, *either* A or B values whatever he has more highly than what the other has, then an exchange will not take place. Similarly, an exchange will not take place if either party has no knowledge that the other party has a vase or a typewriter.

On the other hand, if the goods are available in *supplies* of homogeneous units, the problem becomes more complex. Here, in determining how far exchanges of the two goods will go, the law of marginal utility becomes the decisive factor.[8] If Jones and Smith have certain quantities of units of goods *X* and *Y* in their possession, then in order for Jones to trade *one unit* of *X* for *one unit* of *Y*, the following conditions have to be met: To Jones, the marginal utility of the added unit of *Y* must be greater than the marginal utility of the unit of *X* given up; and

---

[8]Strictly, the law of marginal utility is also applicable to the case where the supply is only one unit, and we can say that, in the example above, exchange will take place if, for A, the marginal utility of good *Y* is greater than the marginal utility of good *X*, and *vice versa* for B.

to Smith, the marginal utility of the added unit of *X* must be greater than the marginal utility of the unit of *Y* given up. Thus:



to Jones, M.U. of Addition of *Y* > M.U. of *X*.
to Smith, M.U. of Addition of *X* > M.U. of *Y*.

(The marginal utilities of the goods to Jones and to Smith are, of course, not comparable, since they cannot be measured, and the two value scales cannot be reduced to one measure or scale.)

However, as Jones continues to exchange with Smith units of *X* for units of *Y*, the marginal utility of *X* to Jones increases, because of the law of marginal utility. Furthermore, the marginal utility of the added unit of *Y* continues to decrease as Jones' stock of *Y* increases, because of the operation of this law. Eventually, therefore, Jones will reach a point where, in any further exchange of *X* for *Y*, the marginal utility of *X* will be greater than the marginal utility of the added unit of *Y*, so that he will make no further exchange. Furthermore, Smith is in a similar position. As he continues to exchange *Y* for *X*, for him the marginal utility of *Y* increases, and the marginal utility of the added unit of *X* decreases, with the operation of the law of marginal utility. He too will eventually reach a point where a further exchange will lower rather than raise his position on his value scale, so that he will decline to make any further exchange. Since it takes two to make a bargain, Jones and Smith will exchange units of *X* for units of *Y until one of them* reaches a point beyond which further exchange will lead to loss rather than profit.

Thus, suppose that Jones begins with a position where his *assets (stock of goods)* consist of a supply of five horses and zero cows, while Smith begins with assets of five cows and zero horses. How much, if any, exchanges of one cow for one horse

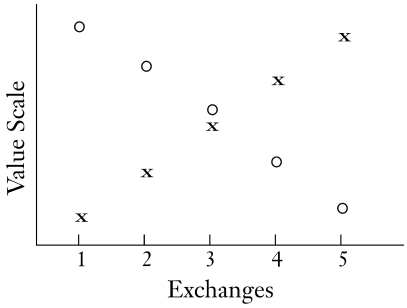


FIGURE 5. JONES

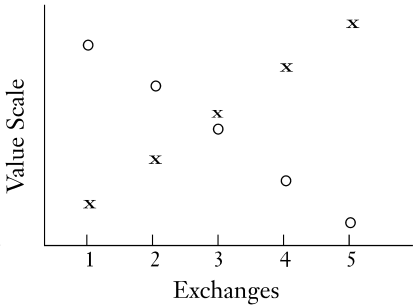


FIGURE 6. SMITH

will be effected is reflected in the value scales of the two people. Thus, suppose that Jones' value diagram is as shown in Figure 5. The dots represent the value of the marginal utility of each additional cow, as Jones makes exchanges of one horse for one cow. The crosses represent the increasing marginal utility of each horse given up as Jones makes exchanges. Jones will stop trading after the third exchange, when his assets consist of two horses and three cows, since a further such exchange will make him worse off.

On the other hand, suppose that Smith's value diagram appears as in Figure 6. The dots represent the marginal utility to Smith of each additional horse, while the crosses represent the marginal utility of each cow given up. Smith will stop trading after two exchanges, and therefore Jones will have to stop after two exchanges also. They will end with Jones having a stock of three horses and two cows, and Smith with a stock of three cows and two horses.

It is almost impossible to overestimate the importance of exchange in a developed economic system. Interpersonal exchanges have an enormous influence on productive activities. Their existence means that goods and units of goods have not only *direct use-value* for the producer, but also *exchange-value*. In other words, goods may now be exchanged for other goods of greater usefulness to the actor. A man will exchange a unit of a good so

long as the goods that it can command in exchange have greater value to him than the value it had in direct use, i.e., so long as its exchange-value is greater than its direct use-value. In the example above, the first two horses that Jones exchanged and the first two cows surrendered by Smith had a greater exchange value than direct use-value to their owners. On the other hand, from then on, their respective assets had greater use-value to their owners than exchange-value.[9]

The existence and possibilities of exchange open up for producers the avenue of producing for a "market" rather than for themselves. Instead of attempting to maximize his product in isolation by producing goods solely for his own use, each person can now produce goods in anticipation of their exchange-value, and exchange these goods for others that are more valuable to him. It is evident that since this opens a new avenue for the utility of goods, it becomes possible for each person to increase his productivity. Through praxeology, therefore, we know that only gains can come to every participant in exchange and that each must benefit by the transaction; otherwise he would not engage in it. Empirically we know that the exchange economy has made possible an enormous increase in productivity and satisfactions for all the participants.

Thus, any person can produce goods either for his own direct use or for purposes of exchange with others for goods that he desires. In the former case, *he* is the *consumer* of his own product; in the latter case, he produces in the service of *other consumers*, i.e., he "produces for a market." In either case, it is clear that, on the unhampered "market," it is the consumers who dictate the course of production.

At any time, a good or a unit of a good may have for its possessor either direct use-value or exchange-value or a mixture of both, and whichever is the greater is the determinant of his

---

[9]On use-value and exchange-value, *see* Menger, *Principles of Economics*, pp. 226–35.

action. Examples of goods with only direct use-value to their owner are those in an isolated economy or such goods as eyeglasses ground to an individual prescription. On the other hand, producers of such eyeglasses or of surgical instruments find no direct use-value in these products, but only exchange-value. Many goods, as in the foregoing example of exchange, have both direct and exchange-value for their owners. For the latter goods, changing conditions may cause direct use-value to replace exchange-value in the actor's hierarchy of values, or *vice versa*. Thus, if a person with a stock of wine happens to lose his taste for wine, the previous greater use-value that wine had for him will change, and the wine's exchange-value will take precedence over its use-value, which has now become almost nil. Similarly, a grown person may exchange the toys that he had used as a child, now that their use-value has greatly declined.

On the other hand, the exchange-value of goods may decline, causing their possessors to use them directly rather than exchange them. Thus, a milliner might make a hat for purposes of exchange, but some minor defect might cause its expected exchange value to dwindle, so that the milliner decides to wear the hat herself.

One of the most important factors causing a change in the relationship between direct use-value and exchange-value is an increase in the number of units of a supply available. From the law of marginal utility we know that an increase in the supply of a good available decreases the marginal utility of the supply for direct use. Therefore, the more units of supply are available, the more likely will the exchange-value of the marginal unit be greater than its value in direct use, and the more likely will its owner be to exchange it. The more horses that Jones had in his stock, and the more cows Smith had, the more eager would they be to exchange them. Conversely, a decrease in supply will increase the likelihood that direct use-value will predominate.

The network of voluntary interpersonal exchanges forms a society; it also forms a pattern of interrelations known as *the market*. A society formed solely by the market has an *unhampered*

market, or a *free market*, a market not burdened by the interference of violent action. A society based on voluntary exchanges is called a *contractual society*. In contrast to the hegemonic society based on the rule of violence, the contractual type of society is based on freely entered contractual relations between individuals. Agreements by individuals to make exchanges are called *contracts*, and a society based on voluntary contractual agreements is a contractual society. It is the society of the unhampered market.

In a contractual society, each individual benefits by the exchange-contract that he makes. Each individual is an actor free to make his own decisions at every step of the way. Thus, the relations among people in an unhampered market are "symmetrical"; there is equality in the sense that each person has equal power to make his own exchange-decisions. This is in contrast to a hegemonic relationship, where power is asymmetrical—where the dictator makes all the decisions for his subjects except the one decision to obey, as it were, at bayonet point.

Thus, the distinguishing features of the contractual society, of the unhampered market, are self-responsibility, freedom from violence, full power to make one's own decisions (except the decision to institute violence against another), and benefits for all participating individuals. The distinguishing features of a hegemonic society are the rule of violence, the surrender of the power to make one's own decisions to a dictator, and exploitation of subjects for the benefit of the masters. It will be seen below that existing societies may be totally hegemonic, totally contractual, or various mixtures of different degrees of the two, and the nature and consequences of these various "mixed economies" and totally hegemonic societies will be analyzed.

Before we examine the exchange process further, it must be considered that, in order for a person to exchange anything, he must first possess it, or *own* it. He gives up the *ownership* of good *X* in order to obtain the *ownership* of good *Y*. Ownership by one or more owners implies exclusive control and use of the goods

owned, and the goods owned are known as *property*. Freedom from violence implies that no one may seize the property of another by means of violence or the threat of violence and that each person's property is safe, or "secure," from such aggression.

What goods become property? Obviously, only *scarce means* are property. General conditions of welfare, since they are abundant to all, are not the objects of any action, and therefore cannot be owned or become property. On the free market, it is nonsense to say that someone "owns" the air. Only if a good is scarce is it necessary for anyone to obtain it, or ownership of it, for his use. The only way that a man could assume ownership of the air is to use violence to enforce this claim. Such action could not occur on the unhampered market.

On the free, unhampered market, a man can acquire property in scarce goods as follows: (1) In the first place, *each man has ownership over his own self*, over his will and actions, and the manner in which he will exert his own labor. (2) He acquires scarce nature-given factors either by appropriating hitherto unused factors for his own use or by receiving them as a gift from someone else, who in the last analysis must have appropriated them as hitherto unused factors.[10] (3) He acquires capital goods or consumers' goods either by mixing his own labor with nature-given factors to produce them or by receiving them as a gift from someone else. As in the previous case, gifts must eventually resolve themselves into some actor's production of the goods by the use of his own labor. Clearly, it will be nature-given factors, capital goods, and *durable* consumers' goods that are likely to be handed down through gifts, since nondurable consumers' goods will probably be quickly consumed. (4) He may *exchange* any type of factor (labor service, nature-given factor, capital good, consumers' good) for any type of factor. It is

[10]Analytically, receiving a factor from someone as a gift simply pushes the problem back another stage. At some point, the actor must have appropriated it from the realm of unused factors, as Crusoe appropriated the unused land on the island.

clear that gifts and exchanges as a source of property must eventually be resolved into: *self-ownership*, *appropriation of unused nature-given factors*, and *production of capital and consumers' goods*, as the ultimate sources of acquiring property in a free economic system. In order for the giving or exchanging of goods to take place, they must first be obtained by individual actors in one of these ways. The logical sequence of events is therefore: A man owns himself; he appropriates unused nature-given factors for his ownership; he uses these factors to produce capital goods and consumers' goods which become his own; he uses up the consumers' goods and/or gives them and the capital goods away to others; he exchanges some of these goods for other goods that had come to be owned in the same way by others.[11,12] These are the methods of acquiring goods that obtain on the free market, and they include all but the method of violent or other *invasive* expropriation of the property of others.[13]

---

[11]On self-ownership and the acquisition of property, cf. the classic discussion of John Locke, "An Essay Concerning the True Original Extent and End of Civil Government, Second Treatise" in Ernest Barker, ed., *Social Contract* (London: Oxford University Press, 1948), pp. 15–30.

[12]The problem of self-ownership is complicated by the question of *children*. Children cannot be considered self-owners, because they are not yet in possession of the powers of reason necessary to direct their actions. The fact that children are under the hegemonic authority of their parents until they are old enough to become self-owning beings is therefore not contrary to our assumption of a purely free market. Since children are not capable of self-ownership, authority over them will rest in some individuals; on an unhampered market, it would rest in their *producers*, the parents. On the other hand, the property of the parents in this unique case is not exclusive; the parents may not injure the children at will. Children, not long after birth, begin to acquire the powers of reasoning human beings and embody the potential development of full self-owners. Therefore the child will, on the free market, be defended from violent actions in the same way as an adult. On children, see *ibid*., pp. 30–38.

[13]For more on invasive and noninvasive acts in a free market, see section 13 below.

In contrast to general conditions of welfare, which on the free market cannot be subject to appropriation as property, scarce goods in use in production must always be under *someone's* control, and therefore must always be *property*. On the free market, the goods will be owned by those who either produced them, first put them to use, or received them in gifts. Similarly, under a system of violence and hegemonic bonds, someone or some people must superintend and direct the operations of these goods. Whoever performs these functions in effect owns these goods as property, regardless of the legal definition of ownership. This applies to persons and their services as well as to material goods. On the free market, each person is a complete owner of himself, whereas under a system of full hegemonic bonds, he is subject to the ownership of others, with the exception of the one decision not to revolt against the authority of the owner. Thus, violent or hegemonic regimes do not and cannot *abolish* property, which derives from the fundamentals of human action, but can only transfer it from one person or set of people (the producers or natural self-owners) to another set.

We may now briefly sum up the various types of human action in the following table:

HUMAN ACTION

I. Isolation (Autistic Exchange)
II. Interpersonal Action
    A. Invasive Action
        1. War
        2. Murder, Assault
        3. Robbery
        4. Slavery
    B. Noninvasive Action
        1. Gifts
        2. Voluntary Exchange

This and subsequent chapters are devoted to an analysis of a noninvasive society, particularly that constituted by voluntary interpersonal exchange.

3. Exchange and the Division of Labor

In describing the conditions that must obtain for interpersonal exchange to take place (such as reverse valuations), we implicitly assumed that it must be *two different goods* that are being exchanged. If Crusoe at his end of the island produced only berries, and Jackson at his end produced only the same kind of berries, then no basis for exchange between them would occur. If Jackson produced 200 berries and Crusoe 150 berries, it would be nonsensical to assume that any exchange of berries would be made between them.[14] The only voluntary interpersonal action in relation to berries that could occur would be a gift from one to another.

If exchangers must exchange two different goods, this implies that each party must have a different proportion of assets of goods in relation to his wants. He must have relatively *specialized* in the acquisition of different goods from those the other party produced. This specialization by each individual may have occurred for any one of three different reasons or any combination of the three: (*a*) differences in suitability and yield of the nature-given factors; (*b*) differences in given capital and durable consumers' goods; and (*c*) differences in skill and in the desirability of different types of labor.[15] These factors, in addition to the potential exchange-value and use-value of the goods, will determine the line of production that the actor will pursue. If the production is directed toward exchange, then the exchange-value will play a major role in his decision. Thus, Crusoe may have found abundant crops on his side of the island. These resources, added to his greater skill in farming and the lower disutility of this occupation for him because of a liking for

---

[14]It is possible that Crusoe and Jackson, for the mutual fun of it, might pass 50 berries back and forth between them. This, however, would not be genuine exchange, but joint participation in an enjoyable consumers' good—a game or play.

[15]Basically, class (*b*) is resolvable into differences in classes (*a*) and (*c*), which account for their production.

agriculture, might cause him to take up farming, while Jackson's greater skill in hunting and more abundant game supply induce him to specialize in hunting and trapping. Exchange, a productive process for both participants, implies specialization of production, or *division of labor.*

The extent to which division of labor is carried on in a society depends on the *extent of the market for the products.* The latter determines the exchange-value that the producer will be able to obtain for his goods. Thus, if Jackson knows that he will be able to exchange part of his catch of game for the grains and fruits of Crusoe, he may well expend all his labor on hunting. Then he will be able to devote all his labor-time to hunting, while Crusoe devotes his to farming, and their "surplus" stocks will be exchanged up to the limits analyzed in the previous section. On the other hand, if, for example, Crusoe has little use for meat, Jackson will not be able to exchange much meat, and he will be forced to be far more directly self-sufficient, producing his own grains and fruits as well as meat.

It is clear that, praxeologically, the very fact of exchange and the division of labor implies that it must be more productive for all concerned than isolated, autistic labor. Economic analysis alone, however, does not convey to us knowledge of the enormous increase in productivity that the division of labor brings to society. This is based on a further empirical insight, viz., the enormous *variety* in human beings and in the world around them. It is a fact that, superimposed on the basic unity of species and objects in nature, there is a great diversity. Particularly is there variety in the aforementioned factors that would give rise to specialization: in the locations and types of natural resources and in the ability, skills, and tastes of human beings. In the words of Professor von Mises:

> One may as well consider these two facts as one and the same fact, namely, the manifoldness of nature which makes the universe a complex of infinite varieties. If the earth's surface were such that the physical conditions of production were the same at every

> point and if one man were . . . equal to all other men . . . division of labor would not offer any advantages for acting man.[16]

It is clear that conditions for exchange, and therefore increased productivity for the participants, will occur *where each party has a superiority in productivity in regard to one of the goods exchanged*—a superiority that may be due either to better nature-given factors or to the ability of the producer. If individuals abandon attempts to satisfy their wants in isolation, and if each devotes his working time to that specialty in which he excels, it is clear that total productivity for each of the products is increased. If Crusoe can produce more berries per unit of time, and Jackson can kill more game, it is clear that productivity in both lines is increased if Crusoe devotes himself wholly to the production of berries and Jackson to hunting game, after which they can exchange some of the berries for some of the game. In addition to this, full-time specialization in a line of production is likely to improve each person's productivity in that line and intensify the relative superiority of each.

More puzzling is the case in which one individual is superior to another in all lines of production. Suppose, for example, that Crusoe is superior to Jackson both in the production of berries and in the production of game. Are there any possibilities for exchange in this situation? Superficially, it might be answered that there are none, and that both will continue in isolation. Actually, it pays for Crusoe to specialize in that line of production in which he has the greatest *relative* superiority in production, and to exchange this product for the product in which Jackson specializes. It is clear that the inferior producer benefits by receiving some of the products of the superior one. The latter benefits also, however, by being free to devote himself to

---

[16]Mises, *Human Action*, pp. 157 ff. On the pervasiveness of variation, also cf. F.A. Harper, *Liberty, A Path to Its Recovery* (Irvington-on-Hudson, N.Y.: Foundation for Economic Education, 1949), pp. 65–77, 139–41.

that product in which his productive superiority is the greatest. Thus, if Crusoe has a great superiority in berry production and a small one in game production, it will still benefit him to devote his full working time to berry production and then exchange some berries for Jackson's game products. In an example mentioned by Professor Boulding:

> A doctor who is an excellent gardener may very well prefer to employ a hired man who as a gardener is inferior to himself, because thereby he can devote more time to his medical practice.[17]

This important principle—that exchange may beneficially take place even when one party is superior in both lines of production—is known as the *law of association*, the *law of comparative costs*, or the *law of comparative advantage*.

With all-pervasive variation offering possibilities for specialization, and favorable conditions of exchange occurring even when one party is superior in both pursuits, great opportunities abound for widespread division of labor and extension of the market. As more and more people are linked together in the exchange network, the more "extended" is the market for each of the products, and the more will exchange-value predominate, as compared to direct use-value, in the decisions of the producer. Thus, suppose that there are five people on the desert island, and each specializes in that line of product in which he has a comparative or absolute advantage. Suppose that each one concentrates on the following products:

A . . . . . berries
B . . . . . game
C . . . . . fish
D . . . . . eggs
E . . . . . milk

---

[17]Kenneth E. Boulding, *Economic Analysis* (1st ed.; New York: Harper & Bros., 1941), p. 30; also *ibid*., pp. 22–32.

With more people participating in the market process, the opportunities for exchange for each actor are now greatly increased. This is true even though each particular act of exchange takes place between just two people and involves two goods. Thus, as shown in Figure 7, the following network of exchange may take place: Exchange-value now takes a far more dominant place in the decisions of the producers. Crusoe (if A is Crusoe) now knows that if he specializes in berries, he does not now have to rely solely on Jackson to accept them, but can exchange them for the products of several other people. A sudden loss of taste for berries by Jackson will not impoverish Crusoe and deprive him of all other necessities as it would have before. Furthermore, berries will now bring to Crusoe a wider variety of products, each in far greater abundance than before, some being available now that would not have been earlier. The greater productivity and the wider market and emphasis on exchange-value obtain for all participants in the market.

It is evident, as will be explained further in later sections on indirect exchange, that the contractual society of the market is a genuinely *co-operative society*. Each person specializes in the task for which he is best fitted, and each serves his fellow men in order to serve himself in exchange. Each person, by producing for exchange, co-operates with his fellow men voluntarily

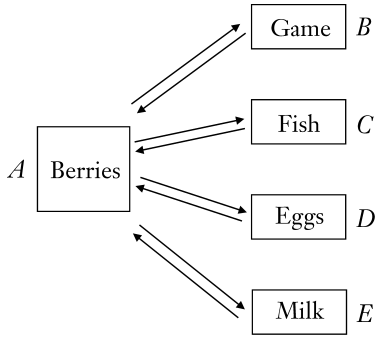


FIGURE 7. PATTERN OF A'S EXCHANGES

and without coercion. In contrast to the hegemonic form of society, in which one person or one group of persons exploits the others, a contractual society leaves each person free to benefit himself in the market and as a consequence to benefit others as well. An interesting aspect of this praxeological truth is that this benefit to others occurs regardless of the *motives* of those involved in exchange. Thus, Jackson may specialize in hunting and exchange the game for other products even though he may be indifferent to, or even cordially detest, his fellow participants. Yet regardless of his motives, the other participants are benefitted by his actions as an indirect but necessary consequence of his own benefit. It is this almost marvelous process, whereby a man in pursuing his own benefit also benefits others, that caused Adam Smith to exclaim that it almost seemed that an "invisible hand" was directing the proceedings.[18]

Thus, in explaining the origins of society, there is no need to conjure up any mystic communion or "sense of belonging" among individuals. Individuals recognize, through the use of reason, the advantages of exchange resulting from the higher productivity of the division of labor, and they proceed to follow this advantageous course. In fact, it is far more likely that feelings of friendship and communion are the *effects* of a regime of (contractual) social co-operation rather than the cause. Suppose, for example, that the division of labor were not productive, or that men had failed to recognize its productivity. In that case, there would be little or no opportunity for exchange, and each man would try to obtain his goods in autistic independence. The

[18]Those critics of Adam Smith and other economists who accuse the latter of "assuming" that God or Nature directs the market process by an "invisible hand" for the benefit of all participants completely miss the mark. The fact that the market provides for the welfare of each individual participating in it is a *conclusion* based on scientific analysis, not an assumption upon which the analysis is based. The "invisible hand" was simply a metaphor used in commenting on this process and its results. Cf. William D. Grampp, "Adam Smith and the Economic Man," *Journal of Political Economy*, August, 1948, pp. 315–36, especially pp. 319–20.

result would undoubtedly be a fierce struggle to gain possession of the scarce goods, since, in such a world, each man's gain of useful goods would be some other man's loss. It would be almost inevitable for such an autistic world to be strongly marked by violence and perpetual war. Since each man could gain from his fellows only at their expense, violence would be prevalent, and it seems highly likely that feelings of mutual hostility would be dominant. As in the case of animals quarreling over bones, such a warring world could cause only hatred and hostility between man and man. Life would be a bitter "struggle for survival." On the other hand, in a world of voluntary social co-operation through mutually beneficial exchanges, where one man's gain is another man's *gain*, it is obvious that great scope is provided for the development of social sympathy and human friendships. It is the peaceful, co-operative society that creates favorable conditions for feelings of friendship among men.

The mutual benefits yielded by exchange provide a major incentive (as in the case of Crusoe above) to would-be *aggressors* (initiators of violent action against others) to restrain their aggression and co-operate peacefully with their fellows. Individuals then decide that the advantages of engaging in specialization and exchange outweigh the advantages that war might bring.

Another feature of the market society formed by the division of labor is its permanence. The wants of men are renewed for each period of time, and so they must try to obtain for themselves anew a supply of goods for each period. Crusoe wants to have a steady rate of supply of game, and Jackson would like to have a continuing supply of berries, etc. Therefore, the social relations formed by the division of labor tend to be permanent as individuals specialize in different tasks and continue to produce in those fields.

There is one, less important, type of exchange that does *not* involve the division of labor. This is an exchange of the *same types of labor* for certain tasks. Thus, suppose that Crusoe, Jackson, and Smith are trying to clear their fields of logs. If each one engaged solely in the work of clearing his own field, it would

take a long period of time. However, if each put in some time in a joint effort to roll the other fellow's logs, the productivity of the log-rolling operations would be greatly increased. Each man could finish the task in a shorter period of time. This is particularly true for operations such as rolling heavy logs, which each man alone could not possibly accomplish at all and which they could perform only by agreed-upon joint action. In these cases, each man gives up his own labor in someone else's field in exchange for receiving the labor of the others in his field, the latter being worth more to him. Such an exchange involves a *combination* of the same type of labor, rather than a division of labor into different types, to perform tasks beyond the ready capacity of an isolated individual. This type of co-operative "log-rolling," however, would entail merely temporary alliances based on specific tasks, and, would not, as do specialization and division of labor, establish permanent exchange-ties and social relations.[19]

The great scope of the division of labor is not restricted to situations in which each individual makes all of one particular product, as was the case above. Division of labor may entail the specializing by individuals in the different *stages of production* necessary to produce a particular consumers' good. Thus, with a wider market permitting, different individuals specialize in the different stages, for example, involved in the production of the ham sandwich discussed in the previous chapter. General productivity is greatly increased as some people and some areas specialize in producing iron ore, some in producing different types of machines, some in baking bread, some in packaging meat, some in retailing, etc. The essence of developed market economies consists in the framework of co-operative exchange emerging with such specialization.[20]

---

[19]*See* Mises, *Human Action*, pp. 157–58.

[20]Such specialization of stages requires the adoption of *indirect exchange*, discussed in the following chapters.

4. Terms of Exchange

Before analyzing the problem of the terms of exchange, it is well to recall the reason for exchange—the fact that each individual values more highly the good he gets than the good he gives up. This fact is enough to eliminate the fallacious notion that, if Crusoe and Jackson exchange 5,000 berries for one cow, there is some sort of "equality of value" between the cow and the 5,000 berries. Value exists in the valuing minds of individuals, and these individuals make the exchange precisely because for each of them there is an *inequality* of values between the cow and the berries. For Crusoe the cow is valued more than the 5,000 berries; for Jackson it is valued less. Otherwise, the exchange could not be made. Therefore, for each exchange there is a *double inequality of values*, rather than an equality, and hence there are no "equal values" to be "measured" in any way.[21]

We have already seen what conditions are needed for exchange to occur and the extent to which exchange will take place on given terms. The question then arises: Are there any principles that decide the *terms* on which exchanges are made? Why does Crusoe exchange with Jackson at a rate of 5,000 berries for one cow, or 2,000 berries for one cow?

Let us take the hypothetical exchange of 5,000 berries for one cow. These are the terms, or the *rate of exchange* (5,000 berries for one cow). If we express one commodity in terms of the other, we obtain the *price* of the commodity. Thus, *the price of one good in terms of another is the amount of the other good divided by the amount of the first good in exchange*. If two cows exchange for 1,000 berries, then the *price* of cows in terms of berries ("the berry-price of cows") is 500 berries per cow. Conversely, the *price* of berries in terms of cows ("the cow-price of berries") is $^{1}/_{500}$ cow per berry. The *price* is the rate of exchange between two commodities expressed in terms of one of the commodities.

---

[21]Cf. Mises, *Human Action*, pp. 204–06; and Menger, *Principles of Economics*, pp. 192–94, 305–06.

Other useful concepts in the analysis of exchange are those of "selling" and "buying." Thus, in the above exchange, we may say that Crusoe *sold* 1,000 berries and *bought* two cows in exchange. On the other hand, Jackson *sold* two cows and *bought* 1,000 berries. The *sale* is the good given up in exchange, while the *purchase* is the good received.

Let us again focus attention on the object of exchange. We remember from chapter 1 that the object of all action is to *maximize psychic revenue*, and to do this the actor tries to see to it that the psychic revenue from the action exceeds the psychic cost, so that he obtains a psychic profit. This is no less true of interpersonal exchange. The object in such an exchange for each party is to maximize revenue, to exchange so long as the expected psychic revenue exceeds the psychic cost. The psychic revenue from any exchange is the value of the goods received in the exchange. This is equal to the marginal utility to the purchaser of adding the goods to his stock. More complicated is the problem of the psychic costs of an exchange. *Psychic costs* include all that the actor gives up by making the exchange. This is equal to the *next best use* that he could have made of the resources that he has used.

Suppose, for example, that Jackson possesses five cows and is considering whether or not to sell one cow in exchange. He decides on his value scale that the following is the rank in value of the possible uses of the cow:

1. 5,000 berries offered by Crusoe
2. 100 bbls. of fish offered by Smith
3. 4,000 berries offered by Jones
4. Marginal utility of the cow in direct use

In this case, the top three alternatives involve the exchange-value of the cow, the fourth its value in direct use. Jackson will make the best use of his resource by making the exchange with Crusoe. The 5,000 berries of Crusoe will be his psychic revenue from the exchange, while the loss of the 100 barrels of fish constitutes his psychic cost. We saw above that, in order for

exchange to take place, the marginal utility of the goods received must be greater than the marginal utility of the goods given up. We now see that for any *specific* exchange to occur, the marginal utility of the goods received must also be greater than the marginal utility forgone—that which could have been received in another type of exchange.

It is evident that Jackson will always prefer an offer of more units of one type of good to an offer of fewer units of the same good. In other words, the seller will always prefer *the highest possible selling price for his good.* Jackson will prefer the price of 5,000 berries per cow offered by Crusoe to the price of 4,000 berries per cow offered by Jones. It might be objected that this may not always be true and may be offset by other factors. Thus, the prospect of 4,000 berries from Jones may be evaluated higher than the prospect of 5,000 berries from Crusoe, if: (*a*) the psychic disutility of labor and time, etc., for delivery over a longer distance to the latter renders the prospect of sale to Crusoe less attractive despite the higher price in berries; or (*b*) special feelings of friendship for Crusoe or hatred for Jones serve to change the utilities on Jackson's value scale. On further analysis, however, these turn out *not* to be vitiating factors at all. The rule that the actor will prefer the highest selling price for his good in terms of the other good always holds. It must be reiterated that a *good* is not defined by its physical characteristics, but by the equal serviceability of its units to the actor. Now, clearly, a berry from a longer distance, since it must call forth the disutility of labor to move it, is *not* the same good as the berry from a shorter distance, even though it is physically the same berry. The very fact that the first is further away means that it is not as serviceable as the other berry, and hence not the same good. For one "price" to be comparable with another, the good must be the same. Thus, if Jackson prefers to sell his cow for 4,000 berries from Jones as compared to 5,000 berries from Crusoe, it does *not* mean that he chooses a *lower* price for his product in terms of the same good (berries), but that he chooses a price in terms of one good (berries from Jones) over a price in terms of an