

HUMAN ACTION

by Ludwig von Mises, 4th edition (1996)

PART FOUR

CATALLACTICS OR ECONOMICS OF THE MARKET SOCIETY

XVIII. ACTION IN THE PASSING OF TIME, && 1-4

1. Perspective in the Valuation of Time Periods

Acting man distinguishes the time before satisfaction of a want is attained and the time for which the satisfaction continues.

Action always aims at the removal of future uneasiness, be it only the future of the impending instant. Between the setting in of action and the attainment of the end sought there always elapses a fraction of time, viz., the maturing time in which the seed sown by the action grows to maturity. The most obvious example is provided by agriculture. Between the tilling of the soil and the ripening of the fruit there passes a considerable period of time. Another example is the improvement of the quality of wine by aging. In some cases, however, the maturing time is so short that ordinary speech may assert that the success appears instantly.

As far as action requires the employment of labor, it is concerned with the working time. The performance of every kind of labor absorbs time. In some cases the working time is so short that people say the performance requires no time at all.

Only in rare cases does a simple, indivisible and nonrepeated act suffice to attain the end aimed at. As a rule what separates the actor from the goal of his endeavors is more than one step only. He must make many steps. And every further step to be added to those previously made raises anew the question whether or not he should continue marching toward the goal once chosen. Most goals are so far away that only determined persistence leads to them. Persevering action, unflinchingly directed to the end sought, is needed in order to succeed. The total expenditure of time required, i.e., working time plus maturing time, may be called the period of production. The period of production is long in some cases and short in other cases. It is sometimes so short that it can be entirely neglected in practice.

The increment in want-satisfaction which the attainment of the end brings about is temporally limited. The result produced extends services only over a period of time which we may call the duration of serviceableness. The duration of serviceableness is shorter with some products and longer with other goods which are commonly called durable goods. Hence acting man must always take into account the period of production and the duration of serviceableness of the product. In estimating the disutility of a project considered he is not only concerned with the expenditure of material factors and labor required, but also with the period of production. In estimating the utility of the expected product he is concerned with the duration of its serviceableness. Of course, the more durable a product is, the greater is the amount of services it renders. But if these services are not cumulatively available on the same date, but extended piecemeal over a certain period of time, the time element, as will be shown, plays a particular role in their evaluation. It makes a difference whether n units of service are rendered on the same date or whether they are stretched over a period of n days in such a way that only one unit is available daily.

It is important to realize that the period of production as well as the duration of serviceableness are categories of human action and not concepts constructed by philosophers, economists, and historians as mental tools for their interpretation of events. They are essential elements present in every act of reasoning that precedes and directs action. It is necessary to stress this point because Bohm-Bawerk, to whom economics owes the discovery of the role played by the period of production, failed to comprehend the difference.

Acting man does not look at his condition with the eyes of a historian. He is not concerned with how the present situation originated. His only concern is to make the best use of the means available today for the best possible removal of future uneasiness. The past does not count for him. He has at his disposal a definite quantity of material factors of production. He does not ask whether these factors are nature-given or the product of production processes accomplished in the past. It does not matter for him how great a quantity of nature-given, i.e., original material factors of production and labor, was expended in their production and how much time these processes of production have absorbed. He values the available means exclusively from the aspect of the services they can render him in his endeavors to make future conditions more satisfactory. The period of production and the duration of serviceableness are for him categories in planning future action, not concepts of academic retrospection and historical research. They play a role in so far as the

actor has to choose between periods of production of different length and between the production of more durable and less durable goods.

Action is not concerned with the future in general, but always with a definite and limited fraction of the future. This fraction is limited, on the one side, by the instant in which the action must take place. Where its other end lies depends on the actor's decision and choice. There are people who are concerned with only the impending instant. There are other people whose provident care stretches far beyond the prospective length of their own life. We may call the fraction of future time for which the actor in a definite action wants to provide in some way and to some extent, the period of provision. In the same way in which acting man chooses among various kinds of want-satisfaction within the same fraction of future time, he chooses also between want-satisfaction in the nearer and in the remoter future. Every choice implies also a choice of a period of provision. In making up his mind how to employ the various means available for the removal of uneasiness, man also determines implicitly the period of provision. In the market economy the demand of the consumers also determines the length of the period of provision.

There are various methods available for a lengthening of the period of provision:

1. The accumulation of larger stocks of consumers' goods destined for later consumption.
2. The production of goods which are more durable.
3. The production of goods requiring a longer period of production.
4. The choice of methods of production consuming more time for the production of goods which could also be produced within a shorter period of production.

The first two methods do not require any further comment. the third and the fourth methods must be scrutinized more closely.

It is one of the fundamental data of human life and action that the shortest processes of production, i.e., those with the shortest period of production, do not remove felt uneasiness entirely. If all those goods which these shortest processes can provide are produced, unsatisfied wants remain and incentive to further action is still present. As acting man prefers those processes which, other things being equal, produce the

products in the shortest time¹, only such processes are left for further action which consume more time. People embark upon these more time-consuming processes because they value the increment in satisfaction expected more highly than the disadvantage of waiting longer for their fruits. Bohm-Bawerk speaks of the higher productivity of roundabout ways of production requiring more time. It is more appropriate to speak of the higher physical productivity of production processes requiring more time. The higher productivity of these processes does not always consist in the fact that they produce--with the same quantity of factors of production expended--a greater quantity of products. More often it consists in the fact that they produce products which could not be produced at all in shorter periods of production. These processes are not roundabout processes. They are the shortest and quickest way to the goal chosen. If one wants to catch more fish, there is no other method available than the substitution of fishing with the aid of nets and canoes for fishing without the aid of this equipment. There is no better, shorter, and cheaper method for the production of aspirin known than that adopted by the chemical plants. If one disregards error and ignorance, there cannot be any doubt about the highest productivity and expediency of the processes chosen. If people had not considered them the most direct processes, viz., those leading by the shortest way to the end sought, they would not have adopted them.

The lengthening of the period of provision through the mere accumulation of stocks of consumers' goods is the outcome of the desire to provide in advance for a longer period of time. The same is valid for the production of goods the durability of which is greater in proportion to the greater expenditure of factors of production required². But if temporally remoter goals are aimed at, lengthening of the period of production is a necessary corollary of the venture. The end sought cannot be attained in a shorter period of production.

The postponement of an act of consumption means that the individual prefers the satisfaction which later consumption will provide to the satisfaction which immediate consumption could provide. The choice of a longer period of production means that the actor values the product of the process bearing fruit only at a later date more highly than the products which a process consuming less time could provide. In such deliberations and the resulting choices the period of production appears as waiting

¹ Why man proceeds in this way, will be shown on the following pages.

² If the lengthening of durability were not at least proportionate to the increment in expenditure needed, it would be more advantageous to increase the quantity of units of a shorter durability.

time. It was the great contribution of Jevons and Bohm-Bawerk to have shown the role played by taking account of waiting time.

If acting men were not to pay heed to the length of the waiting time, they would never say that a goal is temporally so distant that one cannot consider aiming at it. Faced with the alternative of choosing between two processes of production which render different output with the same input, they would always prefer that process which renders the greater quantity of the same products or better products in the same quantity, even if this result could be attained only by lengthening the period of production. Increments in input which result in a more than proportionate increase in the products' duration of serviceableness would unconditionally be deemed advantageous. The fact that men do not act in this way evidences that they value fractions of time of the same length in a different way according as they are nearer or remoter from the instant of the actor's decision. Other things being equal, satisfaction in a nearer period of the future is preferred to satisfaction in a more distant period; disutility is seen in waiting.

This fact is already implied in the statement stressed in the opening of this chapter that man distinguishes the time before satisfaction is attained and the time for the duration of which there is satisfaction. If any role at all is played by the time element in human life, there cannot be any question of equal valuation of nearer and remoter periods of the same length. Such an equal valuation would mean that people do not care whether success is attained sooner or later. It would be tantamount to a complete elimination of the time element from the process of valuation.

The mere fact that goods with a longer duration of serviceableness are valued more highly than those with a shorter duration does not yet in itself imply a consideration of time. A roof that can protect a house against the weather during a period of ten years is more valuable than a roof which renders this service only for a period of five years. The quantity of service rendered is different in both cases. But the question which we have to deal with is whether or not an actor in making his choices attaches to a service to be available in a later period of the future the same value he attaches to a service available at an earlier period.

2. Time Preference as an Essential Requisite of Action

The answer to this question is that acting man does not appraise time periods merely with regard to their dimensions. His choices regarding the removal of future uneasiness are directed by the categories *sooner* and *later*. Time for man is not a homogeneous substance of which only length

counts. It is not a *more* or a *less* in dimension. It is an irreversible flux the fractions of which appear in different perspective according to whether they are nearer to or remoter from the instant of valuation and decision. Satisfaction of a want in the nearer future is, other things being equal, preferred to that in the farther distant future. Present goods are more valuable than future goods.

Time preference is a categorial requisite of human action. No mode of action can be thought of in which satisfaction within a nearer period of the future is not--other things being equal--preferred to that in a later period. The very act of gratifying a desire implies that gratification at the present instant is preferred to that at a later instant. He who consumes a nonperishable good instead of postponing consumption for an indefinite later moment thereby reveals a higher valuation of present satisfaction as compared with later satisfaction. If he were not to prefer satisfaction in a nearer period of the future to that in a remoter period, he would never consume and so satisfy wants. He would always accumulate, he would never consume and enjoy. He would not consume today, but he would not consume tomorrow either, as the morrow would confront him with the same alternative.

Not only the first step toward want-satisfaction, but also any further step is guided by time preference. Once the desire *a* to which the scale of values assigns the rank 1 is satisfied, one must choose between the desire *b* to which the rank 2 is assigned and *c* that desire of tomorrow to which--in the absence of time preference--the rank 1 would have been assigned. If *b* is preferred to *c*, the choice clearly involves time preference. Purposive striving after want-satisfaction must needs be guided by a preference for satisfaction in the nearer future over that in a remoter future.

The conditions under which modern man of the capitalist West must act are different from those under which his primitive ancestors lived and acted. As a result of the providential care of our forebears we have at our disposal an ample stock of intermediate products (capital goods or produced factors of production) and of consumers' goods. Our activities are designed for a longer period of provision because we are the lucky heirs of a past which has lengthened, step by step, the period of provision and has bequeathed to us the means to expand the waiting period. In acting we are concerned with longer periods and are aiming at an even satisfaction in all parts of the period chosen as the period of provision. We are in a position to rely upon a continuing influx of consumers' goods and have at our disposal not only stocks of goods ready for consumption

but also stocks of producers' goods out of which our continuous efforts again and again make new consumers' goods mature. In our dealing with this increasing "stream of income," says the superficial observer, there is no heed paid to any considerations related to a different valuation of present and of future goods. We synchronize, he asserts, and thus the time element loses any importance for the conduct of affairs. It is, therefore, pointless, he continues, in the interpretation of modern conditions to resort to time preference.

The fundamental error involved in this popular objection is caused, like so many other errors, by a lamentable misapprehension of the imaginary construction of the evenly rotating economy. In the frame of this imaginary construction no change occurs; there prevails an unvarying course of all affairs. In the evenly rotating economy consequently nothing is altered in the allocation of goods for the satisfaction of wants in nearer and in remoter periods of the future. No one plans any change because--according to our assumptions--the prevailing allocation best serves him and because he does not believe that any possible rearrangement could improve his condition. No one wants to increase his consumption in a nearer period of the future at the expense of his consumption in a more distant period or vice versa because the existing mode of allocation pleases him better than any other thinkable and feasible mode.

The praxeological distinction between capital and income is a category of thought based on a different valuation of want-satisfaction in various periods of the future. In the imaginary construction of the evenly rotating economy it is implied that the whole income but not more than the income is consumed and that therefore the capital remains unchanged. An equilibrium is reached in the allocation of goods for want-satisfaction in different periods of the future. It is permissible to describe this state of affairs by asserting that nobody wants to consume tomorrow's income today. We have precisely designed the imaginary construction of the evenly rotating economy in such a way as to make it fit just this condition. But it is necessary to realize that we can assert with the same apodictic assurance that, in the evenly rotating economy, nobody wants to have more of any commodity than he really has. These statements are true with regard to the evenly rotating economy because they are implied in our definition of this imaginary construction. They are nonsensical when asserted with regard to a changing economy which is the only real economy. As soon as a change in the data occurs, the individuals are faced anew with the necessity of choosing both between various modes of want-satisfaction in the same period and between want-satisfaction in different periods. An increment can be either employed for immediate

consumption or invested for further production. No matter how the actors employ it, their choice must needs be the result of a weighing of the advantages expected from want-satisfaction in different periods of the future. In the world of reality, in the living and changing universe, each individual in each of his actions is forced to choose between satisfaction in various periods of time. Some people consume all that they earn, others consume a part of their capital, others save a part of their income.

Those contesting the universal validity of time preference fail to explain why a man does not always invest a sum of 100 dollars available today, although these 100 dollars would increase to 104 dollars within a year's time. It is obvious that this man in consuming this sum today is determined by a judgment of value which values 100 present dollars higher than 104 dollars available a year later. But even in case he chooses to invest these 100 dollars, the meaning is not that he prefers satisfaction in a later period to that of today. It means that he values 100 dollars today less than 104 dollars a year later. Every penny spent today is, precisely under the conditions of a capitalist economy in which institutions make it possible to invest even the smallest sums, a proof of the higher valuation of present satisfaction as compared with later satisfaction.

The theorem of time preference must be demonstrated in a double way. first for the case of plain saving in which people must choose between the immediate consumption of a quantity of goods and the later consumption of the same quantity. Second for the case of capitalist saving in which the choice is to be made between the immediate consumption of a quantity of goods and the later consumption either of a greater quantity or of goods which are fit to provide a satisfaction which--except for the difference in time--is valued more highly. The proof has been given for both cases. No other case is thinkable.

It is possible to search for a psychological understanding of the problem of time preference. Impatience and the pains caused by waiting are certainly psychological phenomena. One may approach their elucidation by referring to the temporal limitations of human life, to the individual's coming into existence, his growth and maturing, and his inevitable decay and passing away. There is in the course of a man's life a right moment for everything as well as a *too early* and *to late*. However, the praxeological problem is in no way related to psychological issues. We must conceive, not merely understand. We must conceive that a man who does not prefer satisfaction within a nearer period of the future to that in a remoter period would never achieve consumption and enjoyment at all.

Neither must the praxeological problem be confused with the physiological. He who wants to live to see the later day, must first of all care for the preservation of his life in the intermediate period. Survival and appeasement of vital needs are thus requirements for the satisfaction of any wants in the remoter future. This makes us understand why in all those situations in which bare life in the strict sense of the term is at stake satisfaction in the nearer future is preferred to that in later periods. But we are dealing with action as such, not with the motives directing its course. In the same way in which as economists we do not ask why albumin, carbohydrates, and fat are demanded by man, we do not inquire why the satisfaction of vital needs appears imperative and does not brook any delay. We must conceive that consumption and enjoyment of any kind presuppose a preference for present satisfaction to later satisfaction. The knowledge provided by this insight far exceeds the orbit for which the physiological facts concerned provide explanation. It refers to every kind of want-satisfaction, not only to the satisfaction of the vital necessities of mere survival.

It is important to stress this point because the term "supply of subsistence, available for advances of subsistence," as used by Bohm-Bawerk, can easily be misinterpreted. It is certainly one of the tasks of this stock to provide the means for a satisfaction of the bare necessities of life and thus to secure survival. But besides it must be large enough to satisfy, beyond the requirements of necessary maintenance for the waiting time, all those wants and desires which-apart from mere survival-are considered more urgent than the harvesting of the physically more abundant fruits of production processes consuming more time.

Bohm-Bawerk declared that every lengthening of the period of production depends on the condition that "a sufficient quantity of present goods is available to make it possible to overbridge the lengthened average interval between the starting of preparatory work and the harvesting of its product."³ The expression "sufficient quantity" needs elucidation. It does not mean a quantity sufficient for necessary sustenance. The quantity in question must be large enough to secure the satisfaction of all those wants the satisfaction of which during the waiting time is considered more urgent than the advantages which a still greater lengthening of the period of production would provide. If the quantity in question were smaller, a shortening of the period of production would appear advantageous; the increase in the quantity of products or the improvement of their quality to be expected from the preservation of the

³ Bohm-Bawerk. *Kleinere Abhandlungen über Kapital und Zins*, vol. II in *Gesammelte Schriften*, ed. F. X. Weiss (Vienna, 1926), p. 169.

longer period of production would no longer be considered a sufficient remuneration for the restriction of consumption enjoined during the waiting time. Whether or not the supply of subsistence is sufficient, does not depend on any physiological or other facts open to objective determination by the methods of technology and physiology. The metaphorical term "overbridge," suggesting a body of water the breadth of which poses to bridge builder an objectively determined task, is misleading. The quantity in question is valued by men, and their subjective judgments decide whether or not it is sufficient.

Even in a hypothetical world in which nature provides every man with the means for the preservation of biological survival (in the strict sense of the term), in which the most important foodstuffs are not scarce and action is not concerned with the provision for bare life, the phenomenon of time preference would be present and direct all actions.⁴

Observations on the Evolution of the Time-Preference Theory

It seems plausible to assume that the mere fact that interest is graduated in reference to periods of time should have directed the attention of the economists, intent upon developing a theory of interest, upon the role played by time. However, the classical economists were prevented by their faulty theory of value and their misconstruction of the cost concept from recognizing the significance of the time element.

Economics owes the time-preference theory to William Stanley Jevons and its elaboration, most of all, to Eugen von Bohm-Bawerk. Bohm-Bawerk was the first to formulate correctly the problem to be solved, the first to unmask the fallacies implied in the productivity theories of interest, and the first to stress the role played by the period of production. But he did not entirely succeed in avoiding the pitfalls in the elucidation of the interest problem. His demonstration of the universal validity of time preference is inadequate because it is based on psychological considerations. However, psychology can never demonstrate the validity of a praxeological theorem. It may show that some people or many people let themselves be influenced by certain motives. It can never make evident that all human action is necessarily dominated by a definite

⁴ Time preference is not specifically human. It is an inherent feature of the behavior of all living things. The distinction of man consists in the very fact that with him time preference is not inexorable and the lengthening of the period of provision not merely instinctive as with certain animals that store food, but the result of a process of valuation.

categorial element which, without any exception, is operative in every instance of action.⁵

The second shortcoming of Bohm-bawerk's reasoning was his misconstruction of the concept of the period of production. He was not fully aware of the fact that the period of production is a praxeological category and that the role it plays in action consists entirely in the choices acting man makes between periods of production of different length. The length of time expended in the past for the production of capital goods available today does not count at all. These capital goods are valued only with regard to their usefulness for future want-satisfaction. The "average period of production" is an empty concept. What determines action is the fact that in choosing among various ways which can remove future uneasiness the length of the waiting time in each case is a necessary element.

It was an outcome of these two errors that Bohm-Bawerk in the elaboration of his theory did not entirely avoid the productivity approach which he himself had so brilliantly refuted in his critical history of the doctrines of capital and interest.

These observations do not detract at all from the imperishable merits of Bohm-Bawerk's contributions. It was on the foundation laid by him that later economists--foremost among them Knut Wicksell, Frank Albert Fetter and Irving Fisher--were successful in perfecting the time-preference theory.

It is customary to express the essence of the time-preference theory by saying that there prevails a preference for present over future goods. In dealing with this mode of expression some economists have been puzzled by the fact that in some cases present uses are worth less than future uses. However, the problem raised by the apparent exceptions is caused merely by a misapprehension of the true state of affairs.

There are enjoyments which cannot be had at the same time. A man cannot on the same evening attend performances of *Carmen* and of *Hamlet*. In buying a ticket he must choose between the two performances. If tickets to both theaters for the same evening are presented to him as a gift, he must likewise choose. He may think with regard to the ticket which he refuses: "I don't care for it just now," or "If only it had been later."⁶ However, this does not mean that he prefers future goods to

⁵ For a detailed critical analysis of this part of Bohm-Bawerk's reasoning the reader is referred to Mises, *Nationalökonomie*, pp. 439-443.

⁶ Cf. F. A. Fetter, *Economic Principles* (New York, 1923), I, 239.

present goods. He does not have to choose between future goods and present goods. He must choose between two enjoyments both of which he cannot have together. This is the dilemma in every instance of choosing. In the present state of his affairs he may prefer *Hamlet* to *Carmen*. The different conditions of a later date may possibly result in another decision.

The second seeming exception is presented by the case of perishable goods. They may be available in abundance in one season of the year and may be scarce in other seasons. However, the difference between ice in winter and ice in summer is not that between a present good and a future good. It is the difference between a good that loses its specific usefulness even if not consumed and another good which requires a different process of production. Ice available in winter can only be used in summer when subjected to a special process of conservation. It is, in respect to ice utilizable in summer, at best one of the complementary factors required for production. It is impossible to increase the quantity of ice available in summer simply by restricting the consumption of ice in winter. The two things are for all practical purposes different commodities.

The case of the miser does not contradict the universal validity of time preference. The miser too, in spending some of his means for a scanty livelihood, prefers some amount of satisfaction in the nearer future to that in the remoter future. Extreme instances in which the miser denies himself even the indispensable minimum of food represent a pathological withering away of vital energy, as is the case with the man who abstains from eating out of fear of morbid germs, the man who commits suicide rather than meet a dangerous situation, and the man who cannot sleep because he is afraid of undetermined accidents which could befall him while asleep.

3. Capital Goods

As soon as those present wants are sated the satisfaction of which is considered more urgent than any provision for the morrow, people begin to save a part of the available supply of consumers' goods for later use. This postponement of consumption makes it possible to direct action toward temporally remoter ends. It is now feasible to aim at goals which could not be thought of before on account of the length of the period of production required. It is furthermore feasible to choose methods of production in which the output of products is greater per unit of input than in other methods requiring a shorter period of production. The sine qua non of any lengthening of the process of production adopted is

saving, i.e., an excess of current production over current consumption. Saving is the first step on the way toward improvement of material well-being and toward every further progress on this way.

The postponement of consumption and the accumulation of stocks of consumers' goods destined for later consumption would be practiced even in the absence of the stimulus offered by the technological superiority of processes with a longer period of production. The higher productivity of such processes consuming more time strengthens considerably the propensity to save. The sacrifice made by restricting consumption in nearer periods of the future is henceforth not only counterbalanced by the expectation of consuming the saved goods in remoter periods; it also opens the way to a more ample supply in the remoter future and to the attainment of goods which could not be procured at all without this provisional sacrifice. If acting man, other conditions being equal, were not to prefer, without exception, consumption in the nearer future to that in the remoter future, he would always save, never consume. What restricts the amount of saving and investment is time preference.

People eager to embark upon processes with a longer period of production must first accumulate, by means of saving, that quantity of consumers' goods which is needed to satisfy, during the waiting time, all those wants the satisfaction of which they consider more urgent than the increment in well-being expected from the more time-consuming process. Accumulation of capital begins with the formation of stocks of consumers' goods the consumption of which is postponed for later days. If these surpluses are merely stored and kept for later consumption, they are simply wealth or, more precisely, a reserve for rainy days and emergencies. They remain outside the orbit of production. They become integrated--economically, not physically--into production activities only when employed as means of subsistence of workers engaged in more time-consuming processes. If expended in this way, they are physically consumed. But economically they do not disappear. They are replaced first by the intermediary products of a process with a longer period of production and then later by the consumers' goods which are the final product of these processes.

All these ventures and processes are intellectually controlled by capital accounting, the acme of economic calculation in monetary terms. Without the aid of monetary calculation men could not even learn whether--apart from the length of the period of production--a definite process promises a higher productivity than another. The expenditures required by various processes cannot be weighed against one another without the aid of

monetary terms. Capital accounting starts with the market prices of the capital goods available for further production, the sum of which it calls capital. It records every expenditure from this fund and the price of all incoming items induced by such expenditures. It establishes finally the ultimate outcome of all these transformations in the composition of the capital and thereby the success or the failure of the whole process. It shows not only the final result; it mirrors also every one of its intermediary stages. It produces interim balances for every day such a balance may be required and statements of profit and loss for every part or stage of the process. It is the indispensable compass of production in the market economy.

In the market economy production is a continuous, never-ending pursuit split up into an immense variety of partial processes. Innumerable processes of production with different periods of production are in progress simultaneously. They complement one another and at the same time are in rivalry with one another in competing for scarce factors of production. Continuously either new capital is accumulated by saving or previously accumulated capital is eaten up by overconsumption. Production is distributed among numerous individual plants, farms, workshops, and enterprises each of which serves only limited purposes. The intermediary products or capital goods, the produced factors of further production, change hands in the course of events; they pass from one plant to another until finally the consumers' goods reach those who use and enjoy them. The social process of production never stops. At each instant numberless processes are in progress some of which are nearer to, some remoter from, the achievement of their special tasks.

Every single performance in this ceaseless pursuit of wealth production is based upon the saving and the preparatory work of earlier generations. We are the lucky heirs of our fathers and forefathers whose saving has accumulated the capital goods with the aid of which we are working today. We favorite children of the age of electricity still derive advantage from the original saving of the primitive fishermen who, in producing the first nets and canoes, devoted a part of their working time to provision for a remoter future. If the sons of these legendary fishermen had worn out these intermediary products--nets and canoes--without replacing them by new ones, they would have consumed capital and the process of saving and capital accumulation would have had to start afresh. We are better off

than earlier generations because we are equipped with the capital goods they have accumulated for us.⁷

The businessman, the acting man, is entirely absorbed in one task only: to take best advantage of all the means available for the improvement of future conditions. He does not look at the present state of affairs with the aim of analyzing and comprehending it. In classifying the means for further production and appraising their importance he adopts superficial rules of thumb. He distinguishes three classes of factors of production: the nature-given material factors, the human factor--labor, and capital goods--the intermediary factors produced in the past. He does not analyze the nature of the capital goods. They are in his eyes means of increasing the productivity of labor. Quite naively he ascribes to them productive power of their own. He does not trace their instrumentality back to nature and labor. He does not ask how they came into existence. They count only as far as they may contribute to the success of his efforts.

This mode of reasoning is all right for the businessman. But it was a serious mistake for the economists to agree with the businessman's superficial view. They erred in classifying "capital" as an independent factor of production along with the nature-given material resources and labor. The capital goods--the factors of further production produced in the past--are not an independent factor. They are the joint products of the cooperation of the two original factors--nature and labor--expended in the past. They have no productive power of their own.

Neither is it correct to call the capital goods labor and nature stored up. They are rather labor, nature, and time stored up. The difference between production without the aid of capital goods and that assisted by the employment of capital goods consists in time. Capital goods are intermediary stations on the way leading from the very beginning of production to its final goal, the turning out of consumers' goods. He who produces with the aid of capital goods enjoys one great advantage over the man who starts without capital goods; he is nearer in time to the ultimate goal of his endeavors.

There is no question of an alleged productivity of capital goods. The difference between the price of a capital good, e.g., a machine, and the sum of the prices of the complementary original factors of production required for its reproduction is entirely due to the time difference. He who employs the machine is nearer the goal of production. The period of

⁷ These considerations explode the objections raised against the time-preference theory by Frank H. Knight in his article, "Capital, Time and the Interest Rate," *Economica*, n.s., I, 257-286.

production is shorter for him than for a competitor who must start from the beginning. In buying a machine he buys the original factors of production that were expended in producing it plus time, i.e., the time by which his period of production is shortened.

The value of time, i.e., time preference or the higher valuation of want-satisfaction in nearer periods of the future as against that in remoter periods, is an essential element in human action. It determines every choice and every action. There is no man for whom the difference between sooner and later does not count. The time element is instrumental in the formation of all prices of all commodities and services.

4. Period of Production, Waiting Time, and Period of Provision

If one were to measure the length of the period of production spent in the fabrication of the various goods available now, one would have to trace back their history to the point at which the first expenditure of original factors of production took place. One would have to establish when natural resources and labor were first employed for processes which--besides contributing to the production of other goods--also contributed ultimately to the production of the good in question. The solution of this problem would require the solubility of the problem of physical imputation. It would be necessary to establish in quantitative terms to what extent tools, raw materials, and labor which directly or indirectly were used in the production of the good concerned contributed to the result. One would have to go back in these inquiries to the very origins of capital accumulation by saving on the part of people who previously lived from hand to mouth. It is not only practical difficulties which prevent such historical studies. The very insolubility of the problem of physical imputation stops us at the first step of such ventures.

Neither acting man himself nor economic theory needs a measurement of the time expended in the past for the production of goods available today. They would have no use for such data even if they knew them. Acting man is faced with the problem of how to take best advantage of the available supply of goods. He makes his choices in employing each part of this supply in such a way as to satisfy the most urgent of the not yet satisfied wants. For the achievement of this task he must know the length of the waiting time which separates him from the attainment of the various goals among which he has to choose. As has been pointed out and must be emphasized again, there is no need for him to look backward to the history of the various capital goods available. Acting man counts

waiting time and the period of production always from today on. In the same way in which there is no need to know whether more or less labor and material factors of production have been expended in the production of the products available now, there is no need to know whether their production has absorbed more or less time. Things are valued exclusively from the point of view of the services they can render for the satisfaction of future wants. The actual sacrifices made and the time absorbed in their production are beside the point. These things belong to the dead past.

It is necessary to realize that all economic categories are related to human action and have nothing at all to do directly with the physical properties of things. Economics is not about goods and services; it is about human choice and action. The praxeological concept of time is not the concept of physics or biology. It refers to the *sooner* or the *later* as operative in the actors' judgments of value. The distinction between capital goods and consumers' goods is not a rigid distinction based on the physical and physiological properties of the goods concerned. It depends on the position of the actors and the choices they have to make. The same goods can be looked upon as capital goods or as consumers' goods. A supply of goods ready for immediate enjoyment is capital goods from the point of view of a man who looks upon it as a means for his own sustenance and that of hired workers during a waiting time.

An increase in the quantity of capital goods available is a necessary condition for the adoption of processes in which the period of production and therefore waiting time are longer. If one wants to attain ends which are temporally farther away, one must resort to a longer period of production because it is impossible to attain the end sought in a shorter period of production. If one wants to resort to methods of production with which the quantity of output is higher per unit of input expended, one must lengthen the period of production. For the processes with which output is smaller per unit of input have been chosen only on account of the shorter period of production they require. But on the other hand, not every employment chosen for the utilization of capital goods accumulated by means of additional saving requires a process of production in which the period of production from today on to the maturing of the product is longer than with all processes already adopted previously. It may be that people, having satisfied their more urgent needs, now want goods which can be produced within a comparatively short period. The reason why these goods have not been produced previously was not that the period of production they require was deemed too long, but that there was a more urgent employment open for the factors required.

If one chooses to assert that every increase in the supply of capital goods available results in a lengthening of the period of production and of waiting time, one reasons in the following way: If *a* are the goods already previously produced and *b* the goods produced in the new processes started with the aid of the increase in capital goods, it is obvious that people had to wait longer for *a* and *b* than they had to wait for *a* alone. In order to produce *a* and *b* it was not only necessary to acquire the capital goods required for the production of *a*, but also those required for the production of *b*. If one had expended for an increase of immediate consumption the means of sustenance saved to make workers available for the production of *b*, one would have attained the satisfaction of some wants sooner.

The treatment of the capital problem customary with those economists who are opposed to the so-called "Austrian" view assumes that the technique employed in production is unalterably determined by the given state of technological knowledge. The "Austrian" economists, on the other hand, show that it is the supply of capital goods available at each moment that determines which of the many known technological methods of production will be employed.⁸ The correctness of the "Austrian" point of view can easily be demonstrated by a scrutiny of the problem of relative scarcity of capital.

Let us look at the condition of a country suffering from such scarcity of capital. Take, for instance, the state of affairs in Rumania about 1860. What was lacking was certainly not technological knowledge. There was no secrecy concerning the technological methods practiced by the advanced nations of the West. They were described in innumerable books and taught at many schools. The elite of Rumanian youth had received full information about them at the technological universities of Austria, Switzerland, and France. Hundreds of foreign experts were ready to apply their knowledge and skill in Rumania. What was wanting were the capital goods needed for a transformation of the backward Rumanian apparatus of production, transportation, and communication according to Western patterns. If the aid granted to the Rumanians on the part of the advanced foreign nations had consisted merely in providing them with technological knowledge, they would have had to realize that it would take a very long time until they caught up with the West. The first thing for them to have done would have been to save in order to make workers

⁸ Cf. F. A. Hayek. *The Pure Theory of Capital* (London, 1941), p. 48. It is awkward indeed to attach to certain lines of thought national labels. As Hayek remarks pertinently (p. 47, n. 1), the classical English economists since Ricardo, and particularly J. S. Mill (the latter probably partly under the influence of J. Rae) were in some regards more "Austrian" than their recent Anglo-Saxon successors.

and material factors of production available for the performance of more time-consuming processes. Only then could they successively produce the tools required for the construction of those plants which in the further course were to produce the equipment needed for the construction and operation of modern plants, farms, mines, railroads, telegraph lines, and buildings. Scores of decades would have passed until they had made up for the time lost. There would not have been any means of accelerating this process than by restricting current consumption as far as physiologically possible for the intermediary period.

However, things developed in a different way. The capitalist West lent to the backward countries the capital goods needed for an instantaneous transformation of a great part of their methods of production. It saved them time and made it possible for them to multiply very soon the productivity of their labor. The effect for the Rumanians was that they could immediately enjoy the advantages derived from the modern technological procedures. It was as if they had started at a much earlier date to save and to accumulate capital goods.

Shortage of capital means that one is further away from the attainment of a goal sought than if one had started to aim at it at an earlier date. Because one neglected to do this in the past, the intermediary products are wanting, although the nature-given factors from which they are to be produced are available. Capital shortage is dearth of time. It is the effect of the fact that one was late in beginning the march toward the aim concerned. It is impossible to describe the advantages derived from capital goods available and the disadvantages resulting from the paucity of capital goods without resorting to the time element of *sooner* and *later*.⁹

To have capital goods at one's disposal is tantamount to being nearer to a goal aimed at. An increment in capital goods available makes it possible to attain temporally remoter ends without being forced to restrict consumption. A loss in capital goods, on the other hand, makes it necessary either to abstain from striving after certain goals which one could aim at before or to restrict consumption. To have capital goods means, other things being equal¹⁰, a temporal gain. As against those who lack capital goods, the capitalist, under the given state of technological knowledge, is in a position to reach a definite goal sooner without restricting consumption and without increasing the input of labor and nature-given material factors of production. His head start is in time. A

⁹ Cf. W. S. Jevons, *The Theory of Political Economy* (4th ed. London, 1924), pp. 224-229.

¹⁰ This implies also equality in the quantity of nature-given factors available.

rival endowed with a smaller supply of capital goods can catch up only by restricting his consumption.

The start which the peoples of the West have gained over the other peoples consists in the fact that they have long since created the political and institutional conditions required for a smooth and by and large uninterrupted progress of the process of larger-scale saving, capital accumulation, and investment. Thus, by the middle of the nineteenth century, they had already attained a state of well-being which far surpassed that of races and nations less successful in substituting the ideas of acquisitive capitalism for those of predatory militarism. Left alone and unaided by foreign capital these backward peoples would have needed much more time to improve their methods of production, transportation, and communication.

It is impossible to understand the course of world affairs and the development of the relations between West and East in the last centuries, if one does not comprehend the importance of this large-scale transfer of capital. The west has given to the East not only technological and therapeutical knowledge, but also the capital goods needed for an immediate practical application of this knowledge. These nations of Eastern Europe, Asia, and Africa have been able, thanks to the foreign capital imported, to reap the fruits of modern industry at an earlier date. They were to some extent relieved from the necessity of restricting their consumption in order to accumulate a sufficient stock of capital goods. This was the true nature of the alleged exploitation of the backward nations on the part of Western capitalism about which their nationalists and the Marxians lament. It was a fecundation of the economically backward nations by the wealth of the more advanced nations.

The benefits derived were mutual. What impelled the capitalists of the West to embark upon foreign investment was the demand on the part of the domestic consumers. Consumers asked for goods which could not be produced at all at home and for a cheapening of goods which could be produced at home only with rising costs. If the consumers of the capitalist West had behaved in a different way or if the institutional obstacles to capital export had proved insurmountable, no capital export would have occurred. There would have been more longitudinal expansion of domestic production instead of lateral expansion abroad.

It is not the task of catallactics but of history to deal with the consequences of the internationalization of the capital market, its working, and its final disintegration brought about by the expropriation

policies adopted by the receiving countries. Catallactics has only to scrutinize the effects of a richer or poorer supply of capital goods. We compare the conditions of two isolated market systems *A* and *B*. Both are equal in size and population figures, the state of technological knowledge, and in natural resources. They differ from one another only in the supply of capital goods, this supply being larger in *A* than in *B*. This enjoins that in *A* many processes of production are employed with which the output is greater per unit of input than with those employed in *B*. In *B* one cannot consider the adoption of these processes on account of the comparative scarcity of capital goods. Their adoption would require a restriction of consumption. In *B* many manipulations are performed by manual labor which in *A* are performed by labor-saving machines. In *A* goods are produced with a longer durability; in *B* one must abstain from producing them although the lengthening of durability is obtained by a less than proportionate increase in input. In *A* the productivity of labor and consequently wage rates and the standard of living of the wage earners are higher than in *B*.¹¹

Prolongation of the Period of Provision Beyond the Expected Duration of the Actor's Life

The judgments of value which determine the choice between satisfaction in nearer and in remoter periods of the future are expressive of present valuation and not of future valuation. They weigh the significance attached today to satisfaction in the nearer future against the significance attached today to satisfaction in the remoter future.

The uneasiness which acting man wants to remove as far as possible is always present uneasiness, i.e., uneasiness felt in the very moment of action, and it always refers to future conditions. The actor is discontented today with the expected state of affairs in various periods of the future and tries to alter it through purposive conduct.

If action is primarily directed toward the improvement of other people's conditions and is therefore commonly called altruistic, the uneasiness the actor wants to remove is his own present dissatisfaction with the expected state of other people's affairs in various periods of the future. In taking care of other people he aims at alleviating his own dissatisfaction.

It is therefore not surprising that acting man often is intent upon prolonging the period of provision beyond the expected duration of his own life.

¹¹ Cf. John Bates Clark, *Essentials of Economic Theory* (New York, 1907), pp. 133 ff.

Some Applications of the Time-Preference Theory

Every part of economics is open to intentional misrepresentation and misinterpretation on the part of people eager to excuse or to justify fallacious doctrines underlying their party programs. To prevent such misuse as far as possible it seems expedient to add some explanatory remarks to the exposition of the time-preference theory.

There are schools of thought which flatly deny that men differ with regard to innate characteristics inherited from their ancestors.¹² In the opinion of these authors the only difference between the white men of Western civilization and Eskimos is that the latter are in arrears in their progress toward modern industrial civilization. This merely temporal difference of a few thousand years is insignificant when compared with the many hundreds of thousands of years which were absorbed by man's evolution from the simian state of his apelike forebears to the conditions of present-day homo sapiens. It does not support the assumption that racial differences prevail between the various specimens of mankind.

Praxeology and economics are foreign to the issues raised by this controversy. But they must take precautionary measures lest they become implicated by partisan spirit in this clash of antagonistic ideas. If those fanatically rejecting the teachings of modern genetics were not entirely ignorant of economics, they would certainly try to turn the time-preference theory to their advantage. They would refer to the circumstance that the superiority of the Western nations consists merely in their having started earlier in endeavors to save and to accumulate capital goods. They would explain this temporal difference by accidental factors, the better opportunity offered by environment.

Against such possible misinterpretations one must emphasize the fact that the temporal head start gained by the Western nations was conditioned by ideological factors which cannot be reduced simply to the operation of environment. What is called human civilization has up to now been a progress from cooperation by virtue of hegemonic bonds to cooperation by virtue of contractual bonds. But while many races and peoples were arrested at an early stage of this movement, others kept on advancing. The eminence of the Western nations consisted in the fact that they succeeded better in checking the spirit of predatory militarism than the rest of mankind and that they thus brought forth the social institutions

¹² About the Marxian attack against genetics, cf. T. D. Lysenko, *Heredity and Variability* (New York, 1945). A critical appraisal of the controversy is provided by J. R. Baker, *Science and the Planned State* (New York, 1945), pp. 71-76.

required for saving and investment on a broader scale. Even Marx did not contest the fact that private initiative and private ownership of the means of production were indispensable stages in the progress from primitive man's penury to the more satisfactory conditions of nineteenth-century Western Europe and North America. What the East Indies, China, Japan, and the Mohammedan countries lacked were institutions for safeguarding the individual's rights. The arbitrary administration of pashas, kadis, rajahs, mandarins, and daimios was not conducive to large-scale accumulation of capital. The legal guarantees effectively protecting the individual against expropriation and confiscation were the foundations upon which the unprecedented economic progress of the West came into flower. These laws were not an outgrowth of chance, historical accidents, and geographical environment. They were the product of reason.

We do not know what course the history of Asia and Africa would have taken if these peoples had been left alone. What happened was that some of these peoples were subject to European rule and others--like China and Japan--were forced by the display of naval power to open their frontiers. The achievements of Western industrialism came to them from abroad. They were ready to take advantage of the foreign capital lent to them and invested in their territories. But they were rather slow in the reception of the ideologies from which modern industrialism had sprung. Their assimilation to Western ways of life is superficial.

We are in the midst of a revolutionary process which will very soon do away with all varieties of colonialism. This revolution is not limited to those countries which were subject to the rule of the British, the French and the Dutch. Even nations which without any infringement of their political sovereignty had profited from foreign capital are intent upon throwing off what they call the yoke of foreign capitalists. They are expropriating the foreigners by various devices--discriminatory taxation, repudiation of debts, undisguised confiscation, foreign exchange restrictions. We are on the eve of the complete disintegration of the international capital market. The economic consequences of this event are obvious; its political repercussions are unpredictable.

In order to appreciate the political consequences of the disintegration of the international capital market it is necessary to remember what effects were brought about by the internationalization of the capital market. Under the conditions of the later nineteenth century it did not matter whether or not a nation was prepared and equipped with the required capital in order to utilize adequately the natural resources of its territory. There was practically free access for everybody to every area's natural

wealth. In searching for the most advantageous opportunities for investment capitalists and promoters were not stopped by national borderlines. As far as investment for the best possible utilization of the known natural resources was concerned, the greater part of the earth's surface could be considered as integrated into a uniform world-embracing market system. It is true that this result was attained in some areas, like the British and the Dutch East Indies and Malaya, only by colonial regimes and that autochthonous governments of these territories would probably not have created the institutional setting indispensable for the importation of capital. But Eastern and Southern Europe and the Western Hemisphere had of their own accord joined the community of the international capital market.

The Marxians were intent upon indicting foreign loans and investments for the lust for war, conquest, and colonial expansion. In fact the internationalization of the capital market, together with free trade and the freedom of migration, was instrumental in removing the economic incentives to war and conquest. It no longer mattered for a man where the political boundaries of his country were drawn. The entrepreneur and the investor were not checked by them. Precisely those nations which in the age preceding the first World War were paramount in foreign lending and investment were committed to the ideas of peace-loving "decadent" liberalism. Of the foremost aggressor nations Russia, Italy, and Japan were not capital exporters; they themselves needed foreign capital for the development of their own natural resources. Germany's imperialist adventures were not supported by its big business and finance.¹³

The disappearance of the international capital market alters conditions entirely. It abolishes the freedom of access to natural resources. If one of the socialist governments of the economically backward nations lacks the capital needed for the utilization of its natural resources, there will be no means to remedy this situation. If this system had been adopted a hundred years ago, it would have been impossible to exploit the oil fields of Mexico, Venezuela, and Iran, to establish the rubber plantations in Malaya or to develop the banana production of Central America. It is illusory to assume that the advanced nations will acquiesce forever in such a state of affairs. They will resort to the only method which gives them access to badly needed raw materials; they will resort to conquest. War is the alternative to freedom of foreign investment as realized by the international capital market.

¹³ Cf. Mises, *Omnipotent Government* (New Haven, 1944), p. 99 and the books quoted there.

The inflow of foreign capital did not harm the receiving nations. It was European capital that accelerated considerably the marvelous economic evolution of the United States and the British Dominions. Thanks to foreign capital the countries of Latin America and Asia are today equipped with facilities for production and transportation which they would have had to forego for a very long time if they had not received this aid. Real wage rates and farm yields are higher today in those areas than they would have been in the absence of foreign capital. The mere fact that almost all nations are vehemently asking today for "foreign aid" explodes the fables of the Marxians and the nationalists.

However, the mere lust for imported capital goods does not resuscitate the international capital market. Investment and lending abroad are only possible if the receiving nations are unconditionally and sincerely committed to the principle of private property and do not plan to expropriate the foreign capitalists at a later date. It was such expropriations that destroyed the international capital market.

Intergovernmental loans are no substitute for the functioning of an international capital market. If they are granted on business terms, they presuppose no less than private loans the full acknowledgment of property rights. If they are granted, as is usually the case, as virtual subsidies without any regard for payment of principal and interest, they impose restrictions upon the debtor nation's sovereignty. In fact such "loans" are for the most part the price paid for military assistance in coming wars. Such military considerations already played an important role in the years in which the European powers prepared the great wars of our age. The outstanding example was provided by the huge sums which the French capitalists, pressed hard by the Government of the Third Republic, lent to Imperial Russia. The Tsars used the capital borrowed for armaments, not for an improvement of the Russian apparatus of production.