CHAPTER 1

DEFINITIONS OF TERMS

Weaknesses of Early Definitions

The early conservation movement, which was initiated by Theodore Roosevelt in 1908 when he called together a conference of state governors, apparently collapsed because of its vague and credulous opinions. In many ways it became a moral issue and could well be compared with the movement for prohibition. To many the term conservation became a synonym for the good life as expressed, for example, in the statement by Van Hise that "Conservation means 'the greatest good to the greatest number—and that for the longest time.'"[1] In an early work on the subject, Richard T. Ely suggested that conservation means three things: (1) maintenance as far as possible; (2) improvement where possible; and (3) justice in distribution. Regarding the latter point he states, "In general, it may be said that the conservationists wish to cut off, or at least reduce, the private receipt of property and income beyond what is a fair return to capital and labor and enterprise, reserving the surplus for public use."[2] These broad interpretations of the term conservation are so indefinite that they cannot be used for analytical purposes. In many cases, to use the term in this broad sense is confusing, and for these concepts the term social welfare seems more appropriate. The pattern of the distribution of wealth and property rights cer-

[1] Charles R. Van Hise, *The Conservation of Natural Resources in the United States*, The Macmillan Co., New York, 1910, p. 379.

[2] Richard T. Ely in *The Foundations of National Prosperity*, by Ely, Hess, Leith, and Carver, The Macmillan Co., New York, 1918, p. 6.

tainly affects the use made of resources, but to subsume the problems of justice and "fair" returns to labor and capital under the term conservation adds to the difficulty of defining social ends in such explicit terms that they become useful tools in developing policies of social action.

In an excellent statement of the problem of conservation, L. C. Gray suggests that the heart of the conservation problem "is the determination of the proper rate of discount on the future with respect to the utilization of our natural resources."[3] He also states that "Conservation as a single principle of action involves the equal importance of future wants and present wants," and then points out that this leads to absurdity because present use would "become infinitesimal."[4] Present and future wants are not valued equally either by individuals or society, and a concept of conservation based upon the assumption that these wants should be equal becomes an ethical ideal that it is impossible and absurd to attain. The basic problem of conservation, as Gray points out, is the determination of the proper rate of discount for the future; in this respect it is similar to the problem of investment and is essentially economic in nature. Other economists have made the term *conservation* synonymous with economic use so that it has no specific meaning of its own; on the other hand, many physical scientists use the word to denote the reduction of physical waste and reduction in the rate of physical disappearance.

We may well feel like agreeing with Erich W. Zimmerman that, "The word *conservation* seems impossible of final definition, for its meaning changes with time and place."[5] In spite of this statement Zimmerman presents an excellent summary and analysis of the economic problems of conservation and

[3] L. C. Gray, "*Economic Possibilities of Conservation,*" *Quar. Jour. Econ.* Vol. XXVII, 1913, p. 499.

[4] *Ibid.*, p. 515.

[5] Erich W. Zimmerman, *World Resources and Industries*, Harper & Bros., New York, 1933, p. 788. *See* Chapter XXXIX "Economy and Conservation of Natural Resources."

distinguishes between *economy*, *conservancy*, and *conservation*. The latter term he defines as, "any act of reducing the rate of consumption or exhaustion for the avowed purpose of benefitting posterity."[6] The use of the word *conservancy* to denote a reduction of the rate of exhaustion achieved by the action of economic forces and not directed to the purpose of benefitting posterity seems to make the terminology more complex and classifies actions into two groups depending upon our judgment as to the end involved. When present as well as future economic benefits accrue, it is impossible to make this distinction in fact. Before making this distinction Professor Zimmerman states,

> "Conservation involves a reduction of the rate of disappearance or consumption and a corresponding increase in the unused surplus left at the end of a given period."[7]

This definition of conservation is similar to the economic term *investment* which also emphasizes the curtailment of present consumption for the future. Under these circumstances economic conservation is simply the maximization of social net returns over time. When the term *conservation* is used to apply to all kinds of resources, there appears to be no alternative to using this broad definition in its economic meaning, but the definition cannot then be used in a physical sense to apply to both fund and flow resources. In the case of labor, our most perishable resource, conservation must imply its full utilization rather than any decrease in the rate of use. Again it is doubtful if a "reduction in the rate of disappearance" of our soil resources can be called conservation in any meaningful sense because then any reduction of the rate of exhaustion would be soil conservation even though rapid exploitation were continuing. On the other hand, a system of agriculture which had entirely eliminated soil exhaustion

[6] *Ibid.*, p. 792.
[7] *Ibid.*, p. 790.

and established a system of fertility maintenance could not be called a conservation system according to this definition because no reduction in the rate of use would be taking place! It appears impossible to define conservation in such a manner that it will apply with equal validity to all resources, unless it is done in such broad terms as to become practically meaningless. For this reason the use of specific definitions related to clearly defined cases seems desirable.

Conservation of Fund and Flow Resources

Conservation is, therefore, a word of many meanings. It is currently applied to all kinds of natural resources and has been given both physical and economic connotations.

In order to avoid confusion it appears essential to limit the term *conservation* to a purely physical concept and use the adjectives *economic* or *uneconomic* to describe those aspects of conservation which can be measured in monetary terms. It is also helpful to define the term differently according to the type of resource being considered; three major resource classes should be distinguished because they are fundamentally different in character and raise different problems of conservation.

(1) Fund or exhaustible resources are limited in amount, and conservation may be defined as a reduction in the rate of consumption which will leave a larger quantity available for future use.

(2) Flow resources occur periodically over time, and conservation means using them in such a way that physical waste (non-use) is minimized.

(3) Biological resources of plant and animal life partake of the characteristics of both fund and flow resources upon which they are dependent. They differ from fund or flow resources in that their annual productivity may be decreased through exploitation, maintained at the present level, or increased by the actions of man. Under these circumstances

conservation may be defined as the maintenance of the present level of productivity.

Fund resources include the essentials of industrial production using inanimate power such as coal and oil, and depending upon iron and other metals for the harnessing of power and building of machinery. These resources may be absolutely limited in extent from a physical point of view, but they are only relatively limited from an economic point of view because changes in techniques of extraction, transportation, and the economic possibilities of substitution introduce dynamic factors. For fund resources, economizing means that rate of exploitation or use which will give the greatest social net returns over time; this depends upon costs of extraction, interest rates, and the relative prices of the products. Conservation of fund resources involves higher prices in the present and may best be attained by monopolistic control.[8] A major difficulty in determining the proper rate of use lies in the evaluation of the dynamic factors of technological changes and the possibilities of substitution as, for example, the use of alcohol (a flow resource) for gasoline. These factors vary for each resource as do the institutional conditions of ownership and control. The problems of conservation can, therefore, only be realistically approached by detailed studies including both physical and economic factors.

Flow resources occur periodically over time as, for example, sunshine, precipitation, wind, water flow, fertility from the action of solutions and organisms in the soil together with fibre or organic matter formed by the growth of roots, and the spacial element of land. When applied to these resources conservation means an increase in the rate of use of these factors.

---

[8] *See* the article by Harold Hotelling, "The Economics of Exhaustible Resources," *Jour. Pol. Econ.*, Vol. XXXIX, 1931, pp. 137–75.

The objective of economizing is, of course, identical for all resources in that it aims at maximizing social net returns over time. For flow resources, however, present use does not diminish future use of the resource, and the major problem is that of deciding whether present use is economic or not. This involves a consideration of the substitutability of a flow resource such as water power for fund resources such as coal and oil. Where this occurs conservation of flow resources coincides with the conservation of fund resources, and the economics of conservation, in its broadest sense, involves an analysis of these interdependencies and the economic feasibility of substitution.

The problems of mixed fund and flow resources are associated with biological production; a forest a thousand years old can be exploited as a fund resource or placed on a perpetual yield basis; fisheries can be exploited so that the annual yield declines rapidly; the catch can be regulated so that the annual flow is maintained; or, where the optimum biological balance has not been reached, the flow may be increased. The economic problem of maximizing social net returns over time includes the income and costs of present and future periods of time and this again necessitates a detailed study of the physical and economic factors affecting each particular resource. In this light, resources must be segregated into numerous classes according to the physical problems involved. For example, the conservation and the improvement of the flow of herring present entirely different problems from those associated with salmon. In this monograph no attempt is made to deal with the economics of fund and flow resource conservation as such. Of the large number of resources that are biological in character, only land is dealt with in detail. However, many of the principles resulting from this analysis are applicable to other resources in this general category.

Conservation of Land

One of the difficulties of dealing with agricultural land lies in the fact that it is partly a fund resource, partly a biological resource, and partly a flow resource. Agricultural production may exploit the stored up fertility of thousands of years, or it may utilize the fertility annually renewed through flow resources together with the current receipts of energy and moisture. Agricultural land differs from a mine in that its productivity may be increased or built up by man over time. *Conservation* of agricultural land appears to mean the maintenance of the fund resources and the present level of productivity of the soil, assuming a given state of the arts. Improved varieties of crops and techniques of production will mean increases in productivity as these changes occur. *Exploitation* means the using up of the fund resources of the soil, while *improvement* means increasing the physical productivity of the soil by amendments, drainage, irrigation, and other means.

Reclamation is usually used to denote the creation of agricultural land from waste lands, but any increase of productivity by means of applications of capital or labor to the soil is essentially the same and can be included under the more general term improvement. There is always the difficulty of classifying expenditures as land improvement (a capital outlay) or simply as an annual expense. The difference between applying fertilizer or lime and building terraces or installing drains is purely relative and depends upon the time over which each will yield benefits. Whether any particular expenditure be classed as an operating cost or land improvement will depend on whether the benefits will extend over a long or short period of time. Within obvious limits, the division that is made is in practice a matter of accounting and convenience; those expenditures classed as operating costs do not enter into the capital value of the land, while land improvements do.

Soil types vary greatly in their natural productivity and response to treatments. Many of the podzolic soils have little virgin fertility and have to be improved by careful husbandry and the application of amendments. The chernozem soils, on the other hand, often have large stores of virgin fertility which may be exploited by man for decades. The problem of wise land use involves not only the question of exploitation but also of improvement, and the general statement that we must conserve our soils has little meaning when applied to all soil groups.

In many cases the need exists not only to conserve our soils but also to improve them. The physical problem of conservation differs with each soil type. The physical factors associated with the development of the soil profile include parent material, precipitation, temperature and topography; these determine the plant and animal life that has developed in the past. The soil type, with its characteristic profile and chemical and structural conditions, reflects all of these factors. Some soils are mature and have reached a biological balance, while others are immature and represent young soils not fully developed. The same basic physical factors together with the soil type also limit the crops that may be grown and the cultural practices that can be used in the present.

The limits set by physical factors are not rigid or static and permit many alternative uses at any one time. The biological range of wheat, for example, is extremely wide and only a small fraction of the area that could be devoted to that crop is actually planted to it. The range for tobacco, cotton, and corn is much more limited, but the limits are always relative and not absolute. For corn there is an optimum area in the United States usually designated as the corn belt and as we move from this area yields decline as physical conditions become less suitable; but corn is grown in Alberta, Canada, and also in the southern states. The development of plant breeding has greatly extended the biological range of many of our domesticated species; drouth- and rust-resisting wheat have expanded the area of wheat in the west; early maturing varieties of corn have extended the corn range northward. These physical factors may be called the "permissive" factors affecting land use because they limit the alternative uses available to man.

Impinging upon these permissive factors are economic and social factors which determine the actual combination of crops which will be grown in any given area. Prices reflect, among other things, the market demand in relation to the area and relative productivity of the land available for and suited to the production of particular crops. Transportation facilities, nearness to markets or centers of population, and the perishability of the product all affect the prices received by the producer. The outcome is largely determined by the profitability of the various alternatives in accordance with the general principle of comparative advantage. These economic factors may be called the "causative" factors because they determine the specific alternatives selected from those "permitted" by the physical conditions. It is because these causative factors of land use are so complex that any analysis of the economics of soil conservation must consider many of the problems of agricultural production as a whole.

Economic Relationships

Exploitation, *conservation*, and *improvement* can all be either economic or uneconomic from both individual and social standpoints. These concepts have the following relationships: When exploitation is economic in any homogeneous area, both conservation and improvement of the same area must be uneconomic; when conservation is economic, exploitation and improvement are uneconomic; and when improvement is economic, then conservation and exploitation are uneconomic. In economic analysis these physical concepts are closely paralleled by the concepts of *disinvestment*, *maintenance*, and *investment*, with reference to land as a capital asset.

The economic relationships may be expressed in a simple form in terms of marginal theory under the usual assumptions of a flexible competitive economy. Land improvement involves capital investment, and it is economic for the individual to improve his land up to the point where the marginal returns from investment equal the marginal costs. Up to this point the value of the improvement will be greater than the cost. Land exploitation or disinvestment will be economic to the individual as long as the marginal returns from disinvestment are greater than the value of the resource used up. Conservation (capital maintenance) is essentially an equilibrium concept and is economic for the individual when further investment or disinvestment is uneconomic. At this point marginal returns from investment equal marginal costs, and marginal returns from disinvestment equal the value of the resource used up.

The problem of whether certain expenditures for labor and improvements are current operating costs or represent capital investments has to be decided upon the basis of the time period involved, as was mentioned above. How these are classified is a matter of convenience and makes little difference to the general theory, because all factors of production are applied (in the theoretical model) up to the point where the marginal returns equal marginal costs and net returns to the entrepreneur are accordingly maximized.

Simplifications of this nature are useful in revealing broad general relationships in a simplified world created by the assumptions of a competitive enterprise economy. These assumptions abstract from numerous important features of the real world, and in reality, we must consider divergencies between individual and social net returns, differences in the substitutability of capital for land, the effect of this upon investment and disinvestment, and the problems associated with the institutional structure.

Net Income, Net Returns, and Rent of Land

Net income from land may be defined as the returns to land as a factor of production after all costs of production (including the returns to labor and capital) have been deducted from the gross farm income, including the value of shelter and of home-consumed products from the farm.

Net returns to land as used here is the net land income plus or minus any change in the capital value of the land resulting from exploitation or improvement.

Any decrease or increase in the capital value of the land due to exploitation or improvement is not included in net income; under exploitation, net income would be greater than net returns by the amount of the depreciation of the capital value of the land. This distinction is important because many farmers make no allowance for the depreciation of land values resulting from exploitation.[9] In the case of a system of farming that improves and builds up the productivity of the land, the increase in land value due to this improvement must be added to the net income in calculating the net returns if sound accounting principles are followed. Under a conservation system net income and net returns become identical because no change in productivity or land values takes place.

Economic rent can only be made the basis of land valuation through capitalization when the rent is considered as the annual net return to land under a system of conservation. Under an exploitive system net returns cannot be main-

[9] There are many causes for this attitude, and they are discussed in detail in later sections.

tained over time because the productivity of the land is declining; to capitalize net returns under these circumstances is to capitalize a declining income flow, and this would lead to overvaluation. As shown later, this has been an important factor in introducing fixed costs that make the adjustment from an exploitive to a conservation system difficult. Rent, therefore, may be defined as the net return to land (including the sunk capital applied to it and not separable from it) under a conservation system.[10] Under these conditions net income, net returns, and rent of land become identical. Under static conditions rent and land values would continue unchanged over time; dynamic changes affecting the marginal productivity of any of the factors of production would be reflected in changes in rent and land values. Rent, therefore, represents the expected permanent returns to land under given conditions.

In these definitions the landowner is looked upon as the residual recipient,[11] and management returns are included in costs under the returns to labor. Similarly, interest and depreciation on movable capital goods are included as costs.

To be economic to the individual, exploitation or disinvestment must yield an annual net return for the current year

[10] This definition avoids the controversies regarding the determinants of rent. The marginal productivity theory has some advantages in that it permits a uniform approach to all factors of production, while the classical approach has the advantage of emphasizing differences in qualities of land. In either case the returns must be limited to those occurring under a conservation system. Any realistic analysis of contractual rents must consider four specific determinants: (1) the physical productivity of the land; (2) the supply and demand conditions both of the factors applied to land and the products derived from it; (3) the relative bargaining position of tenants and landlords; and (4) the institutional factors of property rights, custom, and inertia. Any formal definition cannot fully represent reality, and the one used here oversimplifies some problems in order to show other relationships more clearly.

[11] The concept of the landowner as the residual recipient is wholly arbitrary and is adopted as a useful analytical concept in the general theoretical framework developed for this specific study. In other analyses the concept of a residual recipient may be dispensed with, or the residual recipient may be the entrepreneur, or any other factor of production, depending upon the problem being being investigated. *See* chapter 3, footnote 2, and the discussion of population and intensity.

greater than would conservation. If, for example, a rent (net return per acre under conservation) of \$5 could be obtained, the capitalized value of the land at 5 per cent interest would be \$100. Exploitation, however, might yield a net income of \$7 this year, and whether this would represent a higher net return would depend upon the rent that could be earned the next year under a conservation system. If, for example, the rent were reduced to \$4.90 an acre, the value of the land would now be \$98, and the capital loss would be \$2, leaving a net return of \$5. In this case the net returns are identical. If the future rents had been reduced to less than \$4.90, however, exploitation would have been uneconomic, while if the future rents had not been reduced to \$4.90, exploitation would have yielded a higher net return. The same method may be applied to the concept of land improvement or investment to determine whether it is economic or not.

The differences between rents under conservation and net returns from exploitation vary greatly between soils and between different states of exploitation of the same soil; the changes in capital value also vary with changes in the interest rate; changes in the price structure and in techniques of production also affect net income and net returns. These factors and relationships are discussed more fully in later chapters and are only mentioned here to indicate some of the difficulties that arise in attempting to decide whether exploitation, conservation, or improvement is economic for the individual. When the divergence between individual and social interests is considered, the difficulties are further increased by the necessity of introducing concepts of social accounting.

Fertility Depletion and Soil Deterioration

Erosion has been divided into two major categories: normal or geological erosion resulting from the activities of nature, and accelerated erosion resulting from the activities of man.

As used here the term erosion, unless specially qualified, will denote accelerated erosion. This includes wind erosion, and water erosion (sheet, rill and gully); it is a general term implying a movement of the soil. It may be extremely rapid or very slow and represents a destruction of the fund resources of the soil. Fertility depletion refers to the removal of plant nutrients from the soil, and occurs concurrently with erosion; a reduction in the productivity of land may be the result of either of these factors or both together.

Professor Schickele[12] has made a distinction between *fertility depletion* and *soil deterioration* which is of great importance in the study of conservation problems. He states, "Erosion is the most conspicuous form of soil deterioration and, from an economic viewpoint, also the most dangerous because of its irreversible character."[13] The term depletion is used to refer to the removal of plant nutrients and organic matter through crop removals and leaching when these can be replaced by the use of fertilizer, manure, and lime. This distinction is basically physical in nature but may be made economic by expressing it in other terms that may be more useful in determining social-policy. Disinvestment (or exploitation that results in soil deterioration) represents erosion and fertility losses which permanently lower rent; this occurs when the cost of restoring the physical productivity of the soil after a period of exploitation would be greater than the sum of the annual costs, including interest, which would be incurred in maintaining it. Deterioration implies a loss in the value of the soil as productive capital resulting from impairment of its physical properties, and means permanently lower rent to the owner or higher prices to the consumer. Exploitation that results only in fertility depletion, on the other hand, represents

[12] Rainer Schickele, *Economics of Agricultural Land Use Adjustments. 1. Methodology in Soil Conservation and Agricultural Adjustment Research*, Res. Bul. 209, Ia. Agr. Exp. Sta., March, 1937.

[13] *Ibid.*, p. 363.

the use of resources that can be replaced later at a cost equal to or less than the costs of maintaining them. No permanent reduction of physical productivity and rent takes place.

In the case of fertility depletion, the entrepreneur should maintain the productivity of the soil at the point where the costs of marginal inputs equal the value of the marginal product. If he fails to do this because of ignorance or other factors, he and society lose, but the loss is not irreparable. The level of fertility may fluctuate as prices of products and costs vary. In general the entrepreneur tends to be price responsive and increases the intensity of his applications of fertilizer and other input factors when prices rise or costs fall. In this case society need have little concern unless some national crisis demands a larger output of agricultural products, and failure to use resources fully becomes a social menace. In the case of deterioration, exploitation would only be economic for the individual up to the point where the marginal returns from disinvestment equalled the value of the resource destroyed. Failure of the individual to maintain the soil resources at the point where conservation becomes economic means that a permanent social loss takes place, and society is justified in initiating action to prevent it.

This distinction is economic and not physical in nature. From a physical point of view there might be considerable overlapping, and we would find that in some cases physical erosion might be classified as fertility depletion from an economic point of view; this would happen when the cost of restoring the productivity of the soil after a period of exploitation would be no greater than the sum of the annual costs of conservation including interest for the same period. Similarly there may be cases where depletion of soil fertility, with no physical erosion, may cause such changes in the soil that after a period of exploitation the costs of returning to the previous productivity level would be greater than the annual costs, including interest, of maintaining this level. In this case fertility depletion is essentially the same as erosion from an economic point of view because the rent has been permanently lowered. Thus, from a purely economic point of view soil deterioration represents *any* permanent reduction in rent, while fertility depletion (or utilization) represents the case where no permanent reduction of rent results. This distinction is fundamentally one of the relationship between the costs of restoring the productivity to its previous level and the sum of the annual costs, including interest, of maintaining that level.

While no empirical facts are available to prove that this distinction we have made is sound, it is based on the assumption that in many cases erosion permanently reduces net productivity, while in the case of fertility depletion the cost of restoring productivity will not usually exceed the cost of maintaining it. In both cases exceptions will occur, and these are closely related to the types of soil involved. Where the subsoil is not suited to agricultural uses and does not respond to management, deterioration will be synonymous with erosion because no matter how great the expenditure of capital the resource cannot be replaced. This concept of deterioration is also dynamic, and losses may range all the way from zero to large sums for damage that is expensive to remedy. These losses on any given area will vary as techniques affecting the cost of rehabilitation vary. Whether exploitation resulting in deterioration of the soil will be economic to the individual will depend upon the price relationships and physical factors involved. These will be discussed in detail later.

The importance of this distinction to public policy can be illustrated by the events that took place during and after the world war of 1914–18. In response to high prices and government appeals large acreages of grazing lands were plowed and placed in crops under systems that caused rapid deterioration of the soil. Where this occurred the original productivity of the soil was destroyed, and serious wind and water erosion developed, so that the land rapidly became submarginal under the farm size pattern and soil management practices that had developed. Where this occurred the population was forced to vacate the land or became dependent upon relief. Where increases in erosive crops only resulted in fertility depletion, no serious maladjustments occurred, and the physical productivity of the soil was rapidly restored. If the present war demands a large increase in the quantities of erosive crops such as corn and soybeans this increase should take place, as far as possible, on lands not subject to deterioration.

These problems are further discussed from the individual and social points of view in Chapter 6 which deals with fertility maintenance, and in Chapter 7 which deals with soil deterioration. Historically we have developed an exploitive agriculture based upon an abundance of soil resources. While much of our early exploitation represented waste (or uneconomic use of resources) much of it was economic because labor and capital were scarce relative to land. One of the major present difficulties, as we shall see, is to adjust the land use patterns developed in a period when exploitation was economic to the new patterns required by a change in the relative scarcities of labor and capital to land.

Some General Relationships

The interrelationships of all these terms may be clarified by examining them with reference to the differences between land and capital, and fixed and variable costs. From an economic standpoint agricultural land is a capital good and differs analytically from other capital goods primarily in its peculiarities as to reproducibility or substitutability.[14] Land itself is, as we have seen, a composite of fixed and flow resources; at one extreme is the whole complex soil structure (with both the A and B horizons associated with its productivity) which, once destroyed, may never be replaced; at the other extreme is its nitrogen content which may be replaced by legumes or applications of fertilizer. One represents the concept of fixed capital, the other the concept of variable costs. Just as we must use judgment in classifying fixed and variable costs in industry (as, for instance, in deciding whether the cost of an instrument with a certain length of life is a fixed or variable cost) so must we use judgment in classifying the fixed and variable properties of land. There are no absolute criteria of classification, and the division must be made on the basis of its usefulness to the problem under consideration.

For the purpose of an analysis of the economic and social problems of soil conservation, exploitation should refer to a reduction of the fixed capital (i.e. a permanent impairment of productivity and hence of capital value) and be synonymous with soil deterioration. Soil depletion, however, can be looked upon as analogous to the failure to maintain stocks of currently used factors which are usually looked upon as variable costs. Both exploitation and soil depletion represent disinvestment, but depletion is only a short-time phenomenon, while deterioration represents disinvestment which can never be offset by reinvestment or only by a reinvestment of a larger amount of capital. Conservation should refer specifically to maintenance of the fixed capital but would permit temporary changes in fertility due, for example, to variations in the quantity of fertilizer or other factors classed

[14] The spacial element of land is sometimes looked upon as being an absolute difference between land and capital; but in urban areas, where space is most important, space scarcity is overcome by skyscrapers and transportation so that this difference is also only relative.

as variable costs. Land improvement refers to applications of labor and capital of a more permanent nature and would correspond to investment. Whether exploitation, conservation, or improvement is economic to the individual depends upon the cost price structure and varies as these factors vary; furthermore, the fact that any particular course might be economic for the individual does not necessarily mean that it would be economic for society as a whole because society must consider costs, benefits, and prices which may differ from those affecting the individual; both aspects must be considered. Before discussing the relationship of the individual and society to conservation, however, we must analyze the relationships between the various factors of production and show how these affect land use.