



## **Dissertation: Chapter 4, Land Speculation as an Obstacle to Ideal Land Allocation**

By Dr. Mason Gaffney

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## CHAPTER IV

### Land Speculation as an Obstacle to Ideal Land Allocation

#### I. Preliminary approach to hypothesis

Part I depicts the problem this study seeks to explain, the problem that much land is put to uses less productive than feasible alternatives. In Part I we surveyed unused land, tenant-occupied land, and land operated in non-optimal holdings. Not all readers will approve each detail of the picture there drawn. Some will think it too lenient, others too critical. But most will allow that the real landscape, which the drawing represents but imperfectly, is enough like it to warrant pursuing the question: "Does the land market tend to assign land to its best use?"

The facts we surveyed suggest that it often does not. Thus the facts seem to conflict with "the theory of free trade in land." As R. T. Ely put it:

The theory is that through free purchases and sale, land and other economic goods get into the hands of those who can best use them; and these are normally the ones who can buy and hold at higher prices. 1

We have seen that the highest bidder for land often uses it but indifferently. We have seen land reserved by its high price from any use at all. To be sure, there may be

subtle intertemporal relationships that escape the naked eye, and that explain away the whole problem. We will keep that in mind as we now test the theory of free trade in land by analyzing the economic forces that set land prices and allocate land.

Let me emphasize that the land market alone is under scrutiny in this study. Excises, subsidies, quotas, licenses, monopolies and other barriers to the free play of economic forces may distort the entire price structure from the ideal, but these, for the present study, we accept as given. We are presently concerned only with the response of landholders to the price and cost stimuli that impinge on them, and not with how the stimuli are determined. We are concerned with the apparent fact that the response is often sluggish or contrary -- that some landholders withhold land from its best use, or any use, foregoing part or all of the income it might bring them, even though nothing but their own free will stands between them and that income. We are concerned with the implication that even if markets were perfectly free, they would still not assign land to its best use. That is the problem we now seek to analyze.

After looking to the recorded wisdom of the past for guidance, I am disposed to agree with Thomas Adams:

Notwithstanding the high quality of many of the theoretical studies of land valuation and the principles underlying the creation of urban values, there is probably no economic problem of equal importance that has received less study by economists. 2

Most writers on resource allocation and the price system evidently assume that land prices play the same role as other prices, for they give land pricing no separate treatment. Pigou, in his classic Economics of Welfare, lays down the rule that men free to follow their own self interest will thereby allocate resources so as to maximize the "social dividend."<sup>3</sup> Throughout the rest of that encyclopedic study he considers exceptions to the rule, and qualifies it in meticulous detail, yet he never mentions idle or underused land (save for brief reference to tenancy contracts). Many other works follow the same pattern: they submit that prices set by supply and demand in free markets will guide all resources to their best use, and allow a few exceptions to the rule due to influences that come under such headings as "external economies," "imperfect knowledge," and "monopoly". I find few that deal seriously with the exceptions to the rule we described in Part I, and none that tries to reconcile them with the rationale of the price system.

That is not to say no one ever considers the problem of land use. Countless observers have remarked on how "land speculators" sometimes withhold land from its best use, and there are many solid studies of land prices, land ownership, and "land speculation." We will have occasion to cite some excellent works by C. R. Chambers, L. C. Gray, W. I. King, Leon Truesdell, E. A. Goldenweiser, Th. Schultz, E. O. Heady and others. But these are sealed off in a compartment

separate from general price theory. Neither these authors, nor any price theorist known to me, have explicitly raised, much less settled, the question of whether land prices are effective allocating agents.

Yet the question must be raised. Land price is derived by reducing an endless series of future values to a present value. We cannot assume outright that the invisible hands of supply and demand will guide resources to the best use when they work through prices so derived, for we cannot assume that such prices are accurate indices of alternatives. First we must examine the discounting process which makes, or is alleged to make, future values commensurable with present values and with each other.

Philip Cornick, in a neglected exploratory article, "Land Prices in a Commodity Price System," has tried to qualify the generalizations of price theory in the light of his own experience with land markets. Cornick there suggests that speculation in future rents and resale values of land distorts the price structure so that it keeps land from its best use. The suggestion is worth pursuing, as it seems to fit the subject matter. For a distinctive feature of land is its infinite life expectancy; and a distinctive feature of land markets is that one must buy title to the infinite future of land in order to buy it at all. The relation of present to future values is clearly a key to our problem. If a titleholder puts a high price on land he does not use, it must be

the land's future that he values -- he obviously has no reason to value the present. We will follow Cornick's lead and try to see how speculating in the future of land may disrupt its present allocation.

This chapter presents the hypothesis that some land purchasers, due to superior access to credit, find it to their advantage to pre-empt land from other enterprises in which it would add more to output, but whose owners have inferior access to credit. These pre-emptive purchasers we will tentatively designate "land speculators". But before proceeding from here we must establish just what that term means to others and how we shall use it.

## II. The meaning of "land speculation".

When we start to formulate the idea of "land speculation" more precisely some interesting questions immediately arise. Why should anyone want to withhold his own land from present use, passing by and wasting the income he might enjoy from it, just because it will yield future incomes too? Why does he not take both? Or, if he is presently too preoccupied to use the land, why is he not outbid by someone else who values the present as well as the future of the land? It seems reasonable to expect, as many price theorists have evidently assumed, that he to whom as owner the land would yield the most income over time, best distributed in time<sup>4</sup> would outbid all rivals and take the title. That is, land would gravitate to him who

would use it best. What obstructs this fruitful union?

"Land speculation," according to many observers. But what is "land speculation," that it motivates anyone to pass up annual values that are his for the taking? Let us look for a precise definition.

In one sense the term, "land speculation" is analogous to speculation in any commodity, such as grain. Grain speculators withhold grain from consumption when its price is low to conserve it for future sale and use when it is more valuable. "Speculators" in exhaustible natural resources may have the same motive, and serve the same useful function. But the motive is only clear when present use would preclude future use -- when "use" means destruction or depletion. Not all natural resources are exhaustible, and the problem we are dealing with is the disuse and misuse of sites, a kind of land that use does not destroy and disuse does not improve.<sup>5</sup> To be sure, we also dealt with farm land, which has a destructible component. But it is quite feasible to farm land without destroying it, and the problem we described was one of failure to conserve and improve farm land for future use. We did not call it a problem that farm land was being preserved from destruction. This conservationist concept of "land speculation," therefore, is not one that helps analyze our problem.

Having disqualified that definition, it is not as simple as it might seem to find another. The entire value of land is "speculative" in the sense that it derives from

unsure anticipations of future rents and resale values. As a manner of speaking one may roughly distinguish "sound" values based on present realities from "speculative" values based on future possibilities, but strictly all values are "speculative" in this sense because the future begins immediately and lasts forever. There are only the near future and the remote future, with no sharp line between them. From this it would follow that "land speculation" is only an unsympathetic variant of "land purchase," "land holding," or "investment in land."

That is certainly one usage. "Land speculator" is often an epithet used to blame outsiders or other scapegoats for unpopular or flagrant aspects of a price movement in which the whole community participates. One witness testified at Senate Hearings on land speculation in the Columbia Basin -- concerning an area of hundreds of thousands of acres --

"....the only speculative work that was done, and the work that really caused all this trouble, was by the T. L. Stern interests of Seattle..."<sup>6</sup> R. A. Billington remarked on the same human weakness in an earlier era:

...the frontier never realized that the pioneer who held back land from settlement in this way separated himself from his neighbors, delayed the coming of schools and internal improvements, and hindered the development of social institutions that would have made life easier. Instead the westerners concentrated their attacks on the professional speculators, most of whom were absentee owners. 7

The usage is worth noting because it bids us be wary in presuming that those who talk of "land speculation" have a valid distinction in mind.

But there are other usages. "Land speculation" means many things to many people, a confusing number of things, a fact which leads to absurd disputes like this one in California:

....it has been contended that land speculation will not exist in the Central Valley because much of the land is already fully developed. Others have contended that speculation in land is already under way. 8

Before concluding that "land speculation" is only a vague and prejudicial word, let us survey some other usages. For people have written of it for years as a definite force to reckon with, and some of them purport to define it on more substantial and objective bases.

We will consider four definitions:

A. Land speculation is selling land for more than the original purchase price.

B. Land speculation is buying or holding land with the intent of reselling for more than the original purchase price.

C. Land speculation is buying, holding or selling land at prices premised on future rents greater than the present ones.

D. Land speculation is holding land one does not use personally.

We will put the definitions to a test of clarity, and a test of usefulness. The test of usefulness is this: is there any reason to believe that speculation so defined affects

land prices and allocation differently than other influences the definition excludes?

A. To many people "land speculation" means realizing an "unearned increment" by reselling land for more than the original price. The Bureau of Reclamation's "Anti-speculation" law, for example, is directed against taking such increments. Again, E. C. Johnson in the March 1944 Federal Reserve Bulletin proposed an increment tax on such sales of all farm lands, "to stop land speculation." The tax rate he proposed would decline with each year the land is held, reaching zero after six years. Here, the implied definition is that "land speculation" is reselling shortly after buying, and the farther removed the time of sale from the time of purchase the less the transaction partakes the quality of "speculation." The Bureau of Reclamation's law, on the other hand, provides for land price control into the indefinite future -- implying that selling land for a gain, at whatever time, is "speculation."<sup>9</sup>

The definitions are clear enough, but not very useful. By either of them it is not "speculation" to buy or hold land, but only to sell it. The holder does not become a "speculator" until such time, if it ever comes, as he actually sells, and only then if he gains by it. Legally the definition is nearly useless because holders evade the purpose and penalty of the law by simply not selling, and taking their gains in other ways. Analytically it is useless for the same reason. It excludes all those who do not sell, and only includes those who do

sell when they leave the market and cease to influence it. But we are only interested in their behavior while they are in the market, not in their departure. They can only withhold land from use before they sell it.

B. A second, and related definition seeks to overcome the defect of the first by calling a "speculator" one who buys land "with the intent or purpose" of selling for a gain, or "in contemplation of" public works or other developments that would raise its resale value. E.g., the Senate Fact Finders Committee of 1926 enumerated five supposedly distinct types of land buyers, of which this was type 5:

Those who made use of the opportunity offered by the government to secure land and water on most easy terms, and with the intention to hold them until the unearned increment would enable them to sell out at a large profit. Such men are seldom farmers. They are always seeking for an opportunity to sell the lands at a good profit to themselves. These are the speculators. 10

Under this definition one may sell for 500% gain and not be, nor have been a "speculator" as long as he did not originally buy "with that intention." Again, the definitional loophole is a legal loophole. Senator McCarran of Nevada brings out both in this interesting declamation against the Columbia Basin Anti-Speculation Act:

I know of territories in the west where the pioneers went in there and took up lands not looking for any reclamation project to be started... ..and if they could sell their land at an enhanced value I think it would be fair to say: 'You have lived on all these lands without expecting this, but now the Government has put this in, and you are entitled to the enhanced value.' I think they are entitled to the benefit of it. 11

We might plug this loophole by extending the definition so that one becomes a "speculator" whenever he develops the intention of reselling for a gain, regardless of his original intentions. But neither this, nor the original version, nor any definition based on "intent," will ever pass the test of clarity. We readily see the unreality of the black-and-white concept of human motivation underlying the definitions by reflecting on the problems of administering a law based on any of them. The Senate Fact Finders Committee's concept led to their proposing a policy of discrimination among citizens, of "selecting" the project settlers on the basis of their intentions.<sup>12</sup> Anyone charged with this duty would soon find that no man can enter another's mind and know what he intends to do. Often the buyer does not know himself, or indulges in rose-colored dreams that never materialize. The Canadian Pacific Railway, in the nineteen-tens, wrote to hundreds of small absentee title-holders in their Bow River area, inquiring why they had not arrived to settle the land they had bought. As J. B. Hedges reported it:

Many replied frankly that they had bought the land for speculative purposes and were holding it for the appreciation in value... (But) large numbers ....had bought....in good faith, with every intention of settling on the land... they had not found it possible to carry out their original plan. 2

Even supposing all these people told the truth, there is no clear line between the groups. What distinction there is is largely between hypocrisy or self-delusion on the one hand and

frank egoism on the other. The two groups behaved exactly the same.

Another difficulty of these definitions is that, as land lasts forever, no one buys land without giving some thought to its eventual resale value, for himself or his heirs. So even if everyone were honest with himself and with us, we could still not distinguish those who intend to resell from those who do not. An ultimate consumer can often buy goods other than land without speculating in their resale values because these goods die natural deaths in consumption. But land lives on forever, and often grows dearer with the years. If anyone seeks to buy it without considering potential resale values, others who do consider them will crowd him out of the market.

In spite of these unsurmountable problems of formulating a definition of "speculation" based on intent to resell, many who write seriously of "land speculation" define it just that way. It is not surprising to find some of them conceding they do not know just what their subject is. Ernest M. Fisher wrote:

...(land) speculation is difficult to identify with certainty; ...the intent of the purchaser is probably the basis of distinction between speculation and investment....(but) the same individual, in the same transaction, may be at one time a speculator, and at another an investor. 14

L. C. Gray, writing on "Land Speculation" in the Encyclopedia of Social Sciences, also found his subject hard to define:

The investor in land acquires it primarily with a view to employing it as a factor of production; the speculator primarily in the hope of profiting by an expected increment in value... Frequently the purchase is motivated by both objectives. 15

I do not hold these men up to criticism, but to praise. They realized and warned their readers they could not define their central term. Where they have failed, we will not try to succeed. Probably no definition based on "intent to resell" can ever pass the test of clarity.

Even if the definitions were clear, they would not be useful. For "speculation," so defined, excludes intentions that actuate the same behavior as those it includes. C. R. Chambers wrote of the 1920 farm land boom:

It is often stated that the high land values of the war period were the result of speculation in land. If by speculation it is meant that the purchasers of land in these years bought with the idea of selling again at a higher price, it is only to a very limited extent that land values were forced upward because of it.... (Cites two studies) ... These studies showed that a large per cent of purchasers bought without any thought of reselling. 16

On the basis of "intent to resell," if it were made precise, the buyers who boomed up farm land in 1920 were not "speculating." Neither are corporations that hold valuable resources idle "for future expansion," nor are Chicago brokers who buy corn belt tenant farms "for income" and "a hedge against inflation." Only those are "speculating" who plan to take their gains by reselling. But the effect on the present land market is the same in either case. So, at root, are the motives. Land

value derives, as we said, from future values. Buyers may intend to take them as a permanent annuity, by holding the land, or as a lump sum, by selling. There is no reason to suspect that, if the one motive would upset the land price system, the other, its twin, would not have the same effect.

C. Chambers used another concept of "speculation,"<sup>17</sup> one originated by W. I. King and L. C. Gray, and later used by Cornick, in which future increments to rent are the subject of "speculation". They derived it from the formula:

$$V = \frac{a}{i} + \frac{\Delta a}{i^2}$$

Here "V" is land value; "a", the current annual rent; "i", the interest rate; and " $\Delta a$ ", an assumed constant annual increment to rent. The first term,  $\frac{a}{i}$ , (the present rent capitalized), is the "normal" value of land;  $\frac{\Delta a}{i^2}$  is the "speculative" component of land value. "Land speculation" is buying, holding or selling land at prices that include the "speculative" component.

The idea that land value consists of a "normal" and a "speculative" component appears, too, in less formal guise, in statements like the following:

....the confident expectation of the future enhancement of land values, which arises in all progressive countries from the steady increase of rent .... leads to speculation, or the holding of land for a higher price than it would otherwise bring. 18

....there are two primary elements in the value of real estate, its annual or use value and its speculative value. 19

The speculative element (in land values) will persist, in all probability, so long as land values are increasing. 20

....the intensity of the urge to cut up income producing farms into non-income producing vacant lots varies directly as the spread between land prices and land values.... 21

The concept also finds its way into the courts, as when an Iowa judge rejected a land appraisal because it included "speculative value."<sup>22</sup>

Those definitions are all clear enough. They mean that projecting present rents into the future is "non-speculative," while expecting increases is "speculative." Nothing is said about resale values, but the implication is clear that resale values are "speculative" if derived from anything but constant anticipations. Nothing is said about changes in interest rate, but again it is clear that anticipations of changes are "speculative."

Such definitions, although clear, are not very useful. They distinguish two components of anticipated rents: an amount equal to the present rent; and the excess of the future over the present rent. The second is the "speculative" component of rent, from which the "speculative" component of land value derives. The definitions are not useful because there is no cause to believe that the incremental component of anticipated rents will influence present land value in any

special way different from the other component. Let us consider this in more detail.

The formula

$$V = \frac{a}{i} + \frac{\Delta a}{i^2}$$

is only a contraction of the longhand formula

$$V = \frac{a_1}{(1+i)} + \frac{a_2}{(1+i)^2} + \frac{a_n}{(1+i)^n} + \frac{a_{\infty}}{(1+i)^{\infty}}$$

(for the special case where  $a_1, a_2, a_3, \dots, a_n, \dots, a_{\infty}$  increase annually by a constant increment  $\Delta a$ ). In the longhand formula it is quite clear that both components of the anticipated rent of any year, ( $a_n$ ), affect present value,  $V$ , through the same discount mechanism. That is, both components of  $a_n$  are multiplied by  $\frac{1}{(1+i)^n}$  and thus discounted to a present value.

From this it appears that if expectations of increments to rent, ( $\Delta a$ ), tend to distort land prices, then expectations of constant or even falling rents will do the same. Neither component has unique effects on value.

And why should it be "speculative" to think rent will rise, and "normal" to think it will maintain in the future the same level it happens to have reached in the present? Why, for example, was it "speculative" to buy a city lot in 1940, correctly expecting rents to rise, but not "speculative" to buy in 1929, erroneously expecting them to stay at their peak levels? Intellectually, the distinction seems

to be based on little more substantial than the medieval doctrine that constant prices are right and beneficent, while changing ones necessarily work mischief. But of course in our dynamic world, where nothing is so constant as change, prices are only useful if they adjust constantly to new situations. There is no apparent cause to impute especial damage to change or the anticipation of it.

We will temper this criticism with three qualifications.

First, the formula  $V = \frac{a}{i} + \frac{\Delta a}{i^2}$  is useful for some purposes. It is a handy compact summary of how anticipated rising rents affect land value. Chambers and Cornick have used it with intelligent restraint and to good effect, and we will have occasion to use it ourselves in a few pages. Strictly, it only holds when the interest rate, "i", and the annual increment to rent, "a", are to be constant for all time to come; but one can readily deduce the effect of various changes in the assumption. We only criticize the formula as a vehicle for defining "land speculation."

Second, there is in fact evidence that land is worse allocated when the market expects rents and values to rise. The most obvious misuse of land -- disuse -- is most common where land is growing eligible for more lucrative uses, and tenancy is more common where rents are expected to rise. To

be sure, there is no evidence that that is the only distorting influence. Vacancy, tenancy and other misuses also appear where no one expects rents and values to rise. But any hypothesis we construct must account for such correlation as there is between bad land use and rising rents. We will use that formula to help do it.

Third, if "speculative" connotes "based on future expectations," then the component of land value that derives from future increments to rent is more speculative than the other component. This other component is also "speculative" in the sense that it is derived from future rents. But if the degree of "speculation" increases with futurity, then rising rents which increase with time are more "speculative" than constant ones, which are evenly distributed in time. That, too, is of some import for our future analysis.

D. In yet another usage, "land speculation" means absentee holding, as opposed to resident ownership. Those who buy farm land "for income," for example, are often called "speculators." According to Mr. Margold of the Bureau of Reclamation, the Columbia Basin Anti-Speculation Act "is not intended.... to prevent him (anybody who is there operating and who is developing land) from doing anything. He is specifically exempted...." <sup>22</sup> The residence requirements of our Homestead Act, and other land settlement laws here and abroad, reflect the same concept.

But the concept is not strictly definable. There is no clear line between the resident and the absentee. As a small resident owner expands his holdings, when does he become an absentee? Over how many hundreds or thousands of acres may one family "reside"? How many hours per day or days per year must they be on each acre of "residence"? Any distinction is purely arbitrary.

Now we might tolerate this intellectual defect if there were in the real world a clear distinction of the types. There is, after all, good cause to think absentee title-holding discourages the best land use. But in fact the twilight zone between absentee and resident is broad. That was the subject of Chapter III. It comprises a substantial part of our problem.

Of course there are some title-holders who never set foot on the land they hold. They are clearly absentees. But if one wishes to set them apart for special study, "absentee," and not "speculator," seems the appropriate term. For the land is just as much an investment or "speculation" to the resident-owner as the absentee. Just as the manufacturer, in the ordinary course of production, unavoidably "speculates" in his inventories, so the owner-operator of land takes the same price risks as those who merely hold title without using. The resident landholder, in fact, resembles the absentee holder more than the manufacturer resembles the professional commodity speculator. For the smallest resident operator holds title to something he will

never use: the infinite future of the land. He is an absentee in time, if not in space. He "speculates" in those future values, willy-nilly, as much as any absentee. He can only avoid it by becoming a tenant. Then, as Goldenweiser and Truesdell wrote, "Under this plan (tenancy) the young farmer would be a farmer pure and simple, instead of partly a farmer and partly a speculator in land."<sup>23</sup> But among those who hold title there is no unequivocal rule to separate the "speculators" from the others.

We have surveyed four usages of "land speculation." None of them passes both the tests of clarity and usefulness. We could always make or accept some purely arbitrary definition, but it would not help with our inquiry. We are left with this conclusion: to hold title is to speculate. Any distinction is only one of emphasis, and it is not usually clear what the emphasis is. It was said of virgin timber that:

...the whole value of stumpage may be said, in a sense, to have a speculative origin; that is, it depends upon the opinion which owners and buyers have of the probable value in the future. <sup>24</sup>

The same is true of all land value. It harks back to no cost of production; there is no gauge of competitive reproduction. It all derives from the future, and it derives from the entire future. There is no buying land without gambling on eternity. "Speculation" is an apt word for that.

Now we have not gone over those definitions in such detail just for the pleasure of picking on fine points. What was the purpose of that long discussion, and what is the meaning of the conclusion? Is it that "land speculation" is a myth? On the contrary, the myth is that anyone can hold land title without speculating. All who hold title are ipso facto speculating. So land speculation is not just an occasional aberration, the product of special conditions. It affects every land market, at all times and places.

To be sure, land speculation does more conspicuous damage in some circumstances than others. Frontiers, especially both urban and rural, are not subtle: the ravages of speculation there lie bare for every eye to see. But similar economic forces work on all land, even where it lies under a veneer of improvements in the centers of society. Land speculation, for better or worse, is an unavoidable incident to the entire process of land allocation.

That does not necessarily mean that all land is misused. It is entirely possible to put land to full use while also speculating in its remote future, and many holders do. Everyone is free to speculate in land, and if one plans to use land well that should only increase the price he is willing to pay for it. Other things being equal, the better land users will generally outbid the worse ones.

But other things are not generally equal. The recurrent protests against land speculation, although they issue

in a baffling babble of tongues, adumbrate a genuine grievance that only wants precise formulation. While there is no sharp line between speculators and other title-holders, there is still an important distinction to make. There are many kinds of speculators. On one extreme the very best land users are speculators, for to use land best one must hold title to avoid the unrequited costs of tenancy. On the other extreme are those who speculate and nothing else, who keep land completely idle.<sup>25</sup> Between the extremes are speculators who do use the land, but not as well as would some other who only lacks the power to buy it. These last comprise most of our problem. We will label anyone who thus withholds land from contributing its utmost to production a "problem speculator."<sup>26</sup> Something prompts him to thwart the free market from directing land to uses with the highest marginal productivity. We will now present a hypothesis to explain why problem speculators can sometimes out-speculate and thus outbid other speculators who would put the land to better use.

### III. Differences among speculators.

With the terminology clear we can strike to the heart of the problem by posing this question: as all landholders are speculators, how can the problem speculator ever enter the market against a more productive speculator? Why, for example, would a speculator who plans to sell a vacant lot after holding it unused for ten years outbid another speculator who plans to resell it after taking income from the

land for ten years? If an acre of land is to yield \$100.00 per year in perpetuity, the sum of these future values, discounted to the present at 5%, is \$2,000. \$780.00, or almost two-fifths of that \$2,000, derives from the first ten years. At 5% the user-speculator could bid up to \$2,000; the problem speculator would go no higher than \$1,220. The question is, what is wrong with our example that it fails to explain what we know to be true? Why do problem speculators sometimes withhold land from use?

If the land has an exhaustible component, the motive may be to conserve it. That is often, though not always, why ores are untapped and virgin timber uncut. But, as we said, we want instead to understand the misuse and disuse of perennial resources: why city lots are vacant and farm lands abused by tenants. That calls for an explanation of its own.

To be sure, R. T. Ely once advanced a "Theory of Ripening Costs" in which the vacant city lot was held to conserve it from lower uses while it "ripened" into higher ones. Said Ely:

If I buy land and hold it for appropriate use, I perform social service. A lot suitable for a fine downtown office building may otherwise be improved with a very different, inferior building and hinder permanent improvement due to the fact that A, who sold it to me, could not hold for the best social use. 27

and:

It would be in the end a waste to put upon this land inferior buildings which would have to be torn down. 28

There is some truth in the idea. The quality of vacancy is itself a kind of exhaustible resource, valuable because a lot once improved for one use can only shift to other uses after some alterations. But there are many reasons to doubt that Ely's theory adequately explains all or even much of the problem of unused land.

A. Unused land appears on all frontiers, not just the urban frontier. And on the frontiers of cultivation and of irrigation there is little such fear of rapid obsolescence to explain it.

B. Few urban structures are demolished, while still new and valuable, due to obsolescence. The contrary problem is much, much more typical of our cities: ancient skeletons of buildings remain standing -- or leaning -- long after their useful life is done.

C. Where many landholders settle back to wait for each other to take the first constructive action and stamp a pattern on a community, it often happens that nothing happens. As one speculator put it, "We have no plans. We're waiting for other people's plans." It is hard to avoid the inference in such cases that the holders are unusually indifferent to maximizing their income from these lands, even over time, else such things could not come about. It is also likely that the first to develop will be able to influence the general course of development in his own favor, and if all

holders were fully awake to their advantage they would hardly continue this Alphonse and Gaston performance very long. Simpson and Burton expressed their feelings about the inadequacy of the theory in some rather memorable language:

...thousands of acres of the finest agricultural land all over the country are taken out of agricultural production and consigned to idleness for decades to come. We speak of land 'ripening' into higher uses; this is putting land into cold storage -- and loading the community with the 'frozen assets' that result. 29

D. Vacant lots are often checkerboarded in among improved lots. There is no sudden avalanche of development once the fear of obsolescence is removed.

E. If land is not yet "ripe" for a higher use it should never have been taken from its previous use. <sup>30</sup>

F. Finally, of course, this argument only even purports to rationalize vacant urban land, and does not help in our general problem.

This is not to say that the concept of "ripening costs," judiciously used, has no place in economic analysis. It is only to say that the concept is not adequate to explain why so much land is vacant and otherwise underused.

If there were no other explanation of the facts, we might spend more time with this fear-of-obsolescence argument. But there is a more convincing and general reason why problem speculators can outbid user-speculators for land: it is their greater power to speculate. To buy land, as we said, one must speculate, willy-nilly, in remote future values. If everyone

could assume this extra burden with the same ease it would not affect how the market dispenses land titles. But ability and inclination to speculate, like other human traits, vary among persons. A strong and sanguine absentee speculator may value land he has no use for higher than can the fittest potential owner-operator. The stronger speculator may bid land away from the weaker even when both parties know the weaker would gain more net income from it in both present and future.

"The power to speculate" means the power to buy future values. It is measurable in terms of the rates at which individuals discount future values: the lower the rate, the greater the power to speculate. One hears that "it takes a difference of opinion to make the market." It is only part of the truth. In land and security markets, as in the grocery store, one's mere opinion counts for no more than he is ready to spend on it. There is a far more telling and persistent difference among individuals in the market than their opinions, and that is the rate at which they discount future values.

A small difference in the rate makes a big difference in what one can bid for a land title, whose entire value derives from future values discounted to the present. In the simplest capitalization formula,  $V = \frac{a}{i}$ , the value (V) that one can place on a land title equals the annual income of the land, (a), divided by an interest rate (i), (both assumed constant in perpetuity). The individual's power to speculate,

as measured by the interest rate he uses to discount future values, influences his bid for land title just as much as does his ability to use the land. "a" and "i", the reciprocal determinants of "v", have equivalent weight. The best user -- he who would produce the highest annual income from the land -- will only take the title if he can discount future values at a low enough interest rate to outbid less productive rivals with more power to speculate.

#### IV. Why differences persist.

Several men have asked why interest rates should vary from person to person when there are capital markets in which those with low rates may lend to those with high rates. There are such markets, of course, but they never arrive at one "market interest rate" at which everyone can discount future values. That is not just because the markets are "imperfect" or "monopolistic," although they may be. It is simply because it costs something to transfer money from lender to borrower. Between those who deposit money in a bank for 2% and those who borrow from it at 6%, there is an ineradicable barrier. Financial institutions do not transfer funds for nothing, but partly insulate lenders from borrowers. They are like resistors in an electric circuit: some "juice" flows through, but along the way it loses much of its potential.

It is a nice question whether individual interest rates would still differ under various assumed conditions of "perfect competition."<sup>31</sup> My own opinion is that they

would, under any reasonable assumptions. To assume costless capital markets would be to assume away the incomes of several million hard-working citizens, and with them all the economic theory that deals with banking. Harry Scherman has stated that handling long-term loan contracts is "the chief business of the legal profession,"<sup>32</sup> and of course bank clerks and presidents, bond salesmen and bill brokers also earn their bread as financial middlemen. If economic theory is to deal with financial matters at all, it must certainly allow their existence. I would style the assumption of uniform interest rates an assumption of "pluperfect" competition, interesting as a curiosity, perhaps, but of no help in understanding or evaluating the real economy.<sup>33</sup>

If the reader sticks at that opinion, I do not insist on it. We may leave to those whom it interests the question of whether individual interest rates would differ in the world of purest theory. In the one we live in, they differ immensely. They will continue to differ until the day when lenders stand ready to loan any sum for any period to anyone at one universal interest rate. Meanwhile, there is not one, but a whole array of interest rates, decisively separated by the costs of transferring funds. Let us now inspect those persistent barriers to transfer that prevent the array's converging into one "market interest rate."

The transfer costs are something like transportation costs. Loanable funds move from the saturated watersheds

of supply to the thirsty fields of demand through such conduits as banks, mortgage houses, insurance companies, savings and loan associations, and the like. It costs something to move funds through those conduits, just as it costs something to ship, say, lumber from Portland to Chicago, or deliver water from Shasta Dam to Mendota Pool. Uniform nationwide lumber or water prices would only result from free transportation; uniform interest rates would only result from free financial service.

But the transfer costs differ from transportation costs in an important respect. The cost of moving lumber or water is mainly physical, so that their prices vary only from region to region. The cost of moving funds is mainly legal, administrative, and clerical, so that interest rates vary from person to person within the same region. Interest rate differentials may be greater between more distant points, but extremely different rates persist within the same city block.

This characteristic of the interest rate structure is what makes it so important for our study. Neighbors -- rival bidders for land -- pay about the same prices for their lumber, but pay or account very different prices for their capital funds. The differences manifest themselves in different powers to hold land. The following remarks from Homer Hoyt's "One Hundred Years of Chicago Land Values" show the forces at work:

In 1876 Chicago land values were in a chaotic state, the prices in the same block varying according to the financial condition of the owner.

Those who were not forced to sell their holdings did not offer them on the market....

One cannot point to a business block, lot or residence sold at a sacrifice in Chicago that was not so heavily encumbered as to make it necessary to dispose of it.

....The landholders kept their land until .... attrition .... brought foreclosure. 34

In 1952 it was reported that "...consolidations begin as the financially sound farmers buy the farms of those who can hang on no longer." More generally, two leading farm economists have bemoaned that "all too often the family makes its decision on the size of the debt involved, rather than on the basis of the price of the farm in relation to its earning capacity."<sup>35</sup>

Here neither opinions nor management ability appear to be of much account in determining who keeps title. Financial strength, varying with individuals, is the determining factor. Neighbors pay the same prices for most goods, but as concerns capital funds, and hence land, they live in separate economies. One is precious of land, as of treasure imported at great cost; another, at the other extreme, is prodigal of land, as of culls from a local mill. As the various economies exist side by side, it is little wonder that the excellence of land use varies haphazardly from holding to holding.

The barriers to transferring funds that separate these economies rise largely from risk. They are likely never to disappear, for they are not so much technological as they are barriers of mistrust between people. As Keynes has pointed out, they are distinct from, and in addition to, the borrower's risk that his investment will not prove as productive as he hopes.<sup>36</sup> They are risks of human or social failure. If price levels were stable, if society were highly ethical, its members firmly united in mutual satisfaction with the terms of their association; if there were no fear of inflation, depression, moratoria, repudiation, or revolution, the barriers would be much lower, although, still appreciable. But as it is they are quite high, and not likely to decline.

A lender risks being cheated of repayment, as well as that he may need his money back before it is due. He must charge insurance to compensate for the inevitable losses, and also charge for the considerable effort of guarding against loss. The high cost of all this is manifest in the spread between what financial institutions pay their depositors and what they charge their customers.

Of course the risk varies with the individual borrower, hence so do the rates and other conditions of the loan. If the "risk" that lenders shun were just the risk that the borrower would not use land as well as he hopes, the results would not be so bad. Then credit would be most abundant for

those most likely to make land productive. But in fact lenders ration credit largely on another basis. Generally the rule is "To him that hath shall be given." As Rainer Schikele puts it:

The principle of allocation is collateral security, not marginal productivity .... These two principles tend to work at cross purposes: with increasing collateral security, the marginal productivity of capital tends to decline, and vice versa. Instead of allocating capital to where it is scarce, our credit system allocates it to places where it is ample. 37

Thus borrowers best able to speculate in land are those already possessing other land and assets, so the system tends to concentrate landholding beyond the requirements of efficient production, as the data of Chapter III suggest is the fact. Of concentration per se we will have more to say in Chapter VI, and still more in a sequel. The present point is that risk premia are not necessarily lower for those more likely to make the land productive.

There is abundant evidence that marginal borrowers like pioneer farmers and innovating and interloping entrepreneurs generally suffer the worst credit terms, while entrenched firms with vast holdings, and perhaps monopoly power and influence in government, enjoy the best. Especially as lending becomes more institutionalized and collateral requirements more stereotyped, the borrower's individual character counts for less, and capital tends to agglomerate about existing nuclei. We need not labor what is obvious and

notorious, but we will expand on some aspects of the market that especially bear on our subject.

Law and custom now prevent most institutions from charging the high risk premia once so common. (History records rates of 10%, 15%, 18%....there is no fixed ceiling.)<sup>38</sup> Of course this does not mean they accomodate all customers at the lower rates. Rather, they ration credit, refusing some loans altogether and limiting most to some fraction of the collateral. Those who cannot borrow what they need from the conventional, regulated sources may try others who charge higher rates -- higher probably than the regulated sources would charge if free of restrictive social controls. But with these high rates and hard terms they are virtually out of the land market.

When credit is rationed to some percentage of the collateral, a small difference in the percentage allowed may make a considerable difference in the credit allowed, since the land or other asset bought with the loan may itself be part of the collateral. Thus a man to whom a bank would lend up to 50% of his collateral could borrow as much as he put up himself; while a man to whom a bank would lend up to 75% of his collateral could borrow three times what he put up himself. If wealthier borrowers are allowed a higher percentage on their collateral, as seems generally to be true, then the ability to raise money must increase very rapidly with the wealth of the individual.

In buying land it matters also for how long one can borrow. One who borrows at 5% for 5 years and can count on renewing it is a much stronger speculator than another who borrows at 5% without such assurance. The latter, after five years, may fall from grace and be sealed off from the easier economy into which the loan admits him. Then he returns to the hard world of 10% or more. In buying land, most of what one buys are values further than five years future.

For example, the first five years of a permanent annuity of \$1.00, discounted to the present at 5%, are worth \$4.30. The succeeding years are worth \$15.70 -- at 5%. But if one must discount later years at more than 5%, he will not consider the later years worth that much. His ability to bid for land is crippled. To be sure, he could plan to sell the land after five years if his credit runs out. But a forced sale is generally at a loss.

This is important to our subject because discrimination among borrowers is more pronounced in respect to long than to short term loans. A negro sharecropper can borrow on short term for his planting, but could he float a 100 year bond issue such as the Santa Fe Railroad recently retired? In buying future incomes, not only does the importance of a given difference of interest rates increase with futurity, but the difference of rates itself increases, so much so that we often find it most convenient to say of some poor

credit risks that they simply cannot borrow long term funds on any terms.

Efforts of the Federal Government to subsidize the capital markets to help people buy land have not always tended to equalize interest rates. We do not here judge the whole legion of federal agencies that lend or insure loans, or have done so. But it is instructive to consider Gray and Turner's summary of the work of the Land Bank System, perhaps the earliest Federal creation in this field.

Gray and Turner found the Land Banks to ease credit only for those who already had some equity in land.<sup>39</sup> That is, federal intervention increased, rather than lessened, the disparity of individuals' powers to speculate.

It is doubtful if other agencies have done much better. To be sure when a government lends or subsidizes loans to some persons it tends to bring them closer in speculative strength to those who were already stronger. But it takes them farther away from those who were weaker. And if they are already among the stronger, the net effect is to disperse the array of interest rates still farther.

We have been discussing differences among borrowers. But these are less extreme than the differences between borrowers, on the one hand, and those on the other who do not have to borrow. In the 'thirties, for example, while many persons could not get loans at any price, others were hoarding money -- taking zero interest -- and bewailing the

dearth of investment outlets.

These, with more assets than outlets for them, are the strongest speculators. Discounting future values little or none, they stand out in a period of attrition for their power to hang on to land. Of timberland speculators, David Mason wrote:

Computed interest on the original investment in the case of properties not burdened by debt has been mildly effective in convincing owners that their investment is not as good as they expected it to be, but after all the optimism of the average owner has encouraged him to continue the ownership; on the other hand, in the case of properties burdened by debt, interest actually payable has proven a tremendous burden, and has quite frequently caused properties to change hands... 40

One might conclude from that only that explicit payments impress the speculator psychologically and dampen his irrational ardor more than mere implicit interest. That is part of the truth. But the more important fact is that explicit interest is higher than implicit, because explicit interest includes the costs of transferring funds from lender to borrower.

As we have said, to speculate strongly in land it is especially important to be sure of having financial power in the future, as so much of the value of land derives from the remote future. Here the self-financed speculator has his greatest advantage. He is surer than any borrower that his sources will not dry up.

Of course there are such things as long term loans,

but they are hard to come by. Lender's risks increase with the time a loan runs. Aside from outright repudiation, a lender risks that inflation may confiscate his funds, or that interest rates will rise and he will miss better opportunities. These risks are not offset by the corresponding chances of deflation and falling interest rates. For the latter often bring depression and with it varieties of repudiation like bankruptcy, delinquency, moratoria, shotgun auctions, composition of creditors, Municipal Bankruptcy Acts, and the like. Beyond them rise the spectres of revolution and foreign invasion which, however remote, are ever present in the minds of many people. For these reasons the long term land purchase loans are not widely available on easy terms to close the gap between the high and low interest rate economies.

Too, it is often harder to borrow to buy land than other assets. That does not mean land is bad security for a loan -- on the contrary, a pre-existent equity in land is in highest favor as collateral. But lenders care not only what a borrower can pledge, but also what he plans to use the loan for. The ideal loan is "self-liquidating," and loans to buy land are farthest from this ideal.

The completely self-liquidating loan is one used to carry a temporary inventory, like a harvest. The borrower pays out as he sells out. Permanent inventories, are less ideal, but their constant turnover assures the lender he

can quickly liquidate his loan in an emergency. Even "fixed" capital turns over in a few years. A truck, as it wears and obsolesces, is being sold to the trucker's customers in the prices they pay as surely as if he dissected and sold it to them piece by piece. If the lender insists, the trucker can use the proceeds to retire the loan rather than buy a new truck -- he can often make do with the old one if need be.

Land, by contrast, is a permanent asset, the only really "durable good." One never sells it out in the normal course of production. To amortize a land purchase loan the buyer must save it from his income (not from the income imputable to the land, for that goes to pay the interest on the loan, at least until the principle is reduced). That is a long, hard ordeal, many steps removed from merely turning over an inventory. This is the harder because land price is generally a higher multiple of its present income than are prices of other assets. Interest on the loan may even exceed the land income -- it is sure to when land price is inflated by high hopes for the future -- adding to the buyer's burden.

So loans used to buy land "for keeps" are in every sense opposite from the ideal self-liquidating loan. Therefore, it takes high interest and/or good collateral to lure lenders into the perilous field of real estate. The marginal borrower is indeed lucky if he can borrow enough speculative power to bid for land against an affluent rival.

To be sure there are times when the situation seems reversed. In periods of madness like the late 'twenties the gates of credit may open wide to any project based on the then supposedly inevitable increase of land values. But even then the most favored borrower is likely to be the land merchant who treats subdivided lots like an inventory and convinces his bank he will sell out quickly. He is not the best land user. And the catastrophe that follows such episodes is such as triply to confirm traditional strictures against real estate loans, and make lending institutions shrink from them for years to come.

In summary: everyone has his personal interest rate. Markets, and especially capital markets, are never so perfect as to level all the barriers that divide each person's economy from his neighbor's. Rival bidders for land discount future values at various rates per year that range from near zero upward without limit. And the further future the values lie, the farther do the different rates diverge, for the greater are the risks and risk premia in lending that insulate the economic worlds of borrowers and lenders. Probably even in hypothetical perfect competition, and certainly in fact, different persons have very different powers to speculate in land.

It is worth pausing here briefly to orient ourselves by the landmarks of economic theory. This is no new discovery, that it costs to transfer funds to borrowers, nor a forgotten

one. We are in the mainstream of modern theory. Keynes made transfer costs the floor under interest rates in the "deadlock" of his General Theory, and others, like Hart, have emphasized direct credit rationing as a restraint on lending. They considered the effects on employment through aggregate spending. We, by contrast, consider the effects on resource allocation.

The contrast is not so great. The two subjects are really one. "Employment" is not just random motion, but useful activity. Employment will not be "full" until the economic incentives that direct resources to produce are perfected to allocate them ideally, or at least tolerably. So, if you please, our study concerns one aspect of the employment problem. It concerns the effect of interest rate differentials on the full employment of land. And as land complements labor and capital with employment and investment opportunities, it is basic to the whole tortured question of "full employment."

#### V. The Mechanics of Mal-allocation.

In Section II we showed that all land title-holders are ipso facto speculators. In Section III we showed land speculation is a "problem" because different people speculate with different interest rates. In Section IV we showed why the differences exist and persist. Now we will go into the mechanical details of capitalization -- the relation between land income and land value -- to show precisely how

and why interest rate differentials distort land allocation.

A man's personal interest rate is the spy-glass through which he scans the future. As he stands on the brief eminence of today and peers wonderingly ahead, he raises the glass to his eye to help assess the shape of things to come. If he carries a powerful 1% glass, objects twenty years hence look almost life size -- 82% life size, to be exact -- and he appraises them accordingly. Another traveler through time, with a flimsy 10% glass, can hardly make the objects out, for to him they have but 15% of their true dimensions.

It is sometimes hard to see how a few percentage points difference in interest rates can much affect economic decisions. It depends on what decisions. Borrowing for one year -- say to buy goods one will sell for \$100 at year's end -- the difference between borrowing at 2% and 4% is trifling: discounting future values at 2%, the present value of the goods is \$98.00; at 4%, \$96.00. A superior manager, borrowing at 4% will easily overcome this handicap.

But when he is competing to buy values anticipated 10, 20, or 50 years in the future, it is quite another matter. Effects of differences in discount rates cumulate over the years, and loom up to dominate the bidding. Table 1 shows that the 4% discounter can bid 98% as much as the 2% discounter for values due at the end of one year; but only 38% as much for values expected in 50 years, and 7% as much for values due in 100 years.

TABLE 1

Present Value of \$100 Due at the End of Selected Years

	<u>1 yr.</u>	<u>10 yrs</u>	<u>20 yrs</u>	<u>35 yrs</u>	<u>50 yrs</u>	<u>100 yrs</u>
At 2%	\$98	\$82	\$67	\$50	\$37	\$14
At 4%	\$96	\$68	\$46	\$25	\$14	\$ 1
Lower bid as % of higher	98%	83%	69%	50%	38%	7%

In this case the discount rates used by two rival bidders differ by only two percentage points. But in result of this difference the stronger speculator can bid fourteen times as much as the weaker for values due in 100 years. Where the rates differ even more, gross disparities in bidding power develop earlier, and their effects are absolutely overwhelming. At 8%, e.g., \$100 due in 50 years is worth \$2.10; at 2%, it is worth \$37.20, eighteen times as much. When two rival bidders with such different powers to speculate face each other in the market for futures, there is little question of which will prevail.

All this greatly affects the disposition of land titles. In a land title, present and future are tightly bound up in one package. There is no taking one without the other. If just one year's use were at issue between rival bidders for land, he who could realize the most from the land's present potentialities would outbid all comers. But when title to a

remote future must pass along with title to the present, title becomes an object of speculation, and gravitates to him with greatest power to speculate. Best present use becomes only a partial influence on allocation. And when future values are expected to be much greater than present ones, present use drops to a tertiary influence, or is entirely subordinated.

Take an extreme example: farm land with oil prospects. Mineral rights are sometimes sold separately from surface rights. But where they are not, the composite title goes to him who bids most for the whole bundle of future values. He who can only farm stands no chance against him who can speculate in oil, even when the latter only plans to do the surface once over lightly now and then, or neglect it altogether. Then strong speculators bid land up and away from mere farmers<sup>42</sup> as easily as a giant electromagnet would snatch iron from a pocket horseshoe.

That serves to illustrate the point. The situation of most lands is less extreme. Power to speculate influences allocation, but does not wholly determine it. Ability to produce from land also weighs in the balance. Both near and remote future contribute to the final sum called "land value." The interesting questions are: "How much?"; and "In what circumstances?" These call for an overall analysis of the discounting and summation processes by which the components that determine land value are fitted together.

Strictly, as we said earlier, the "future" begins immediately, and present land value derives entirely from future values. The value of land to any person is the sum of the present values of future incomes he expects from it (counting resale value as income in the year it is to be realized). He will buy it for less if he can, of course, but he will bid up to this maximum. Algebraically, (where "V" is land value and "a" is annual net income):

$$V = \frac{a_1}{(1+i)} + \frac{a_2}{(1+i)^2} \cdots + \frac{a_n}{(1+i)^n} \cdots + \left( \frac{a_{\infty}}{(1+i)^{\infty}} \right)$$

Figure 1 illustrates this graphically. The horizontal line at \$3.00 represents a constant annual rent expected from a given acre by both of two parties. The dotted line dropping down from it represents the present value of \$3.00 discounted from each future year at 4%. For example, the present value of \$3.00 due at the end of the seventh year is \$2.28. The value of the acre to the 4% discounter is the sum of the present values shown by the dotted line. That is the area under the dotted line.

The dash line represents the present values at 6%. The value of the acre to a 6% discounter is the area under the dash line.

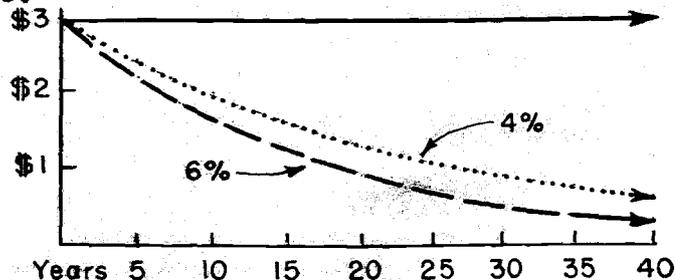


Figure 1: Present Values of \$3, at 4% and 6%.

Obviously the stronger speculator, discounting future values at 4%, will considerably outbid the weaker, even when both anticipate making the land equally productive. And he will still outbid the weaker even if the weaker expects to earn slightly more net income from the land.

Where "a" and "i" are assumed constant over the years, as in our example -- and there is no present need to assume anything more complex -- the longhand capitalization formula given above reduces simply to:

$$V = \frac{a}{i}$$

This shows at a glance the overall influence of interest rate on land value over the whole span of time. It shows that interest rate has equal influence with net income in determining land value. (Farther along we will see that interest rate has more influence than rent when bidders expect rents to rise.) Interest rate and net income are simple reciprocals. Doubling the interest rate has the same effect as halving the rent: it halves land value.

Regarding interest rate again as a lens, this formula is like a lantern projector. It uses the interest rate lens to magnify annual rent into a larger image, land value. Each man uses his own interest rate to project rent -- the measure of his ability to make land productive -- into his bid for land title. Rival bidders for the same site will anticipate getting different rents from it. With each bidder

using a different interest rate lens, each man's bid is a different multiple of the rent from which it derives. For example, a strong 2% lens magnifies 50 times, a weaker 5% lens, 20 times. Hence the various bids for title are not proportional to their respective rents. The enlarged images do not faithfully reproduce the true relative proportions between the original rents. Thus the rivals' ranking as bidders for title is a garbled rearrangement of their ranking as productive managers of the land, and the highest bidder for title is not necessarily the best user. He may be an indifferent land user with an especially strong discount rate lens.

Others have also recognized this problem, although with very different emphasis. E. O. Heady wrote:

...the beginning farmer who is extremely limited in capital may rationally put a lower 'use value' on land than an established and wealthy operator. 43

T. W. Schultz, too, has flirted very near our hypothesis. 44  
 S. V. Wantrup deals with effects of interest rate differentials on conservation of exhaustible resources. 45 And many of those whose empirical studies we cite certainly must have apprehended our problem in their own ways. But no one, to my knowledge, has followed through the implication that land prices are bad indices of alternatives and agents of allocation. No one has conclusively evaluated the performance of land markets in general.

Those who do venture the more sweeping generalizations in economics have generally avoided this problem, so far as I can discover. Ely and Wehrwein, for example, assert simply that "the use which can pay the highest rent at a particular place occupies the land," and again, "rent acts as the 'sorter' and 'arranger' of this pattern (of land use)".<sup>46</sup> Theorists have, to be sure, recognized in a formal way that it is capitalized value, rather than the rent of land, that allocates land titles among different holders. But they have been distressingly coy about committing themselves any farther. Stigler, whose work in general we regard highly, puts the matter off as follows:

Our problem is to explain rent per year... and not the value of an acre of land. The valuation of productive resources which yield an income over a considerable period of time requires an interest rate because future services must be discounted. The theory of the interest rate, and the consequent valuation of productive resources is taken up at a later point.<sup>47</sup>

The promised discussion never appears. Nor have I found others to carry the matter any further. The assumption generally is that everyone uses the same interest rate to discount future values. The assumption is sometimes made explicit in statements like the following:

The marginal rate of substitution between resource control at any pair of moments.... must be the same for every pair of individuals or firms.<sup>48</sup>

The current long-term mortgage rate of interest may be used in capitalizing net rental, for it is assumed that the farmer as a rule has the alternative of selling his farm and investing the proceeds in such mortgage securities. 49

Given this simplified model (perfect competition among landowners and perfect knowledge of markets and techniques) it is possible to examine the 'technological' coefficients of production, and thus to determine the use to which each piece of land will be put. This can be done without examining the motivations of owners of land or of entrepreneurs who may purchase the use of the land. 50

More often, the assumption is expressed only by silence.

As it stands, many authoritative studies of price theory tell us that land is generally most productive in his hands who gets the most annual rent from it, or, more generally, in his hands who will give it the highest marginal productivity, which is certainly correct. But there they drop the matter, and there we pick it up. They leave an impression that the best user will outbid all rivals for title. That, as we have seen, is not always true, because each rival magnifies rent or marginal productivity into land value through a different interest rate lens.

Since we find no one who has come to grips with the matter, it is worth our while to lay it out most explicitly, even at the risk of redundancy.

Figure 2 illustrates the idea. It concerns two rival bidders for the same acre: "B" (for "Better user") and "P" (for "Problem speculator"). "B" discounts future values at 6%. "P", with his greater power to speculate, discounts them at 4%. The top horizontal line represents annual rent of

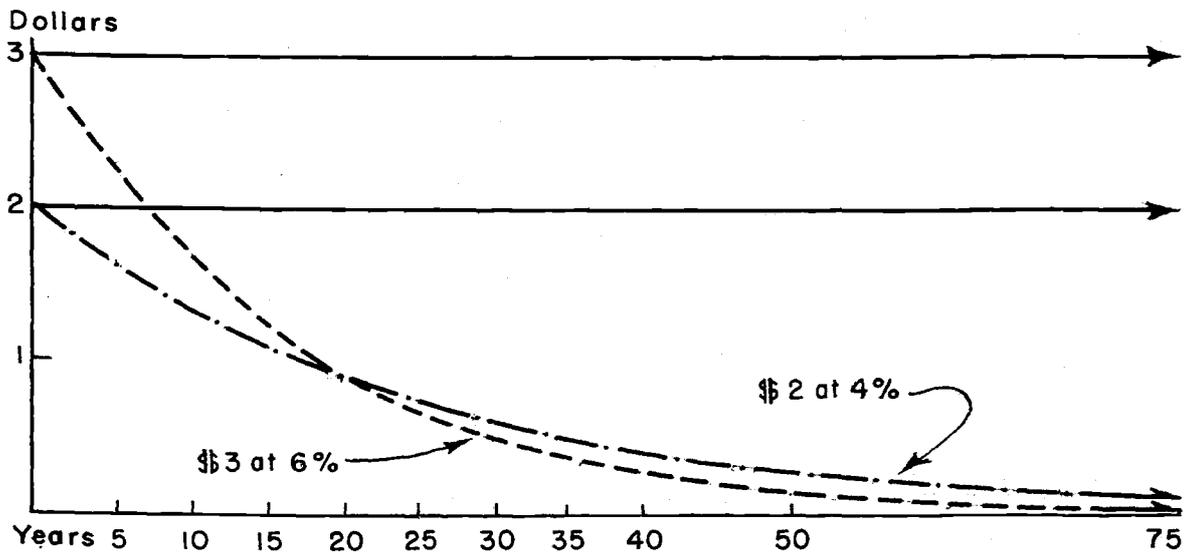


Figure 2

Present Values of \$3 at 6%, and of \$2 at 4%.

\$3.00 which "B" expects to realize if he acquires title. The lower one represents annual rent of \$2.00 which "P" expects if he acquires title.

The dotted line dropping off from the top horizontal line represents the present value of \$3.00 in each future year, discounted to the present at 6%. It is what "B" sees as he looks to the future through his interest rate spy glass. The sum of these present values -- the area under the dotted line -- is the most that "B" will bid for the title.

The dotted line dropping off from the lower horizontal line is what "P" sees through his stronger 4% spy glass. It represents the present value of \$2.00 in each future year, discounted at 4%. The area under it represents what "P" will bid for the title.

You will note that "B", who anticipates higher rents, puts a higher present value on the early years than does his rival. But as they look, through their respective glasses, farther and farther into the future, the present values of their different anticipations come closer and closer until, at about the twentieth year they cross. For all values more remote than twenty years, "P" will bid more than "B". So the mere fact that "B" can use the land better, and bid more for its early years does not necessarily mean he will outbid "P" for the title. "P" will bid more for the later years. The long tail of the curve showing "P"'s present valuation of \$2.00 contains a heavy weight of values that may swing the balance in his favor. This is the tail that wags the dog.

In the illustration, the rivals' bids are equal at \$50.00 ( $\frac{\$3}{.06} = \$50$ ;  $\frac{\$2}{.04} = \$50$ ). But let "P" discount futures at any less than 4%, or "B" at any more than 6%, and "P" takes the title. Then 1/3 of the land's potential is wasted.

So "P" may win the title and treat land like something worth \$2.00 a year, when its true social opportunity cost -- the best alternative use -- is \$3.00 a year, 50% more. Summing it up in one sentence: The highest bidder for a land title is not necessarily he who will use the land best, in present or future, because the power to speculate in remote future values influences bids for titles, and different persons have this power which varies inversely with interest rates in very different degrees. That, in bare outline, is our hypothesis to explain why the land market does not tend to allocate land to its most productive use.

In former times men have accused the "dead hand of the past" of keeping lands from full use, and with cause. But it may be the unborn hand of the future that is more to blame. Coming events cast their shadows before them, to become substance in the prices of land titles. These anachronisms from the future measure ill the needs of the present.

#### VI. The Especial Importance of Anticipated Rising Rents.

This hypothesis does not depend on expectations that land rents or values will rise. Buyers can speculate in

constant rents as well as rising or falling ones. The hypothesis only depends on the buyers' expecting rents to persist through the remote future.

The hypothesis is stronger, though, when buyers expect rents to rise, as in the example of farm land with oil prospects (page 346). When buyers anticipate constant rents, differences in interest rates affect land value only proportionately -- that is, halving interest rate doubles land value. But when remote future values weigh more heavily, power to speculate also counts for more, because more of the land value derives from more remote future years. As we have seen, the farther future values are, the more difference in present valuation results from given interest rate differentials. The importance of speculative power relative to management ability increases with futurity, until management ability counts virtually for nothing.

The neat King-Gray formula previously cited (page 317) serves admirably to measure the effects of interest rate differentials on land value when rent is rising. It involves too specific assumptions to be very general, but it shows the basic forces at work, and the direction and dimensions of their influence. The formula is:

$$v = \frac{a}{i} + \frac{\Delta a}{i^2}$$

Where  $\Delta a$  is an assumed annual increment to rent, and of course "v" is land value and "a" is the original

annual rent. Here, halving the interest rate more than doubles land value. E.g., if "a" is \$20, and  $\Delta a$  \$1, halving interest rate from 4% to 2% increases land value from \$1,125 to \$6,000. In such cases, individual differences in power to speculate far outweigh differences in ability to use the land. Those, like Cornick, who emphasize  $\frac{\Delta a}{i^2}$  as the troublesome "speculative" element in land value are a good deal more than half right. In  $\frac{\Delta a}{i^2}$  the distorting influence of interest differentials is raised to the second power.

Hans Brems has pointed out that if a geometric rate of growth (g) is anticipated, the capitalization formula becomes  $v = \frac{a}{i-g}$ . An anticipated growth rate equal to the interest rate gives an infinite land price -- in practice, the holdout who "will not sell at any price." Brems, in conversation, has pointed out that, as various studies have shown land prices in certain areas rising at rates comparable to the growth of a sum at compound interest, this formula may have many practical applications. In it, obviously, small changes in "i" make for very great changes in "v".

In concluding these observations on the influence of future values on present allocation of land, let us contrast our hypothesis with Ely's idea about fear of obsolescence (p. 326). Ely's idea only applies when present use precludes future use (and only then if the present value of the future

income is greater than the present income that precludes it.) Our hypothesis concerns lands whose present and future uses are compatible and even complementary. Obviously it has interesting implications, too, where present and future use are competitive. But we will not now pursue this aspect. The remote future values our problem speculator bids for are not values he is creating or conserving by present forbearance. Neither are they necessarily higher values than those anticipated by rival bidders -- they may be lower, as in our example, Figure 2. They are simply values on which the individual problem speculator puts a high enough present value to preempt the title from other bidders.

#### VII. Concluding

Our hypothesis links many seemingly diverse problems of land use. The problem speculator's essential quality is his low personal interest rate, coupled with a desire to buy land. Other than that he may be rich or poor, large or small, absentee or resident -- although more likely in each case to be the former. He may waste land by disuse, tenancy, over-extensive use, incompetent or laggard management, or any other default. Our hypothesis concerns them all. In Chapter VI we will apply it to explain these particular aspects of the problem. But first, in Chapter V, we will consider various objections to the hypothesis in its general form.