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The hidden taxable capacity of land: enough and to spare

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Abstract

Purpose – A tax based on land value is in many ways ideal, but many economists dismiss it by assuming it could not raise enough revenue. Standard sources of data omit much of the potential tax base, and undervalue what they do measure. The purpose of this paper is to present more comprehensive and accurate measures of land rents and values, and several modes of raising revenues from them besides the conventional property tax.

Design/methodology/approach – The paper identifies 16 elements of land's taxable capacity that received authorities either trivialize or omit. These 16 elements come in four groups.

Findings – In Group A, Elements 1-4 correct for the downward bias in standard sources. In Group B, Elements 5-10 broaden the concepts of land and rent beyond the conventional narrow perception, while Elements 11-12 estimate rents to be gained by abating other kinds of taxes. In Group C, Elements 13-14 explain how using the land tax, since it has no excess burden, uncaps feasible tax rates. In Group D, Elements 15-16 define some moot possibilities that may warrant further exploration.

Originality/value – This paper shows how previous estimates of rent and land values have been narrowly limited to a fraction of the whole, thus giving a false impression that the tax capacity is low. The paper adds 14 elements to the traditional narrow "single tax" base, plus two moot elements advanced for future consideration. Any one of these 16 elements indicates a much higher land tax base than economists commonly recognize today. Taken together they are overwhelming, and cast an entirely new light on this subject.

Keywords Land rents, Property tax, Economic resources, Taxation, Depreciation, Tax burden

Paper type Research paper

1. Introduction

Scores of economists tell us that an ideal tax is one based on the value of land. A big part of the benefit is getting rid of other taxes, taxes that impose "excess burdens" by twisting incentives against the bases taxed. Then these economists abandon the point by assuming land values are too low to support modern government, so forget the ideal tax base.

Here, we examine their reasons for so assuming. It turns out that the revenue potential of land is greater than almost anyone thinks. There is enough and to spare. We find that conventional sources of data are seriously negligent and consistently biased downwards. They omit much of the potential base and low-ball what they do measure. Then we go on to identify and uncloset hidden elements of revenue potential, by using truer and more comprehensive definitions and measures of rent and land values, and several modes of raising public revenues from them.

Some other economists and pundits, at the same time, express the opposite concern. They bridle at any land tax hike, even in a tax-cum-rebate proposal. It is just "feeding the beast", they say, fearing that this feast is too rich. Some even take both positions alternately, as Seligman did a century ago when he bent the twig of modern tax theory (Andelson and Gaffney, 1979). But here we just address the more common concern

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whether land revenues have the capacity to replace other taxes, so we may sunset the latter. We are looking at a "revenue-neutral" shift, to banish counterproductive taxes on labor, production, dwellings, other capital, and commerce. In the process we will specify ways to cut wasteful public spending by using private land better.

Beyond that we may or may not, as separate issues, want to add some "lean" to the public sector to provide and maintain its crumbling infrastructure, a foundation of the private sector. We may have to pay down our heavy public debts. Interest on those debts now consumes a high fraction of public spending, and threatens to take more as our international credit rating falls, as the dollar already has. We may want to raise taxes to bail out underfunded existing obligations like social security, public health, medical care, and public schools (or vouchers, as one prefers). We may or may not want to distribute a social dividend in cash, on the Alaska model[1]. But again, each of those is a separate issue not treated here.

Many modern champions of Georgist ideas have withdrawn into a corner, confining themselves to modifying the existing local property tax by exempting buildings. Many (not all) even shy away from demanding reform of moss-covered assessment rolls[2]. They express concern at being branded as "cranks" if they would do more, and of course, their opponents see this weakness and use it to cow them[3]. This timidity narrows the prospective tax base to a small and shrinking part of the total system of public revenues. I ask my readers to join me in exploring the whole system. It is not just the property tax, narrowly conceived, that brims with Georgist issues.

There are at least 16 elements of land's taxable capacity that previous researchers have either trivialized, or overlooked and "disappeared" entirely. In Group A, Elements 1-4 correct for the downward bias in standard data. In Group B, Elements 5-12 broaden the concepts of land and its rent far beyond the conventional narrow perception. This includes showing how the benefits of untaxing useful activity are shifted into higher taxable land rents, a very powerful effect. In Group C, Elements 13-14 show how removing "excess burdens" uncaps viable tax rates. In Group D, Elements 15 and 16 explore a moot idea on how mortgage interest might be treated as rent; and on how taxing the rents of absentee owners improves a local balance of payments.

The following table of contents shows how the four Groups and the 16 Elements fit together, and reinforce each other. I urge the serious reader to refer back to this table often, as the focus shifts from one Element to another of the total thesis. The Elements are the trees; this is the forest.

2. Group A. How conventional data hide land rents and values

2.1 Element No. 1 Commonly used data sources

Conventional data sources understate land rents and values. Some omit them entirely. These sources include the following.

2.1.1 Assessed valuations used for property taxation. There are many reasons assessed land values usually fall far short of the market: at least 31 reasons, in fact. Readers interested in them all will find them itemized in Appendix 1. Here, we give just one of the 31 reasons, a most important and general one.

In dividing land and building values, most modern assessors fail to assess land first, using maps, with building value as the "residual". This simple matter, so easy to state

briefly here and pass by, involves huge values, bleeding land value into building value[4].

2.1.2 IRS data with rents zeroed out.

2.1.2.1 Cash rents offset by fictitious depreciation:

- *Fast write-off.* Many economists rely on data generated by the IRS to infer the sources of income in the USA. These data are bad because taken from tax returns, where income from real estate is systematically concealed. For example, landlords deduct alleged "depreciation" from their net operating rents ("cash flow") to arrive at taxable rents. They accelerate depreciation enough, usually, to report little or no taxable rent. This is what the IRS then aggregates and reports as the sum of all rents. It is fiction, but dozens of economists, when estimating rents in the national accounts, take it as fact. Thus, they lend their authority to the IRS, while the IRS' "official" status legitimizes their work – a circular process of transmuting lead into gold.
- *Multiple write-off.* That would be bad enough if it happened only once in the life of a building, but the understatement of national rent is much grosser. When owner A has exhausted his tax "basis" by overdepreciating, he sells to B for a price well above the remaining basis. B then depreciates the same building all over again, then sells to C, who sells to D, and so on, so each building is tax-depreciated several times during its economic life. In any one year many, probably most of all rental buildings in the USA, are being depreciated, some for the second, third, fourth, or fifth time. Since one-third of all Americans rent their dwellings, and most businesses rent office or sales space, that is a lot of unreported rent.
- *Depreciating land value.* In addition, all owners after the original builder are in a position to depreciate some of the land value as well, because the "allocation of basis" between depreciable building and non-depreciable land is mostly in their control. The IRS has no defense against this avoidance, because it has never developed any capacity to value land by itself, and Congress has not mandated it.

  The most that the IRS does, if it will not accept the filer's claim, is to let him cite the allocation used by his local assessor. These officers (with a few notable exceptions), underassess land relative to buildings, by using the erroneous "land-residual" method of dividing land from building value. This is partly to accommodate their local constituents – assessors are locally elected or appointed, and do not report to the IRS.
- *Exempting land income in perpetuity.* To write off land only one time is to achieve tax exemption in perpetuity. It means the Treasury has bought the right to tax the land in the future. If income tax rates fall after the write-off, the Treasury has bought at a high rate what it later taxes at a low rate. When the dollar keeps losing real value, as it has and will, the write-off in hard dollars is repaid by taxes in soft dollars.
- *Subsidizing owners for holding land.* When the land is written off more than once – and it is – taxation becomes negative. The Treasury each time is re-subsidizing people for holding land.
- *Converting ordinary income into capital gains*. When A sells to B there is a large excess of the sales price over the remaining or "undepreciated" basis. This excess

is taxable income. Taxing is called "recapture" of prior excess depreciation, leaving an impression of equitable treatment. Congress has classed this kind of income as a "capital gain." Most rents, therefore, show up as capital gains, not as rents. No economist or statistician, to my knowledge, has adjusted the data for this, while proclaiming instead that "rents" are a low fraction of national income, based on the "official" data.

- *Undertaxing capital gains.* Taxing these factitious "capital gains" is alleged to "recapture" the earlier fast write-off, but the recapture is more nominal than real. Capital gains are subject to a score of additional avoidance devices known to every lawyer and accountant (Noyes, n.d; Gaffney, 1969, 1970b, 1991a, b), including a tax rate capped at 15 percent today, and headed south if present trends continue. So capital gains, too, are underreported, leaving little trace of the rents they contain. Most economists today neglect this whole matter. Many of them now are even claiming that capital gains are not income at all, making it even easier to ignore them. Increasingly, writers and allied politicians are referring to "the capital gains tax" as though it were something different from the income tax, of which it is actually a part (in the USA).

2.1.2.2 Omitting imputed rents. The IRS reports nothing at all for the imputed income of owner-occupied lands, because Congress has not made this kind of non-cash income taxable as income. Local property taxes do tap it by taxing property values, but the convention is not to label this as "income", even though economists regard it as such. Todd Sinai and Joseph Gyourko of the Wharton School reported aggregate "house" values in the US in 1999 were $11.1 trillion. The annual rental value of that, figuring at 5 percent, would be roughly half a trillion dollars a year – quite a chunk to omit from the rental portion of national income. We also know that the prices of lands for housing have risen sharply since 1999, perhaps tripling before falling back after 2007, so that $11.1 trillion may be $22.2 trillion now.

That means not just that the imputed annual value is double, but also that the net worth of the owners rose by about $11.2 trillion, 1999-2008. Such silent gains are also a form of income from land, unreported and almost entirely untaxed. This is not a product of ignorance. Every homeowner knows she can realize the gain in cash by borrowing on it, as so many have. A "line of credit" is a handy way, you just write a check, and the gain is tax-free. She also knows she can defer any gains-tax on sale by trading up, never down. She may also know of the "angel of death" provision: taxes on accrued unrecognized gains are canceled forever when one dies. The heir starts from a new enhanced "basis", the appraised value at time of death. (For more on unrealized gains, see Section 3.2.5.)

Sinai/Gyourko's treatment is high-quality. Even they, however, write of the imputed income of owner-occupied "housing," exclusively. That is doubly misleading. First, it emphasizes the house, the building, de-emphasizing the land. That is wrong because the income proper imputable to the house, *per se*, is much less than its rent equivalent. The house requires constant expenses for upkeep, heating, maintenance and repairs, cleaning, painting, etc. The house also depreciates, physically, and obsolesces. Those expenses and the depreciation/obsolescence must be deducted from the rental equivalent to get the net income.

The land, that is the space and location, requires none of those expenses. Its rental equivalent includes its entire net current income. It does not depreciate physically, and

rarely obsolesces. Instead, it usually appreciates in value, and that annual increment is also a current income. So the "imputed income of owner-occupied housing" is mostly attributable to the land.

Second, to single out "housing" is misleading by omitting other lands that yield imputed income. We may presume that "house" includes the land under it, and a little yard or curtilage, but what about other lands held for the owners' personal enjoyment? No agency collects data on such lands and their values, but common observation tells us they are vast and valuable. (Section 3.2.4).

2.1.2.3 Misposting internalized rents. Most amazingly, all the data sources mentioned limit their measure of cash rent to explicit payments from tenant to landlord. What about those landowners, be they proprietors or partnerships or corporations or eleemosynaries or other organizations, managing their own lands? On prime farmland in central Illinois, for example, a standard crop share is at least 50 percent for the landlord. Owner-operators do not give up that 50 percent share, they take it directly and post it as part of profit. So do all the official data sources, and the rent disappears.

When land is heavily mortgaged, the owner-operator doing his books may well deduct interest from profit, so even profit disappears. Then the lenders become the *de facto* recipients of the rent, but they post it as "interest", and so do the official data sources. At times like late 2007, when overextended sub-prime borrowers are missing payments and defaulting on mortgage-backed debts, reality breaks through temporarily as the pain reaches Wall Street. The lenders are the real owners.

2.1.3 "NIPA" data. The conventional sources of data on GNP and its components are the National Income and Product Accounts (NIPA), kept and published regularly by the US Department of Commerce. NIPA data is better than raw IRS data, in one way, by virtue of its making a gesture, at least, at including the imputed value of owner-occupied housing. Even these data omit, as noted in Section 2.1.2, other lands yielding imputed income.

When it comes to cash rent, however, NIPA depends on IRS data, which thus are passed along to all students of economics as the "official" accounting. We have seen how far below reality these data are.

Major media still blame current bankruptcies on novel modern mortgage bundlers, equity funds, program traders, and other froth on the waves, but we have suffered land pullbacks before, over several centuries, under different sets of lending institutions. The constant factor is the ebb of the land market underlying the froth. Keepers of the national accounts, however, plod along impassively as the waves crest and crash, and keep deluding us that rent and land values are trivial.

It seems odd that US Department of Commerce scriveners recognize invisible "imputed rent" in owner-occupied housing, but not cash rent lumped in profits and interest. What are they thinking? Thinking or not, they whittle rent down to a minute part of national income – a part so small there seems no point in even listing it separately, unless the point is to persuade us that rent today has become trivial.

NIPA is worse than the IRS, in a big way, because NIPA explicitly excludes "capital gains" from National Income. "Capital gains" is an artificial term that includes all gains realized from the sale of what Congress defines at any time as "capital assets." "Capital assets" include land and improvements, housing, common stock, timber, breeding herds (including race and show and riding horses), subsoil mineral and fuel deposits,

and several other favorite holdings of the rich and well-connected. As we saw in "2.1.2", most commercial rents show up as capital gains, so that NIPA does not report them at all.

Standard economists go with the flow and pass the results along as though they must be true, because they are official. Then we find in a standard textbook by Paul Krugman and Robin Wells of Princeton University that rent was only 1 percent of US income in 2004 (Krugman and Wells, 2006). One would expect Krugman, of all people, to see through this error. He often writes with critical insight exposing official book-cooking. He is pro-labor, so why would he endorse such a mythical figure with its implication that labor must pay all the taxes – the Curse of Caesar added to the Curse of Adam? It seems to be because an official source, the Bureau of Economic Analysis, says so, and he has not been moved to examine definitions or methods. "Mainstream" economists read mainly each other, while writing for the rest of the world. Like semi-conductors, their data flow only one way.

2.1.4 Federal Reserve Board (FRB) estimates. Another source of data is the FRB. Unfortunately its leaders live inside the same intellectual bubble as the other agencies mentioned, so its nominal independence is wasted. Hudson and Feder have unpacked FRB methods, which they found to report rents of income property so far below reality that they actually became negative, exposing their error to what Hudson and Feder call a "comical" degree: trillions of dollars of real estate value based on negative rents! Such "comedy" has tragic effects on policy. Rather than reform the methods, the FRB discontinued the series, producing less comedy but more tragedy (Hudson and Feder, 1997a, b).

2.1.5 The National Bureau of Economic Research. Economists reflexively look to the National Bureau of Economic Research for numbers. Thus, Raymond Goldsmith's estimates of the USA land values have been widely cited as authoritative, old as they now are, and ripened into a permanent mindset trivializing land values. Yet they do not bear examination. Goldsmith generated them as incidents to other work in a negligent, offhand way (Goldsmith, 1962, 1955).

It is hard to retrace Goldsmith's steps; one must track interlocking footnotes from several sources. At the end of the trail, however, he simply takes residential land value as 15 percent of building value (which comes to 13 percent of land and building value). The basis of this allocation is the share of land in the cost of one to four family houses insured by the Federal Housing Authority in the 1950s (!), which was about 20 percent. It is not explained why he cut this down to 13 percent.

This basis is then applied to nonresidential real estate as well. Corporate-held lands are valued at book value, although hundreds of corporate raiders pierced this veil years ago, ferreting out undervalued assets.

These methods are not worthy of the faith with which the results have been cited by several economists. In the first place, FHA-insured houses are not typical. They tend to be new and on cheap land. Those not new are not very old – in 1967 the median age of insured existing homes was 13 years. To apply such data to a typical American city, most of whose dwelling units antedated 1920, is not defensible.

The FHA is most active at the expanding fringe of cities. A basic fact of urban land economics is that the land share rises toward the center. In Manhattan, for example, the share of assessed land value has always been higher than in the outer Boroughs.

FHA clientele is lower middle class, which means the land share is low. Land is both a consumer luxury and a rich man's hedge, so the land fraction of the value rises sharply with value, clear up to William Randolph Hearst's castle at San Simeon, sited on a parcel of 62,000 acres of the primest of prime land. As to the castle building, it proved to be such a white elephant that the heirs deeded it over to the State of California to maintain. The high land share in Beverly Hills, Rancho Santa Fe, Palm Beach, Belvedere, Greenwich, Kenilworth, Aspen, or other enclave of great or considerable wealth is also of course, missing from FHA data.

Goldsmith also seems to omit vacant lots and unsubdivided acreage. He also omits the value of subsoil minerals: imagine the effect of that in, say, Huntington Beach or Long Beach, CA, or any of various oil towns in Texas or Oklahoma.

Applying a land share derived from residential data to commerce and industry is all wrong, anyway. The land share is highest in retailing, the more so now that retailing entails vast parking areas. Some other low-density non-residential land-uses are filling stations, auto dealerships, lumber yards, junk yards, open storage of all sorts, tank farms, parking lots, railroad yards, utility easements, industrial reserves, dumps, drive-ins, salt beds, terminals, and so on. In downtown Milwaukee, half the assessed value, and more of the true value, is land, even though Milwaukee is an industrial city, highly decentralized. In Manhattan, it is instructive to consider the Empire State Building. If ever a structure overdeveloped a site, the nation's tallest building on a mediocre site (far from the 100 percent location) should be it[5]. Yet in two transactions since 1950 the site was valued at one-third the total. What this implies of the whole island one may infer: it has many more low-rise than high-rise buildings, many more old than new.

Several case studies may be cited. The *Whitstable Report* by valuer Wilks is a study of land value rating (that is, taxation) in an English city, commissioned by the English Rating and Valuation Association. He began by valuing residential land:

> It was soon noticed that the figures of rateable value we were producing were very much lower than those in the current orthodox valuation list. Indeed, at one time it was feared that the total rateable value would be so low that to produce the same rate income as at present, a rate poundage of well over 20 shillings would be necessary [...] [But] our fears were groundless, for the loss in rateable value in the outer-lying residential areas was more than made good by the increase in the other areas (Wilks, 1964).

The report gives detail on how central, vacant and derelict land made good the losses.

Paul Wendt has documented the higher land share in the central business districts of San Francisco and Oakland (Wendt, 1961), and Bronson Cowan has done the same for Sydney, Johannesburg, Wellington, and other cities that tax only land value (Cowan, 1958). A much higher share of local taxes comes from the center when only land is taxed. The same relationship holds in Fresno, as reported by Griffenhagen-Kroeger, Inc., to the California legislature (Griffenhagen-Kroeger, Inc., 1962). Schwartz and Wert found the same in Bethlehem, Pennsylvania (Schwartz and Wert, 1958).

Another study is my Milwaukee cadastral mapping from 1963 to 1965[6]. My co-workers and I estimated market land values by tax book districts. We divided these by the equalized full value assessment of land and buildings. The resulting fraction is an estimate of the share of land in the value of real estate (Gaffney, 1970a, Table 9.3).

The districts with low land shares comprise at least three kinds. One kind is far out, on the less prestigious south side, newly built, and fairly filled in. A second kind is in and alongside the black ghetto on the near north side, where buildings are old but dense. A third kind is among industrial plants.

Districts with high land shares are different. Those with ratios above unity reflect acutely lagging assessment: some of these are largely vacant, highly speculative, on the extreme south and northwest. Some are downtown and its leapfrogging western edge, moving into old residential areas. Others are on and around the secondary downtown, Mitchell Street.

Extension of the map into the suburbs inside Milwaukee County shows similar patterns. The land share is low in tight, fully built middle-class suburbs: Shorewood and Whitefish Bay. It is low in industrial suburbs with blue-collar housing: Cudahy, South Milwaukee, West Allis. The land share is high in sprawled suburbs with empty land: River Hills, Oak Creek, Greendale, Greenfield, and Franklin. It is moderate in mixed suburbs subject to offsetting influences: Glendale, Wauwatosa, Brown Deer.

On the whole, these findings bear out Wilks's findings in Whitstable, although the Milwaukee patterns are more complex, Milwaukee being much larger and less centralized. But one thing is crystal clear. Goldsmith's transfer of the land share in a few new FHA residences to all urban real estate, of all uses in all quarters, is a momentous error. It dominates his estimates and destroys any value they might have.

2.1.6 The Lincoln Institute of Land Policy. Most data and interpretations published by the Lincoln Institute of Land Policy, its staff and grantees, downplay the value of land, as well as the possibilities of using it as a major source of revenue. They follow the pattern set by the parent Lincoln Foundation in 1961 when it backed and may have micromanaged studies by Keiper *et al.* (1961).

Professor Mills, an influential Professor of Real Estate at Northwestern, has testified to the influence of Kurnow's work by citing it as "the best source" on the aggregate value of land (Mills, 1998).

Kurnow's basic source is tax assessments. He accepts their allocation of value between land and buildings. Errors are possible, but "in all likelihood there is a tendency for such errors to cancel each other" (Kurnow, 1960). Believing so, he does not even correct for the assessment bias shown by sales-assessment ratios of the Census of Governments and other studies, and of course, does not correct for the greater degree of underassessment that would be revealed by mapping land values, or by the rest of the 31 factors bulleted in Appendix 1. His estimate of land values is no better than its sources, which we there showed to be heavily biased downward. Kurnow's estimates are therefore no more valid than Goldsmith's.

Another error by Kurnow is to assume that the value of the buildings rises in step with indices of construction costs (Kurnow, 1959, 1960, p. 344). But then-recent research by Dacy and others had already revealed that these indices rise faster than costs per unit of new output, due to technological advance (Dacy, 1962, see also Gordon, 1968). As to existing stock, it suffers extreme obsolescence and is not worth anything approaching its reproduction cost.

Kurnow was a known quantity when Lincoln and his senior adviser, Raymond Moley, picked him. Kurnow had declared his views in 1959 and 1960 (Kurnow, 1959, 1960). The 1959 paper threw cold water on "the single-taxers", just as Moley had in his 1939 book (p. 128), where he derides them as "goo-goos". The 1961 work by

Kurnow *et al.* discloses an unusual relationship. The authors thank the Lincoln Foundation for financing their work, which is usual. However, they then go on to thank their financier David Lincoln and his senior advisor Raymond Moley personally for "intellectual guidance". That is not usual, it is extraordinary in independent scholarly work. Then Kurnow *et al.* add to the abnormality by declining to take responsibility for the work that bears their names. They omit the universal disclaimer absolving their advisors and patrons. This is unique. *Res ipsa loquitur*? Does this help explain why researchers seeking full estimates of land values seek in vain at the Lincoln Institute of Land Policy?

Kurnow and his co-authors have not been heard from since. David Lincoln has been: "George said that (a Single Tax) would be sufficient to fund the government. Maybe in his time, it would have, but it would be inadequate to do that now. If the government collapses, we're all in deep s–." (Lincoln, 1995).

2.1.7 Data limited to equity values. Some published surveys of real estate values pick up sales prices where only the equity trades. Equities are net of debts, of course, which most sources adjust for. They are also net of lease obligations, which may not be adjusted for. In Orange County, CA, for example, much housing is built on leased land, with 25-year terms. This writer has tried in vain to get DataQuick, a standard source that feeds real estate market values to the press, to explain how they handle this issue. Likewise, John Husing and Alonzo Pedrin have not responded (Husing and Pedrín, 2002). When chain retail corporations change owners, some of their real estate is on leased land, and/or heavily mortgaged, so the trade value does not reflect all the underlying land value.

2.1.8 Ignoring consumer budget data. Consumer budget and cost-of-living studies regularly show that shelter costs loom high among consumer outlays: 25, 30, 35 percent, never below 20 percent, depending on the investigator' methods and universe. You would think some conscientious number-cruncher would ask how shelter outlays can be, say, 30 percent of consumer outlays, and rents be just 1 percent of national income. One or both of those numbers is wildly off the mark. How odd that no quant or macro-economist has ever raised such an obvious question. They pack 100 learned journals with trivia and esoterica, where "a hair perhaps divides the false and true", but if this oversight were a dog it would bite them.

2.1.9 Using median housing prices like means. Most published data on housing prices report median rather than mean values. It is not clear why: it is a custom. The result is to understate per-unit housing values relative to, say, income per family, and thus to understate the taxable capacity of housing relative to personal income. That is because the mean outvalues the median. That in turn is because distribution of values is highly skewed.

Here, is an example from Indian Wells, California, zip code 92210, sales recorded from August 16 to September 15, 2007 (*The Press-Enterprise*, 2007):

- Median price – $726k.
- Mean price – $1,639k.
- Mean/median – 2.26.
- Mean price above median – $2,646k.
- Mean price below median – $600k.

It is bad enough to conceal inequality of housing values in average values. How much worse it is to conceal it more by using median values. I give the example of Indian Wells to illustrate a point. Its distribution is more skewed than most middling cities. It is, however, typical of high-valued cities, like Malibu or Pacific Palisades, where one finds a few mansions selling for over $50 million, and even the odd spread over $100 million.

Most of the few modern economists who look into these matters at all rely on the several standard sources cited above, mindless of or indifferent to their downward biases.

2.2 Element No. 2 Recent rises of land rents and resource values

Prices of land and resources have risen sharply in recent years. For example, 50 years ago leading economists like Kahn and Davidson and Douglas found that most oil profits were rents, at the lower prices prevailing then. Oil firms were a byword for tax avoidance. Since then prices have risen sharply in several giant steps following the first OPEC price revolution, while tax reform has been cosmetic at best, and Congress has lowered income tax rates on capital gains (a big fraction of oil profits) to a cap of 15 percent. Natural gas prices, stable for a while, doubled in the last few years. The price of copper on the London Metals Exchange in 2007 had risen to sixfold its value in 2001. The price of crude oil tripled, 2001-2007. A price that merely doubles downstream, i.e. in London, more than doubles upstream at the source [7]. Few of today's leading economists and pundits are addressing these facts. They have been differently screened and conditioned than the giants of "The Greatest Generation", like Kahn, Davidson, and Douglas. They are leaving an intellectual vacuum[8].

The Great Land Boom, 2001-2007, is now the stuff of folklore. It was preceded by another, 1985-1990, so that many (like this writer) who bought in 1972 or so have seen their land values rise tenfold in 35 years, without their lifting a finger.

2.3 Element No. 3 Lowballing the land fraction of real estate

The land fraction of real estate value is much higher than standard modern sources show. These sources today use a wrong method of separating land from building values.

One indication is that on most assessment rolls the value of old "junker" buildings, on the eve of demolition, is listed as higher than the land under them. This, too, is a "tragicomical" result, a *reductio ad extremum* of a systematic, immanent error. Obviously the old junker has no residual value: that is why the owner is junking it. It has lost value to "locational obsolescence". Real estate people recognize this concept instantly. Not everyone does, however, which helps conceal it, and provokes mawkish, nostalgic resistance to change, a favorite theme of TV serials.

People who make a virtue of recycling old cans and papers can be oblivious to the much higher social value of recycling old urban sites. Many of these old "junkers" even appear sound and valuable, as in enclaves of high values like Kenilworth/Winnetka/Glencoe, Illinois (moderately high), or Beverly Hills, California (immoderately high), but suffer from "locational obsolescence," which is the key concept. That means the growing value of the underlying site for recycling has cannibalized the residual building value.

2.4 Element No. 4 Farmland

Farmland warrants separate treatment because generations of usage and poetry have conditioned us to equate "land" with rural life, rolling prairies, swales and rises, sowing and reaping, ploughing and grazing, food and fiber. Political campaigns have persuaded many that a "tax on land" means a special tax on farm folks, and "farm folks are good folks". "Back to the land" has meant leaving cities behind.

Professor Schultz of Chicago has put an academic gloss on the idea that "land" means mostly farmland; and that farmland is decreasingly "important" in farming itself. For such contributions to knowledge he was awarded a Nobel Laureate. His views imply, clearly, that land cannot be a rich tax base. Neither of his two points is true, however. For some reasons why not, see Gaffney (1985, 1992b).

In terms of market values, farmland ranks below some other kinds of lands and resources. One city parcel in Los Angeles sold recently for $62 million per acre ($1,423 per square foot). That is tops for Los Angeles, but Los Angeles values fall below denser cities, like San Francisco and Miami Beach, where land values rise over $3,000 per square foot. Manhattan now tops out at over $10,000. In Tokyo at the height of its boom in 1990, the grounds of the Imperial Palace alone were said to outvalue the whole state of California: cities, farms, subsoils, beachfronts, the lot. A square foot on the Ginza was supposedly valued over $20,000. There are 43,560 square feet per acre, to that comes to $870 million per acre. One acre at the Ginza price is worth 870 farms worth $1 million each.

Nevertheless, farm values are high relative to farmers. The number of serious farms in the US has dropped from six million in 1930 to below one million today, while the area of land in farms is still about 900 million acres, or 900 acres per farm[9].

Values per acre vary widely, of course, and are subject to many influences. In the Midwest, more than elsewhere, a farm is just a farm, but it yields more than food and fiber. Now it is "food, fiber, and fuel". The ethanol boom has pushed land prices up by factors like 20 percent, 2005-2007, so $5,000 an acre is not unusual, and a peak of $10,000 an acre has been reported. At a lowball $2,000 per acre, 900 acres is worth $1.8 million. That is a substantial tax base per average farm.

High land rents and values usually mean that absentees own a high fraction of the land. Lacking a high local property tax rate much of that tax base is skimmed off to support retirement havens elsewhere, from Palm Beach down to The Ozarks, leaving a superficial impression of fiscal poverty amid the economic plenty of rich farmlands. Self-evidently, that impression is false when you count in the absentee owners (Gaffney, 1976a).

Owing to the vast areas involved, to own farmland is to own a lottery ticket in the sweepstakes of future subsoil finds. One of these, of growing value, is the aquifer. Aquifers are invisible, but store more water than all our surface reservoirs.

An early winner was oil prospector Newton Bass (no relation to the Ft. Worth family). In 1943 he bought high desert land north of Cajon Pass for $2.75 per acre, to look for oil. He found a rechargeable aquifer instead, under the Mojave River, and his desert land became what is now the City of Apple Valley, California. With water, and the spread of Los Angeles, and Roy Rogers' "Happy Trails", his land rose by 1950 to 4,000 times what he had paid, and many times more since then[10].

The Kern Water Bank along I-5 west of Bakersfield is a now-private aquifer holding 730,000 acre-feet of publicly-supplied water in a bone-dry area. Stewart Resnick of

Los Angeles, Paramount Farming, and a select few others control it by controlling the overlying farmland. They also control the Dudley Ridge Water District, a "public" agency in which only landowners vote. After the water is gone, the reservoir will abide to be recharged again and again (Arax, 2003).

Another rechargeable aquifer underlies the Coachella Valley (Palm Springs and vicinity). Every overlying landowner may pump water at will, while State and Federal water lines recharge the storage continually for their benefit. Such pumping rights, originally agricultural, now water about 100 golf courses that have sprung up there, interspersed with time-share condos catering to those who can afford them in addition to their primary and other residences. Many of these courses (the ones for members only) are exempt from all but trivial property taxes (details on golf course assessments in Appendix 1).

In south central Colorado, the deep "Closed Basin" (in San Luis Valley west of the Sangre de Cristo Range, north of White Sands National Park) holds 2 billion [*sic*] acre-feet of groundwater, trapped behind a great underground natural dam. 2 billion acre-feet is 50 times [*sic*] the combined capacity of Lakes Mead and Powell on the Colorado. Each drop is precious in the arid region. Billionaire Canadian oilman Maurice Strong in the late 1980s headed a consortium that bought the 100,000 acre Baca Ranch overlying this aquifer, planning to pump and sell the water to Denver for a large gain. Moving water is more politically complicated than outsider Strong may have reckoned, so he sold to native son Gary Boyce, who continues political maneuvering to sell. In all this, the vast Baca Ranch farmland is just a stalking horse for the aquifer (Quillen, 2002).

The Ogallala Aquifer underlies the high plains from Texas through Nebraska. Man has overdrafted it and cannot recharge it. Nothing daunted, oilman Boone Pickens has picked up 200,000 acres in and around Roberts County, Texas, near Amarillo, to establish a claim on the Ogallala, with an aim to export the water to Dallas. He has set up a dummy Water District under Texas law that gives him a power of eminent domain for a pipeline he proposes, and tax exemption for bonds to finance it (Woellert, 2007). Eminent domain is, of course, a species of land right that should be taxable.

Some other recent aquifer speculators have been PG&E Properties in northern California, Peter Hensen and John Huston near Denver, Bell Canada Enterprises (BCE), Keith Brackpool and his Cadiz Inc. with a 35,000 acre ranch cum aquifer in eastern San Bernardino County, Richard Heckmann with Dan Quayle and his US Filter Corporation in Riverside County and many other locations, Tenneco in Kern County, Azurix (front for Enron) with 13,000 acres in Madera County over a deep aquifer that would receive, store, and release 400,000 acre feet. It is not just the water, but also renting out space in the aquifers. There are hundreds of others, including a few major oil firms, who have received less publicity.

Surface water "rights", too, may (with difficulty) be severed from the land and sold for high prices to thirsty cities nearby. In one such case Sid and Lee Bass, oilmen who also own the better part of downtown Fort Worth, bought Western Farms, with 40,000 acres in the Imperial Irrigation District. They then tried to sell its water allotment to San Diego for some $400 per acre-foot[11]. The water in question is taken free from the Colorado River by the Imperial Irrigation District and delivered at $12.50 per acre-foot to its members.

Water transfers are legally complex, and become highly political at several steps. The Imperial Irrigation Disrict, like all legal districts, holds water in trust for all its landowner-members. The Bass's, in their maneuverings, nearly got their business associate Al Checchi elected Governor and, when that failed, financed and worked through Governor Gray Davis. Where natural resources are on the auction block, and taxes are zero, big money rushes in, and takes its political concerns right to the top, diverting Governors and Legislators from other business that might benefit more citizens. After a series of complex feints and parries, the Imperial Irrigation District itself bought Western Farms to quiet the matter, profit the Bass's, and profit the District by selling the water directly to San Diego.

However, much or little the original and intermediate landowners finally got, it is the water, an incident of landownership in the Imperial Irrigation District with its prior claim on the Colorado River, and its subsidies from the US Bureau of Reclamation, that is the source of the land value.

Other more obvious subsoil values are fuels: oil, gas, coal, and uranium. The whiff of such values brings the "lease-hounds" running, spreading new riches of bonus bids among wizened farmers, scattering a new level of "floating values" among many voters over wide areas. (For more on subsoil minerals, Section 3.3.4, "Exhaustible Resources", below.) There are also valuable deposits of the original 92 elements in Mendelejev's Periodic Table. In some areas, like Michigan's Upper Peninsula, mineral firms dominate "farm" values and, according to some critics, have aborted normal settlement for 150 years (Smith, 1960).

In smaller eastern states like Maryland, Delaware, Rhode Island, and New Hampshire, most of the farmland is so-so in fertility but high in urban influence. An acre of farmland there sells for twice the price of more fertile Midwestern and prairie soils. It is partly the prospect of a quantum leap into housing that upvalues the land, but also the advantages of urban access to farming and farm life *per se*, as the Supervisors of Montgomery County Maryland learned in their experiment with transferable development rights (TDRs). Outlying farmland owners sold out their TDRs cheaper than the planners had expected, because of the high value of their land for farming and/or manorial living, without development (Daniels, 1998).

3. Group B. Broadening the concepts of land and its rent

3.1 Element No. 5 Rents best tapped by variable charges

Many lands and resources that yield rents are not observed or measured in traditional real estate markets. There is a new realization, flooding in unseen like a riptide below the spume, that "taxes on rent" are broader than the traditional property tax on real estate ex buildings.

3.1.1 Fixed vs variable tax bases. As esteemed a Georgist as Vickrey often pronounced the prime virtue of land taxes to be that they are a "lump sum", meaning not a function of production or sales. He thus identified them solely as property taxes, and not any variable charge like a severance tax on withdrawing water or oil, or a parking fee, or a gas tax, or a bridge toll (even though he favored these, for what he saw as other reasons). He did not see the corporate income tax as being in large part a rent tax, which it is, and he opposed it.

It is a cliché of economics texts to class land-based property taxes together with poll taxes as having the peculiar, and apparently sole, virtue of not varying as a function of

any variable input or output. They call them "lump sum" taxes for that reason, and often let it go at that – except it is more common to cite poll taxes than land taxes. In this mindset, there are no differences worth mentioning between poll taxes and land taxes – an extreme instance of tunnel-vision and involuted mindset that reveals how far modern economics has drifted from common sense. The mindset comes from focusing narrowly on marginal incentives, ignoring distribution, justice, income and wealth effects.

The term "single tax" has been unfortunate in helping perpetuate the narrow fixation on property taxes, and resulting underestimate of revenue potential from rents.

3.1.2 User charges for crowded streets and roads. Many of the siblings in what Netzer (1973) calls "a family of user charges" (which he would substitute for building taxes) are not substitutes for land taxes, they *are* land taxes. They are means of collecting rent for the use of city streets (Gaffney, 1970a). Most Georgist expositors have long cited parking meters to illustrate Georgist principles. So strong is the "single-tax" stereotype, though, that not even Netzer (1998), who has long been tuned into rent issues, includes user charges as part of land revenues. He writes of them purely as efficiency devices. When he writes about the taxable capacity of land they are missing.

Shoup is publishing currently on the multiple benefits of metering curb parking at higher rates (Shoup, 2005). Shoup sees meter revenues as rent charges. He estimates their revenue potential as astonishingly high, equal to all existing property tax revenues from all kinds of private property. This is only from *parked* cars on *public* land. Singapore, London, and other cities have shown there is high revenue from taxing moving vehicles, too. New York City, as is well known, gives away its taxi medallions for a song, while their market value soared to over $300,000 by 2004 and could, obviously, yield large city revenues.

A major source of public revenue from crowding the streets is the excise tax (federal and state) on vehicle fuels, mostly gasoline. It is a crude instrument, but the most comprehensive we have now, and for some years to come. However, the effective tax rate has fallen for 90 years, and is structured to fall further as fuel prices rise. That is because the tax base is "specific", i.e. a gallon of gas, regardless of price. The rate per gallon has risen, but does not automatically keep up with prices. Call it "negative bracket creep".

3.1.3 Some other variable charges. Then there are mineral revenues from severance taxes and/or royalties, plus income taxes. The narrowing "single tax" tradition is so strong that Netzer, when writing about the revenue potential of land, omits them. The omission is major. Severance tax revenues are already so high that some polities get much, or even most of their revenues therefrom.

Leaders of the modern green movement like Robert Repetto, Robert Costanza, Herman Daly, Alan Durning, Josh Farley and others, have identified many more appropriate variable charges, with their generic motto "Tax bads, not goods". What about billboards, for example? These are merely legalized graffiti with social standing and a lobby. Anyone who doubts the reality of visual pollution might shed the doubts by driving through Vermont, which outlaws billboards. Unblemished nature looks better: deep green for summer, red, orange and yellow for October "leaf-peepers", lavenders for November, steep whites for skiers, reviving greens in spring, it's a downer to leave that enchantment for the ad-ridden outside world[12]. The loss of rent

from billboards is compensated by the overall gain in charm. One could anticipate, too, that a society that penalizes billboards might have an easier time persuading young vandals to stop spewing their smaller-scale graffiti.

There are other eyesores. Permission to build and maintain transmission towers, like the giant one lowering from atop Twin Peaks, San Francisco could bear heavy taxes to pay for the negative spillover. There are thousands of cell phone towers now, whose camouflage with faux palm fronds is effective as lipstick on a pig. There are hundreds of thousands of miles of phone wires and power cables blocking views. Europe, supposedly lagging us in technology, manages to conceal such eyesores underground, while American firms plead poverty and bankruptcy at the very whisper of such extravagance, and libertarians cry havoc at "intervention" in the free market.

Superior geothermal sources should bear an extraction charge. Some have proven submarginal at former low prices, but even in 1984, when energy was still cheap, a source near Santa Rosa, California, went for $350 million from Occidental Petroleum to a Kuwaiti owner, as part of the Banana-Republicanization of this highly rentable state (Myerson, 1994). (Since then a corporation, Calpine, has taken over.) Now, sources in the Imperial Valley and Kern County, formerly submarginal, are coming on line. By 2006, 5 percent of the electric power in California came from geothermal sources, untaxed. The fraction is lower than in Iceland, the world leader in developing geothermal power, but the absolute amount is higher (Douglas, 2007). Iceland can apply much of the heat directly by pipeline, because Icelanders live closer together. Since converting heat to electricity loses about half the potential energy in the source of heat, that gives an idea of how much more heat will be worth when we learn to live more compactly by curbing urban sprawl – a major objective of taxing land values instead of new buildings.

A total of 19 percent of California's electric power comes from falling water, leased long ago at sweetheart rates on 40-year leases from the FPC (now FERC). In the past the FPC has quietly renewed these leases without new bidding, so making the falling waters in effect private, while tax free.

We identify many more taxable "bads" in Element No. 7, "Taxing for Conservation", below.

3.2 Element No. 6 Taxing the income from land

Taxes on property income can easily be made into a means of collecting land rent, while exempting the income imputable to real capital.

3.2.1 Historical and Legal Background. The Federal income tax base includes income from land. For this we have to thank a bloc of Georgist Congressmen[13] of 1894 who got land included in the base of the income tax that Congress enacted then. Otherwise we would have had a tax purely on labor income. The Supreme Court overturned the 1894 Law on account of that specific inclusion (*Pollock* v. *Farmers' Loan and Trust Co.*, 1894[14]). Congress had the power to tax labor incomes, ruled the Court, but not land incomes (without apportionment among the States by population, a crippling provision). To overrule the Supreme Court, the voters in a bi-partisan effort passed the 16th Amendment which took effect in 1913. It was needed solely to let land income be included in the income-tax base without apportionment.

Our progressive forebears taxed corporate income from 1907, before the 16th Amendment. The corporation income tax raised more federal revenue than any other

tax clear through until the Reagan years. Legally, it was pitched as an excise tax on the privilege of doing business as a corporation. "The excise tax used net income as a measure of the privilege of corporate business practice" (Herber, 1995). The legalistic circumlocution suggests how creative lawyers can implement what Congress really wants[15]. Indeed, the Nolan-Jackson Bill of 1920, and the Keller Bill of 1924, used exactly such language as the constitutional basis for imposing a national 1 percent charge on holding title to land. (Neither Bill passed.)

In addition 50 state legislatures, like Congress, control what kinds of income to include in or exclude from the income tax base. They have abandoned most of their discretion by piggybacking on Federal laws, but they could take their power back. States have reacted to and counterbalanced Federal overreach before.

3.2.2 Untaxing income from labor. Congress can convert the income tax today into a tax on land income in two steps.

First, exempt wage and salary income from the tax, in whole or in part. We could also tiptoe out of taxing labor the same way our forebears crept into it, on little cat feet, step by step. We could raise the earned income exemption, the standard deduction, personal exemptions, etc. Workers paying the social security tax could deduct it from taxable income, as they should have been doing all along. Meantime, raise the rates on what remains of the income tax base, which would now be mostly property income.

The proposed step 1 may strike some as too radical, until they recall that from 1913 to 1941 (before withholding, and the explosion of the FICA tax rate) most wage and salary income was in fact exempt. The whole of US participation in World War I was financed without taxing payrolls, and with remarkably little borrowing, compared with other nations, to whom we actually extended loans, as well. What is really radical is the massive shift of tax burden off property income onto wage and salary income, a shift that has upended the whole notion of progressive income taxation as originally adopted in 1907 (the corporate income tax), 1913 (the 16th Amendment) and 1916 (the first substantial income-tax act of Congress) [16,17].

3.2.3 Untaxing income from capital. Step 2 is to remove capital income from the base. This is harder to understand, but easier to accomplish because it has already been done in part. The policy took off originally under JFK in the "Soaring Sixties". Heller, JFK's Chair of the CEA, and the only Chair ever to exert much influence, was the leading spirit. It was an idea from the Institutionalist-Georgist Commons, a leading figure in the Economics Department at the University of Wisconsin where Heller learned his economic ABCs (Commons, 1961).

The present tax law still includes several devices designed to lower or effectively eliminate any tax on the income from capital. Basically, this is done by letting investors write off what they invest in new capital at or near the time they invest it. The investment tax credit (ITC) even goes farther and lets them write off more than they invest, provided (and this is of the essence) they actually pay people to produce *new* capital, as opposed to buying old capital and land. Heller pushed the ITC because he foresaw how fast write-off could be perverted, as it has been, into multiple write-off[18] and land write-off.

"Expensing" of certain capital investments means writing them off 100 percent in the year made. This privilege is so valuable it reduces the effective tax rate to zero (0), because after expensing the Treasury only receives a return on its own share of the investment. Accelerated depreciation is a substantial move in the same direction.

Even straight-line depreciation is really accelerated compared to the true depreciation paths of durable capital, especially when coupled with the use of tax lives which are much shorter than economic lives of durable capital items.

None of those devices should apply to land, however, because land is not depreciable, by Federal Law. That is again thanks to generations of Georgists, starting with those in the Progressive movement when the income tax was shaped. Who else would insist that land is different? Standard-brand academic texts keep teaching that land is just another form of capital. Hall and Rabushka's The flat tax, the "bible" of the flat tax movement, provides that land purchases be expensable. So do variations on the theme by Aaron and Galper (1985) and others.

To convert the tax fully to land, then, we need only complete step two by allowing universal expensing of all new investments. *Voilà!* Be certain, though, not to let buyers expense land as Robert Hall and Alvin Rabushka would.

3.2.4 Plugging loopholes for land income. At the same time, we must plug many loopholes designed especially for land income. One of these is tax-depreciating land, even though land does not wear out. This is illegal, but the IRS often allows it when new buyers in series depreciate old buildings from their successive purchase prices. Some economists and pundits have suggested in the past that the fisc should compensate landowners before raising their taxes. James and Mill, Walras, Gossen, Wallace, Spencer, Cannan, and others seriously discussed this, pro and con, in the nineteenth Century. The tumult and the shouting died, but now, by letting owners write off land, that is exactly what the fisc is doing, while economists are silent: the leak is unseen, unsung, and unplugged.

It is more than a "leak"; it is the washout of a North Sea dike! To write off land just once is to achieve effective tax exemption in perpetuity. Thereafter the fisc receives only a return on its own investment. But the IRS continues to allow it, not just once but time after time, world without end. It is a periodic negative tax (a subsidy) for holding title to land. Little wonder so many analysts can waive aside the taxable capacity of land as though it were nugatory. The power to tax is there, the tax base is there, but the revenues are lost in obscure operations of a tax system that few people understand, except the gainers, and they are not talking. I have published elsewhere a long list of other loopholes for land (Gaffney, 1969, 1970b; Noyes, n.d).

Many will object, and with reason, that the income tax only recognizes realized income from land. It exempts the many holders who neglect or underutilize land. (We discuss below those who take only imputed income from land.) True enough, and important, this is why we need the property tax. However, consider two points. First, we are surveying how to improve the income tax we already have, assuming voters want to keep it. Second, observe the behavior of private landlords and tenants. They often prefer arrangements that share risks and returns, like the income tax, instead of fixed cash rents that resemble the property tax. There are those who favor these anyway, because they consider participation and risk-sharing to be better ways to assert what Walras called the "co-proprietorship of land by the state." As Turgot explains at length in his *Réflexions*, fixed rents work better with tenants who have some capital on tap to cover the risk.

Another advantage of the income tax is to capture more of the unrealized appreciation of minerals *in situ*. Ideally this would not be necessary. Ideally, a property assessor could put a present value on the future cash flow from a mine-mouth or

wellhead or open pit, and assess that each year as it gradually ripens from green resource to green cash, over many decades. In administrative practice and law, though, that has proven difficult, and does not always happen. Some assessors do not value unripe resources until they approach harvest time, and the valuable subsoil deposit is about to fly. Given that problem, a severance or income tax at time of extraction is the only way to tax the capital gain that accrues between acquisition at low cost and sale at a high price.

Some criticize the property tax on unripe minerals anyway, alleging that it hastens extraction uneconomically. Others criticize the harvest tax, claiming the opposite. A good compromise is to do some of both. The property tax on unripe minerals drives them into the hands of the income or severance tax collector, while fear of the latter keeps them on the rolls of the former (Gaffney, 1967, 1977). We find the same strategy in private leases. There is a "delay rental" payable, like a property tax, annually until the lessee starts commercial extraction; then a "royalty", resembling a severance or income tax, on each unit when extracted.

Taiwan's farmland model has set a good example of such taxes in tandem. In Taiwan, when the Chinese Nationalists were in power, farmland holdings above a minimum size were taxed *ad valorem*, yearly, but in addition price gains were taxed upon sale for an unearned increment. The former tax successfully prompted owners to sell excess land, while the latter tax raised more revenue (Riew, 1980; King, 1988).

A weakness of the income tax, under current definitions, is that non-cash income (imputed income) is exempt. This includes all the imputed income of the land under and around owner-occupied homes. Most economists, *qua* economists, tell us that this is a monster loophole in the present income tax. To make it worse, interest secured by a home is deductible, even though the corresponding imputed income is untaxed; so are local property taxes, even though they finance untaxed services. It is no professional secret tightly held: popular and business presses for years have harped on home loans as "the last great tax shelter".

A problem with these professional economists is that, having made the point, they let their amateur politics override their professional economics. They tell us the voters would not accept the tax policies implied by the economics, so forget the economics. How good are economists as politicians? Not very: Canada already disallows deducting interest on home loans, on the solid ground that the fisc does not tax corresponding income (the imputed income of the home). This is what US pundits tell us that voters "will never accept". They call it "poison at the polls", "the third rail", and other such conversation-stoppers. Are Canadians so much deeper than Americans? Each nation labors under its own native follies, but Canadians demonstrate that voters are not predestined to fall for this particular one.

Another problem with these professional economists is that they limit the scope of imputed income to "housing", narrowly defined. Think of all the demesne attached to mere houses in expensive retreats of the wealthy. Think Berkshire County (Lenox, Tanglewood), Massachusetts; Pitkin County (Aspen), Colorado; Bourbon County (blue-grass, whitewashed fences, mint juleps), Kentucky; San Juan County (channel islands, sun's-over-the-yardarm), Washington; Loudon, Fauquier and Albemarle Counties (hunt clubs and stirrup cups), Virginia; Spring Valley (horsey set near town), Maryland; Vilas and Walworth Counties (lakes and beer), Wisconsin; Barrington (mink and manure), Illinois; Flathead County (landed gentry cum logging), Montana; Glenwood Springs

(broncos and access to public lands), Colorado; The Hamptons (beaches and rich neighbors), New York; Saddle River (class), New Jersey; Pinehurst (golf), North Carolina; Killington (skiing), Vermont; Holderness (brains and Golden Pond), New Hampshire; or Santa Barbara County (climate and cinema stars), California. Think horse farms, rivieras, waterfronts with beach and boating, golf, polo, hobby farms and ranches and groves and vineyards, duck blinds and decoys, celebrity neighbors, country manors with sweeping lawns over wide demesnes, ski resorts, game preserves, hunting of several kinds, summer camps, forested retreats, dude ranches, cattle ranches as vast and scenic as National Parks, the whole complex of landed diversions whereby some Americans emulate English country squires and bid land up and away from real farmers producing food and fiber. Yes, even think of endless west Texas, where oilman Boone Pickens is buying up vast ranches, and retiring cattle for quail, his favorite prey, for the bird-shooting trade. (Pickens may be combining this with his plan to tap the Ogallala Aquifer for exporting water eastwards.)

A legislature could define imputed "land income" as a fixed proportion of land value, regardless of cash flow, and tax it. Many economists would have to call that reasonable, since they have already inserted imputed income of housing in the NIPA measure of national income[19]. They understate it, as noted above, by limiting it to "housing", narrowly defined, but at least they endorse the idea. Remark well, that would make the income tax into something much like the property tax.

3.2.5 Current unearned increments as current rents. Professors Robert Murray Haig and Henry Simons gave their names to "Haig-Simons" income, a definition of taxable income that includes unrealized unearned increments, taxable in the year that they accrue, not waiting for sale. Many, probably most economists until the Gingrich Era endorsed Haig-Simons, at least in principle. Harold Groves and Vickrey are two of the better-known. In 1966, Canada's Royal Carter Commission recommended Haig-Simons at a high political level (*Carter Report*, 1966). Dr Pechman of the Brookings Institution devoted much of his career to promoting his "Comprehensive Income Tax Base" based on Haig-Simons. (Pechman, like Heller, studied under Professor Harold Groves at Wisconsin.)

In 1973 economist Harry Kahn, inventorying untaxed kinds of income, estimated that *unrealized* capital gains were ten times the value of realized gains; and that the excess of unrealized over realized gains was about 20 times the value of imputed housing rents (Kahn, 1973). His figures may have been casual, but clearly this is a huge item. Since then, "capital" gains as a fraction of income have swollen.

Few seem aware that "capital" gains are mostly land gains, misnamed. Most true capital depreciates and obsolesces, by nature; it is land that appreciates. That is why the little island that Pieter Minuit bought from the Canarsee Indian tribe in 1626 for $24, and the lands Thomas Jefferson bought from Napoleon for $15 million in 1803, are now worth $ trillions, while their buildings have gone, and come and gone and come again, many times over. Mislabeling land gains as "capital" gains seems calculated to keep people in the dark, and it has succeeded because so many people, including economists who should know better, live in thrall to "The Tyranny of Words".

Land gains are a form of taxable land rent, as we will demonstrate. But as gains grow so do the wealth and political power of the political and allied academic movements to untax them. So much greater, then, is the need for objective economists to establish the taxability of capital gains, to show how to tax unrealized gains as they

accrue, without disincentive effects or administrative nightmares. We need to scope out the huge revenue potential that now largely escapes taxation.

A property tax based on the market value of appreciating or "ripening" land *is* a tax on the accrual of value, levied annually as the value accrues. How is that? In a reasonably perfect market for futures, the annual increment is the current price times the interest rate, say 5 percent. The property tax is the current price times the tax rate, say 2 percent. Therefore, the tax is a fixed portion of the current annual increment. Economists of high repute and mathematical ability have been astonishingly dense about this. Vickrey, for example, who campaigned to have capital gains taxed as they accrue (rather than on sale), declared there is no simple way, as he worked out schemes to do it in complicated ways that only a theorist of his brilliance could love (Vickrey, 1947), and not even a theorist of his stature could sell, not even to fellow economists[20].

Owners of appreciating land have long seen the point, but from their own slant, which is to avoid taxes, whatever havoc they wreak on the English language. They have agitated to have the property tax base converted from market value to a multiple of just the current cash flow. They call this "capitalized income", and have sold their terminology to the world. It is well below the discounted cash flow (DCF) of all future rents (equations 1-3). DCF is common coin in private appraisal work, but not in public assessments for taxation. When the public has to condemn land for public works, on the other hand, that's different! Then it's back to DCF valuations to inflate the price. The excess of DCF over capitalized current income then emerges in glaring contrast (Appendix 1, bullet 3).

Some George champions point out there would be no unearned increments if the property tax rate on land values were as high as they would have it (and buyers and sellers expected it to remain high). Thus, they dismiss thoughts of how we get from here to Nirvana, and how we make do *en route*. "Some for the Glories of This World, and some sigh for the Prophet's Paradise to come". As to "This World", perfectionists also dismiss the income-tax version of the capital gains tax because it is an imperfect tax (which it is). It is levied only at time of sale, making it (as Wicksell wrote) a tax on commerce, a barrier to allocating land ideally. But its virtue depends on "compared to what?". It certainly beats the income tax sans a capital gains tax.

As to the last, the capital gains tax, being part of the income tax, actually serves a useful political role en route to the Prophet's Paradise. It makes the income tax less attractive to recipients of land gains, discouraging them from pushing legislators to replace the property tax with the income tax.

That is politics. The central economic truth here, however, is little appreciated, and therefore wants underscoring. It is that the property tax based on land value, remarkably, taxes both the current rent, and the current unearned increment as it accrues. Both at once; both at the same rate! Thus, *en route* to the Prophet's Paradise, it offers something "Alike to those who for Today prepare, and those that after some Tomorrow stare."

Some say that is double taxation, or making something out of nothing. They overlook that we are traveling through infinite time. Use up a century or two, infinite time remains: the end recedes as fast as the future nears. There is always tomorrow, and tomorrow, and tomorrow, undiminished by all the yesterdays. We die, our works crumble, the very paint on the "immortal" *Mona Lisa* cracks, photo-chemical smog eats

at the Parthenon, the facing sloughs off even the Great Pyramid of Gizeh, but space on Earth survives, as fresh for new mornings as it was on the First.

Normally, future rents will be higher. That raises the DCF of the present by taking from an infinite reservoir of time, gaining something while losing nothing. Like infinity, it is counter-intuitive and hard to conceive. Our minds are geared to finite lives in finite time. Yet markets have adapted to the infinite life of land since time immemorial. Even those who preach that the end-time is near buy and sell land at the market.

Here, is the mathematics[21]. Let V be market value; let it also be assessed value. Let t, the property-tax rate; a, the current annual rent; and g, an annual percentage rise of "a". Then:

$$V = a/(i + t - g) \tag{1}$$

You may derive equation (1) using high school algebra for the sum of an infinite geometric progression.

Rearranging terms, we single out the annual gain of V, which is Vg, and denote that as V':

$$V(i + t) = a + V' \tag{2}$$

Solving again for V:

$$V = [a + V']/(i + t) \tag{3}$$

Again, V' is the current annual rise of V, the "unrealized capital gain" that is part of Haig-Simons income – current income. The denominator, $(i + t)$, is the usual "cap rate" used by land appraisers and assessors. It is the way of capitalizing a into the corresponding V when V is land value subject to an annual tax. If that looks novel, it is only through neglect. It is common coin in land appraisal. Its reciprocal, $1/(i + t)$, is the Englishman's "years' purchase" of land. It has been with us a long time: it is the Frenchman's *le denier* of which Turgot made so much in his *Réflexions*, 1766. It resembles the stockbrokers' P/e ratio, but with a property tax added.

Equation (3) tells us that a free market treats V', the annual rise of V, as current income, as Professors Haig and Simons said it is. It capitalizes it into V by the same cap rate that it applies to "a".

Finally, a tax rate, t; applied to the base V, taxes "a" and V' at the same rate:

$$\text{Tax} = tV = t/(t + i) \times (a + V') \tag{4}$$

Equation (4) shows that the tax rate is being applied equally to a and to V', year after year. The true tax base, then, is higher than a; it is $(a + V')$. The fisc's share of this net income is $t/(i + t)$[22].

If future rent is to be heavily taxed, there will be less current value and less appreciation. One might think that increments would thus be destroyed, but economic value does not disappear without a trace. It is conserved, like matter and energy. The value is rather transferred to the public. The right to levy future taxes has a present value, too. The public can and does take current cash out of unrealized increments to this present value in the same way private owners do, by banking them.

Thus, debt expansion soundly grounded on a rising tax base is current income that the owner, private or public, may take as cash. It is part of what the public may spend currently from the tax base, without reducing the net worth of the public equity, or damaging public credit. Lest this seem reckless, recall that public debts have been rising for a long time, in step with rising taxes of other kinds, which are mortgaged to public debt. The rationale, found in most economics textbooks, has been in terms of rising gross national product, which shrinks debt relative to tax base.

One must be cautious: this is sailing close to the wind, and spendthrift rulers can get in trouble, as they have throughout history. The federal government turned to folly after Arthur Laffer sold the "dynamic budgeting" notion that lower tax rates cum wider loopholes would mean higher revenues, and Robert Barro sold his version of "Ricardian Equivalence", that higher public debts stimulate offsetting higher private saving, and neo-cons sold the notion that war is quick and easy and profitable. But the idea forwarded here is to raise tax rates on a rising base, and close loopholes. It is not to finance aggressive wars, although one must recognize it would make it easier to do so.

Capital gains as a revenue source can be quite unstable. California's 2003 fiscal bind illustrated the danger. The real estate bust of 2007 will soon do the same. This is not a drawback of the present proposal, however, for this differs from the current income tax on capital gains in several ways:

- The proposal here is to tax gains as they accrue, not upon sale. Sales are more unstable than prices: they soar on a rising market, and drop like lead on a falling market, redoubling the drop of the tax base.
- The proposal here is limited to land gains. Current income taxes, on the other hand, include gains from other sources like building up a new business. During the dot.com boom that broke in 2003, it was this last element that was most unstable.
- During a land boom and bust, land taxes, if assessments were kept current, would be a strong stabilizing factor – a factor that has been missing. Many assessors refuse to follow a rising market, with reasons like "These green new buyers from out-of-town are paying more than the land is really worth". Never mind that the buyers are risking their own money in the game, while the Assessor observes from the bleachers. Implicitly, "I, the Official in Charge, know better than the market".

However, the Assessor by law is supposed to follow a bull market, not outguess it. When the "exuberance" appears in his wisdom to he "irrational", his job is still to go along, not judge. When private fee-appraisers go along they confirm and reinforce a boom, but when the tax Assessor goes along he douses a boom with cold water: higher taxes (Gaffney, 1985). It was the lack of such an automatic remedy that let the farmland boom of the 1970s soar so dangerously high above reality, then the urban bubble of the late 1980s, and now of 2001-2007.

3.3 Element No. 7 Taxes for conservation

3.3.1 Taxable surplus in water resources. Here, is a high potential to turn "Negabucks into Megabucks" for the treasury. For generations past, we have subsidized landowners to withdraw and waste water, rather than charge them for it. The result, as economists would predict, is chronic "shortage", an endless train of "crises".

The benefits of the subsidy have gone roughly in proportion to the area of irrigable land owned. As a result, water is maldistributed, misallocated, underpriced and wasted.

Today, growing numbers support a groundwater extraction charge, as a conservation and efficiency measure, and to obviate megabuck "rescue" projects. As modern "green" thinking slowly (oh, so slowly!) bends our mindsets away from the tradition of subsidizing waste and maldistribution, there is also great revenue potential in water, a double boon (Gaffney, 1992). In an arid land water is life, and people will pay what they must. Some, perhaps much of the land rent now imputing to fee simple lands can be transferred to the holders of water, by raising its price at the source.

Why should we want to transfer rents to the holders of water? Because water at the source belongs to "the people" of each state that follows the "appropriative doctrine" of western water law, and of many eastern states, too. A license to withdraw the people's water is not real property. The evidence, if any were needed, is that it is not taxed as property. So it is not sheltered by Proposition 13, in California, or comparable caps on property tax rates in other states (the Alabama laws call them "lids"). It is not sheltered by the usual Constitutional safeguards of private property, because it is not property – a license is just a legal "privilege", subject to forfeiture, conditions, reservations and term limits. Oregon State Supreme Court Chief Justice McBride put it plainly in his opinion on *In Re Hood River*, 1924: "It does not seem to me that water use in this country ever rose above the dignity of a mere privilege over which the state had complete control"[23].

The State can serve free market efficiency and conserve scarce water and raise revenue in one stroke by putting a charge on water withdrawals. Such a charge would also expedite the current movement to market water (Gaffney, 1993a, 1997), reallocating it to higher uses.

An economic charge should of course, be geared to the economic value (locational, mainly) of waters. I have mentioned groundwater. Surface water, if regulated, could bear higher charges because it is already at the surface with no pumping. This charge might be called a "tax," or a rental for state property, as politics may require. The charge should cover not just active withdrawals, but "dog-in-the-manger" licenses to block withdrawals by others. Value-data to help set a proper charge would come from the proposed free market in tradable water licenses.

The great revenue potential may be envisioned by the fact that the State of California now stores and delivers water from the Feather River, north of Sacramento, clear to the Mexican border, pumping it over the 2000' Tehachapi Range on its journey of nearly 1,000 miles, using (but not paying much for) something like 5 percent of all the energy generated in the State. The true cost at the margin is over $2,000 per acre-foot delivered (Gaffney, 1982b). Nature delivers some water that far south for nothing. The *in situ* value, or rent, of these native waters is therefore in the ballpark of $2,000 per acre foot. Even if few would buy at that price, it would obviate the public costs of wheeling water that far south. They would become "avoided costs", in the language of utility regulation.

Water has many uses besides those in farms, industries, and homes. Each of those other uses has its revenue potential. There are transportation, amenities, power generation, sea plants for human use, finfish and shellfish and marine mammals, recreation, wildlife habitat, underwater communications, naval operations, sovereignty

over overflights and radio transmissions, tidal power, adiabatic sites for power, gene pools, salt-water marshes, and others. To the extent that water supply takes water from these other uses, their loss is part of the economic cost. People dying of thirst will pay anything for a drink, but few people are really that thirsty, so the cliché is that "people will vote for water, but pay for power".

Also on the cost side are other resources used to develop and store and "wheel" waters. Damsites of the right qualities are scarce. Reservoir sites are vast and often scenic. Whole towns have been flooded out. Rails and highways and utility lines must be relocated. Parkland treasures like The Grand Canyon of the Tuolumne (Hetch Hetchy) and Glen Canyon on the Colorado have been drowned; 93 miles of Hells Canyon on the Snake would have been had they built the proposed High Dam.

The seabed under water contains minerals and fuel deposits. The shoreline has beaches and salt marshes and harbors and ports, and marinas for parking boats, of which there are one million registered in each of Florida, California, and Michigan. The National Marine Motors Association estimates there are 18 million motorboats nationwide; there are also millions of "raghaulers" and lesser boats. No one has tried to sum up the revenue potential from all those values, but they are clearly immense, and may even exceed what people will pay for water supply in the simple sense.

3.3.2 Pollution effluent charges: "Tax Bads, not Goods". On carbon taxes, Peter Barnes estimated the revenue potential at 3 percent of GDP, or $228 billion a year in 2001 (Barnes, 2001). That is for the gasified garbage from carbon alone. Since then, of course, the price of hydrocarbons has risen much faster than GDP, and confirmation of anthropogenic global warming has risen too. Barnes also points out that public revenues from other pollutants like sulfur and nitrogen would add greatly to the total. Sulfur mining from pure underground domes, by the Frasch process, also generates large rents at the source (Montgomery, 1940).

Redefining progress, a San Francisco- and now Oakland-based think tank, has estimated the generation of "illth" (i.e. pollution, or negative externalities) at half of GDP. That gives a macro perspective on the undreamed-of revenue possibilities. Costanza *et al.*, painting in even broader strokes, estimated the value in 1997 of 17 ecosystem services at $33 trillion per year, exceeding the world's GDP (Costanza *et al.*, 1997). That was perhaps exaggerated for publicity, but with enough documentation to reinforce the high estimates of revenue potentials.

Joint power authorities in the Ruhr Valley of Germany pioneered the use of "effluent charges" that cleaned up one of Europe's dirtiest rivers. Kneese and Bower of Resources for the Future, Inc., pioneered in bringing this news to Americans (Kneese and Bower, 1968; p. 1974). There was a flurry of interest and support in the Johnson Administration. Since then it has been a hard slog through hostile Chicago economists, discussed below.

Many in the Green Movement see the double boon in Pigovian taxes: they curtail overuse and pollution of common airs and waters, while also raising revenue (Costanza *et al.*, 1997). Many academicians, sadly, bicker over whether this is possible, although it seems like a no-brainer.

Taxing air and water polluters by levying "effluent charges" won the favor of many economists influential in the 1960s. The reasoning, from Cambridge economist Pigou, was pure Georgism: make polluters pay an economical price for fouling publicly owned air and water. Kneese touted Germany's Ruhr Valley as a model and success story.

Before the movement could make headway, Dales and Ronald Coase published their rationalizations for an alternative system of giving tradable permits to polluters. Chicago economists embraced and apotheosized Coase, who gave them the rationalization they needed to hector environmentalists and give aid and comfort to polluters. Professor Armen Alchian of UCLA, a Chicago economist in spirit, denounced Pigovian taxes as interfering with free markets. Coase and the Chicagoans affected not to care who gets the pollution rights. In Chicago-school economics, distribution of wealth is an archaic nineteenth Century concern, obsoleted by Neo-Classical Economics. All that matters now is optimal allocation. Trading permits, they allege, will accomplish that.

But of course, the polluters do care. With their great wealth and political power, and their support of and therefore by a dozen venal think-tanks, they have made it seem only reasonable that permits to continue polluting should be given away to those with track records. So the administration has created an aristocracy of ancient and honorable polluters.

With the current obsession over global warming, many are now touting a "carbon tax". Barnes is an articulate champion (Barnes, 2001). His estimates of the revenue potential are staggering (3 percent of GDP). The same forces that subverted Pigou's idea, however, are rallying against Barnes. Europe already has abandoned its polluter-pays principles in favor of gifting the ancient polluters, "giving away the sky", as Barnes puts it.

3.3.3 Handling non-point pollution. "Non-point" pollution poses its own special problems. Being impossible to measure and meter, it does not lend itself either to effluent charges or tradable permits. Taxing pollution surrogates (like biocide purchases, for example) is a rough alternative, but too rough. Such taxes are part of any program to combat nonpoint pollution, and could raise substantial revenues. However, the policy has narrow limits as an anti-pollution measure, and must be reinforced by other kinds of measures to constrain the kinds of land use that encourage runoff.

For example, urban sprawl entails grading and denuding new lands. In the Menominee River that bisects Milwaukee, 75 percent of the pollutant loadings come from urban nonpoint sources, upstream and more sloping (even in "flat" Wisconsin). Newly developing urban areas cover only 2.6 percent of the watershed, but contribute 37 percent of the suspended solids, and 48 percent of the phosphorus (Gaffney, 1988a, 1988/1989). "It's the grading, stupid".

The most effective containment policy for urban sprawl is that contained in our present subject, taxing land. Remove taxes from using the flatter lands of the original city, while raising taxes on simply holding such lands. We need also sunset cross-subsidies to scattered settlement (Gaffney, 1962b, 1964). Gaffney (1988a, b) specified additional measures, mostly revenue-raising ones, in more detail.

With forest lands, as with urban, denuding land is the source of most runoff problems. Erosion results from a combination of logging roads (too many, too long, on land too steep); clearcutting; and slow replanting.

Slow replanting is the central problem. It slows the supply of second-growth timber, and thus creates pressure to invade submarginal areas. Foresters should harvest the low, flat, warm lands early and often because:

- replanting is economical there, it pays for itself where trees grow fast;
- seedlings grow fastest there, minimizing the exposure period of bare land;

- logging roads may be shorter and less erosive there, because nearer to markets and on level land;
- the loss of scenic beauty is shorter;
- exposed bare land is flatter;
- logging is cheaper and less destructive; selective logging is more feasible;
- fire control is easier; and
- younger stands are more vigorous and naturally resistant to pests.

The last point shows how managing forests better can minimize pest damage without relying so much on toxics. The spruce budworm, for example, damages mainly older trees. To protect them owners spray whole forests, millions of acres in the northeast, with tragic treadmill results.

The tussock-moth, over which forest managers have shed so much organochlorine in the fir forests, damages trees mainly on poor growing sites. Trees on good sites withstand defoliation, green up, and grow with renewed vigor. The moral: stay off the poor sites. The method: utilize the good sites fully.

Why do not owners harvest the good sites early, replant them quickly, and utilize them fully? This calls for thinking outside the box of the price mechanism, narrowly conceived in the neo-classical way. One major reason lies in the tax system:

- Replanting cost is not expensable from taxable income, it must be capitalized, hence not written off until decades later when timber is harvested. Oregon Senator Robert Packwood who led the timber bloc while shepherding through our 1987 tax reform Act (before succumbing to roving hand trouble), did not neglect timber taxation, we may be sure. Neither did Idaho Senator Larry Craig who succeeded Packwood (roving foot trouble). As Senators and tabloid scandals come and go, however, timber lobbies hew relentlessly to the main chance. They have traded off expensing to keep what they prize more, the capital gains treatment of timber sales. They may soon secure both, for in the modern Washington consensus, domestic and foreign and academic, only workers are to pay taxes.
- Most states have substituted the yield tax for the property tax. The result is a bias against early harvesting (Gaffney, 1967a, 1980, 2006). When we look at the whole system it also pushes cutting pressure out to marginal lands. But a yield tax at a high rate destroys any incentive to restock marginal lands, once cut: it makes them subeconomic to replant. Timber is called "renewable", but on marginal land it is more like mining. The prospect of a yield tax leaves the land scalped for ages.
- Some states have virtually eliminated the land value part of the property tax on timber, removing an incentive to early replanting. A tax based on land value continues at a steady level during the sterile downtime of land between harvest and replanting, thus pricking holders in the most compelling way to restock, while not taxing them at all for actually doing so. On marginal land the land tax base is zero (it being based on a zero value) so it does not cause abandonment, nor make replanting any less economic than nature already has.
- When timber is growing the IRS does not recognize growth as ordinary taxable income. Congress made timber a "capital asset" in 1944 (even while billing

soldiers overseas, like this writer, for taxes on their meager pay). The IRS defers any tax until harvest. That is close to tax exemption for some timber that may take 80 years or more to mature. Then when and if timber is cut and taxed, the maximum rate (as of 2007) is 15 percent, and headed south.

- When and after owners fell timber, however, value-added by labor in logging, hauling, and in the mills and markets is "ordinary" income and bears the full fury of the tax rates. So long as timber is standing there is no property tax, so it need only grow fast enough to pay interest on its value. After it is cut for sawlogs, and these are made into buildings, it must yield a rate of return high enough to cover a property tax, too, not just on its stumpage value but also on the value-added by felling, bucking, hauling, milling, shipping, storing, merchandising, and constructing. This includes all the considerable taxes, like payroll taxes, imposed on those activities.

All that adds up to a strong tax-induced bias against replacing old, disease-prone and fire-prone trees by vigorous new ones.

Thus, the combined result defers harvest, increasing the volume of old, disease-prone timber standing on good land, and pushing logging pressure out to marginal lands. Many marginal lands, if stripped, cannot reclothe themselves in less than a century or two. Logging there is simply mining, leaving soils as exposed as Goya's *Maja Desnuda*, and less pleasing to the eye.

Forestry on public lands, ironically, manifests parallel biases, from a different set of incentives. Hyde, Clawson and others have documented the pattern: undermanagement of superior sites accompanied by premature invasion of steep, remote sites as the Forest Service internalizes all its profits from timber sales to build more roads (and its empire) (Hyde, 1980; Clawson, 1976a, b).

An optimal solution would constructively combine and synthesize two apparently contrary concepts of land stewardship:

- Concept A says "Conserve for the future."
- Concept B says "Stewardship means highest and best use now." Landholders are responsible to use land in order to employ others (generate incomes), to produce goods (combat inflation), and pay taxes (avoid deficits).
- Concept AB says do both, but in different places. Use the good lands intensively, grow timber early and often, thus relieve human pressure and help conserve the vulnerable, erosive lands. This was, by the way, the basic theme of the early conservationists Gifford Pinchot, William Kent, Frederick Law Olmsted, and their fellows, in the sunrise and high noon of the progressive-era conservation movement.

Until we do this, will optimal taxes on aerial sprays do much good? Some good, yes. But the main problems are outside the box of conventional price-theory thinking, and call for another set of measures.

3.3.4 Exhaustible resources: buried bonanzas. Hardrock minerals are little tapped for public revenues in the USA. Minnesota was once an exception, supporting its state universities from hematite in The Mesabi range. Children of immigrant Finnish laborers in Hibbing, Minnesota, received the best schooling in the USA from the local cut of those taxes, but that was long ago, in the progressive era.

There are 92 elements in Mendelejev's original table of 1869. The 17 listed since then are not of comparable economic value, if any. Mankind constantly mines many of the original 92, using them in products, then losing them to chaos. Nature conserves matter, but not usability. Graedel *et al.* write that 26 percent of the recoverable copper in the Earth's crust, for example, has already been mined and scattered beyond economic recovery (Graedel *et al.*, 2006): classic entropy. Meantime, usage rates are rising. This helps account for the 6-fold rise in copper price on the London Metals Exchange, 2001-2007. Platinum, used in catalytic converters, is even scarcer. "Yellowcake" uranium ore has risen to great new heights. No one but a few owners gains from this; everyone else loses.

Besides, the elements there are valuable natural forms and mixtures of them, like diamonds and other gems, hydrocarbons for fuel, marble, slate, kaolin, asbestos, structural stone, clay for bricks, sand, gravel, aggregate, cement, salt, and so on. Mankind has prized salt throughout history, and even today uses masses of it in industry, and in the north to melt ice on streets and roads. In some states and provinces stone and gravel are the most valuable subsoil product. Their owners are a major part of the "road gang" that lobbies for highway and other capital-heavy construction projects.

Revenue from gravel deposits may take the indirect form of letting the owner underbid rivals for lucrative highway contracts. The Yeager family of Riverside, California, for example, built up its construction business by acquiring gravel deposits near planned highways, which gave them an edge in bidding for lucrative state contracts.

After the gravel is gone there may remain a hole that the owner uses as a dump, charging by the load, and finally seals over to restore the surface and collect a third set of rents. My own grandmother sold gravel by the truckload to the Vermont Highway Department and the town of Dorset from a pit under her pasture and sugarbush on a terminal moraine, and skipped step two. A daughter later sold the hole to the Central Vermont Power System to hide a substation, as the pasture evolved into dwelling lots that a workaday eyesore might blemish. In Brentwood Bay, north of Victoria, Jennie (Mrs Robert P.) Butchart created an international tourist draw by turning the pit left from Mr Butchart's limestone quarry into her famous garden.

Meantime these valuable uses, especially the dumping, are unconventional, so many county assessors (or town "listers", in New England) overlook or undervalue them. Pennywise counties or towns that underpay assessors, and understaff their offices, pay the price when they get routinized personnel who do not know or much care how to handle unusual cases.

Some national governments reap large revenues from subsoil deposits. Conrad and Gillis in 1985 listed Chile, Thailand, Malaysia, Bolivia, Gabon, Jamaica, Liberia, Papua-New Guinea, New Caledonia, Zambia, and Zaire as especially dependent. Remember we are still treating just of hardrock minerals, not hydrocarbons, so Russia, Norway, The Netherlands, Mexico, and other such nations, and states and provinces like Alaska, Louisiana, Oklahoma, and Alberta are not yet mentioned. Papua-New Guinea retained Australian economic advisers Garnaut and Anthony, who have published on their method of identifying and taxing net economic rent, free of excess burden (Garnaut and Anthony, 1977).

In the USA, however, the Bureau of Land Management (BLM) oversees 270 million acres, and supervises leasing and mining on another 300 million, from which Congress prevents it from taking any net revenues to speak of, under the Mineral Leasing Act of 1872. 1872! This Act sprang from what Mark Twain and Charles Dudley Warner branded "The Gilded Age", under the notorious giveaway Grant Administration. It still hems us after 136 years. Governors and Congressmen from the Rocky Mountain States monitor the BLM closely, and force out administrators like Clawson (1953) and Baca (1994) who try to enforce even the weak laws we have. There are not even any local property taxes, since the land is federal and the exploiters are lessees. About 20 percent of the leased land is held by alien corporations.

One might think reform is hopeless, since the abuse has lasted so long. That however is politics. Someday we may expect that wage-earners and consumers will learn they are paying taxes to spare an aristocracy of land kleptocrats, and vote in reformers. They will not learn, though, unless someone tells them, which is our present objective. May other economists chime in!

The biggest money underground is from oil and gas. In 2006 the Chevron Corporation had 62,000 employees and reported revenues of $205 billion. That is $3.3 million per employee. We may safely assume that the average wage or salary falls well below $3.3 million a year, leaving a wide margin payable to the owners of property. A passing knowledge of the industry tells us that a large share of that property is land in several forms: petroleum *in situ,* refinery sites and use permits, tacit permission from local governments to pollute surrounding neighborhoods, Supreme Court protection against punitive damages for oil spills, sites for loading/unloading, pipeline rights of way, tank farms, parking for tank trucks, retail station sites and aprons either owned or dominated by the parent company, etc.

Not all the revenue imputable to petroleum is net income, of course, because of depletion. The NIPA statement of national income does not deduct depletion, and it should, and WE should for an honest accounting. The flip side of depletion, however, is that undepleted deposits rise in value. Additional rent income is the annual increment to values of shut-in reserves, as retail prices rise, and costs fall because technology advances. By 1980, after the first two OPEC price hikes, security analysts and accountants became concerned about the distorted picture of oil firms that developed because they do not report inventory appreciation, as other firms do. (For tax accounting, petroleum *in situ* is a "capital asset", not an inventory.) There is no entry on the balance sheet of oil firms for oil reserves. Capitalized investment is merely symbolic, and independent reserve estimates are needed to find net worth (McDonald, 1963).

Accordingly, to better inform investors, the Financial Accounting Standards Board (FASB), a private quality controller, and the SEC finally required Reserve Recognition Accounting (RRA) for 1980 reports. Here, revenue was recognized at the time reserves were determined, as opposed to when sold. So 1980 reports contain a wealth of previously hidden data on the weight of this factor. The new rule ended after just one year, under pressure from this puissant industry and a newly supportive Administration, so this brief candle from 1980 is all the light we have.

Here, is Getty Oil Company as a sample, from their Annual Report to stockholders. The increase in proved reserves in 1980 was $3.3 billion, or 3.18 times the net income otherwise reported. In 1979, the increase was $6.3 billion, or 10.4 imes the net income

otherwise reported (Getty Oil Company, 1980). The value of proved reserves at 12/31/80 was $17.2B, or 2.07 times the Total Assets of all kinds reported conventionally (Getty Oil Company, 1980, p. 37).

The reported reserves are net of royalties. Royalty owners bear no costs, so a 25 percent royalty could represent 50 percent or over 100 percent of net income. Thus, for every dollar of added reserves reported by Getty, the lessee, there is a good fraction of a dollar not reported, enjoyed by a royalty owner.

The increases were the joint results of findings, acquisitions, and price hikes; and the greatest of these was price hikes, according to Getty. One could argue the details of SEC reporting rules, particularly the myth of constant future prices. But Getty was careful to note that these estimates "should not be construed as implying in any way a price at which Getty would sell the assets." (Getty Oil Company, 1980, p. 62). A billion here, a billion there, who knows how many? But clearly reserve increments are big money, and a major part of the total income of oil firms. In one year the mere increase in the value of Norway's undersea reserves exceeded its entire national income, otherwise reckoned (Aaheim and Nyborg, 1995).

Another authority that has challenged the traditional invisibility of reserve appreciation is the California State Board of Equalization. Proposition 13 takes a recognition-upon-sale posture towards land values, for purposes of property tax assessment. But new construction enters the rolls at current market. The Board's Rule 468 treats new findings as "new construction", and also adds the increase of economic reserves resulting from higher price (Love, 1980). I am currently researching what information is available from this source.

There are several other reasons to think the rent share of oil and gas revenues is high. One is the high and rising retail price of gasoline and natural gas and heating oil. Many fields that were producing when gasoline retailed for 30¢ are still yielding nature's bounty with retail gasoline at 15 times 30¢. Another reason is the rise of royalty rates. 40 years ago the industry standard royalty was one-eighth or 12.5 percent. Now we find rates up over 50 percent, and the lessees still prospering. A third reason is the high value of company assets. Oil firms report a large fraction of the assets of Fortune 500 companies, with a much lower fraction of the employees. At one time a rare labor-intensive giant like General Motors rivaled the oil giants in sales and profits, but today GM faces bankruptcy while the oil giants continue to hold most of the top ten slots in sales, profits, and assets – but not in employees. Their high sales are produced by nature more than by man.

When an area becomes "oil-prone" the market land values rise simply because of the odd chance that someone might strike oil there or, more commonly, take a leasehold on the chance that he, the lessee, might find oil. Gene Wunderlich has written on how this "floating value" floated over vast areas of North Dakota following the Williston Basin strike (Wunderlich, 1967), tantalizing lease-hounds and sending many farm owners off to retire in balmier climes.

The Williston boom rose and fell, but today there is a new and potentially huge North Dakota oil boom based on The Bakken Formation. This is a 2-mile deep and thin but vast, vast stratum now beginning to be accessed economically by horizontal drilling techniques. Today's high oil prices have made these techniques economically feasible at last. The Bakken underlies much of western North Dakota, and also extends

into neighboring states and provinces. Anyone selling land there would ask a premium price.

All told, about 20 percent of the upland area of the USA is under lease for subsoil resources, mostly oil and gas.

More than half our domestic oil and gas now comes from under salt water in that vast empire that President Harry Truman added to the USA in 1945 when he annexed all the seabed inside a 200-mile limit. The BLM manages it by leasing it to private corporations.

Professor Walter Mead of U.C. Santa Barbara believes the BLM does a good job of extracting most of the rent for the public purse. Some others, including this writer, believe otherwise, but out of respect for Mead we will leave this moot here. Rather, let us note how lessees play the system to lower their federal tax liabilities.

For decades from 1920 to 1975 oil firms earned ill fame for milking the "depletion allowance" to avoid income taxes. There was no limit, in time or quantity or historical cost, for deducting 27.5 percent of wellhead value from taxable income. It was the quintessential loophole, deplored by everyone except the beneficiaries. In the 1970s this loophole was partly closed, to great applause and relief. In the loss of public focus that followed, lobbyists quickly replaced it with a new set of loopholes, less visible. The writer has detailed them in a 1982 paper[24]. Here, I mention just one, the expensing of leasehold abandonment.

In the nature of exploration, several leases are taken for each that proves "commercial", i.e. worth using. It is a screening process. Something like fourth-fifths are culled out and then abandoned. A reasonable person would construe the cost of the four culls as part of the cost of acquiring the one producer, and this is the industry position when explaining the high returns on the producing leases. At Prudhoe Bay, for example, the lucky winners got some $50 billion worth of oil on leases costing only $6 million (Gaffney, 1977a, p. 31). Oil spokesmen have published reams justifying this by the costs of acquiring and sifting through dry leaseholds that were abandoned.

Now if the cost of abandoned leaseholds is part of the real cost of acquiring producing ones, then it should be treated the same, tax-wise. But instead, abandonment's are expensed, along with most costs of exploration. The only outlay capitalized is that for the specific lease that produces. Thus, some 80 percent of the *de facto* cost of land acquisition is expensed at an early date. Disappointing leaseholds are abandoned regularly, as in Baltimore Canyon in 1981, with "tax reasons" given as the motive (*LA Times*, 1980).

Few other businesses have this avoidance avenue open to them on such a scale because abandonment of land is not routine in other businesses[25]. Putting it all together, the package of benefits is extraordinary: capital gains for winners, ordinary loss deduction for losers, no limits, no pooling, no recapture, no constraints on timing[26].

More fundamentally, the abandonment "loss" comes at the front end: it is really part of the cost of acquiring assets, rather than a loss on selling them. The comparable provision in other businesses would be to allow expensing 80 percent of capital and land costs. The reform literature neglects abandonments entirely, so far as I know. It is a gross oversight, especially now that lease acquisition has become the largest single outlay of oil firms.

The relative weight of lease purchase in oil industry costs may be judged by these data from the Joint Association Survey, available for 1974[27]. Lease acquisition then had jumped to 38 percent of the total spending of the industry. In 1981, one single lease sale (Santa Maria Basin) brought $2.27B in winning bids on 81 tracts. In 1980, a Gulf of Mexico sale brought $2.6B.53 These two sales were a small fraction of total acquisitions, but together added up to 86 percent as much as 364 reporting firms spent in 1974. The treatment of leasehold payments is the weightiest question in oil tax law, in dollar values.

Coal is comparable to petroleum in value, and in the degree of tax avoidance through undervaluation. In the Appalachian coal states the underassessment of coal reserves held by giant corporations and other absentees is a national scandal[28]. In the Rocky Mountain States maladministrators of the public domain have given away billions of the national treasure under transparent pretexts. To recite the details is beyond our present scope, but they are sordid to the max. If our Federal Government could not tap our wages and salaries, it would have to, and could, raise revenues from the immense natural resource values it now lets slip away to favored private parties.

3.4 Element No. 8. Novel, unseen, and unrecognized lands

Novel kinds of natural resources, hitherto neglected or not classed with land, show great revenue potential. Some examples are the radio spectrum; telecom relay sites; slots in the geosynchronous orbit; fishing quotas; quotas on production and imports and marketing; pollution permits; power drops; curb parking spaces; highway access; mooring spaces; etc.

Any kind of franchise with a territorial component is a bite, large or small, of the bundle of rights to land within the territory. Thus, the only liquor license in, say, metropolitan Nashville, would have great monopoly value. Some franchises are granted privately, e.g. by the Coca-Cola Bottling Company. They might be assessed as being in restraint of trade. Others are granted by public law, e.g. a power franchise over northern California. This could be assessed as a form of property created by law.

To catalogue and measure all such forms of potentially taxable property is beyond the scope of this paper. Fortunately, many able researchers have gone before, and we will merely reference some of their work.

3.4.1 Radio spectrum. Radio spectrum is public domain and only wants better administration and political support to yield huge public revenues. Levin long ago published a detailed and definitive work explaining the technology of spectrum use, as it existed then, with practicable ways of collecting the ever-growing rents (Levin, 1971). He was a prophet without honor, as the shroud of "private property" dropped over economic analysis. Congressman Lionel van Deerlin of San Diego championed the cause, only to be unseated by a challenger enjoying heavy contributions from established spectrum interests. Republican Presidential Candidate Robert Dole took up the cause when he ran unsuccessfully in 1996. He ran and lost without strong support from the Gingrich wing of his Party because of his concern with maintaining public revenues and avoiding deficits.

Congress and the FCC in the 1990s went through the motions of auctioning spectrum permits, but without challenging older permits. It generated publicity that

barely hinted at what spectrum is worth, while vastly underestimating its total value. It was like auctioning lots in the desert after giving away the beach-front. Now, The New America Foundation is researching the value of spectrum. Researchers Calabrese and Snider in 2003 estimated the value at $750 billion (Calabrese and Snider, 2003).

Advancing technology lets more signals be crowded on existing band-widths of the natural resource. George Gilder predicted this was making spectrum so capacious it would be worthless. Julian Simon has been saying much the same about all natural resources (Simon, 1996). However, at the same time AT&T, thinking otherwise, paid Craig McCaw $12 billion of their good money for his spectrum assignments. Gilder's position was like saying that engineering advances in big cities would devalue all the land there, by producing elevators and pumps that let skyscrapers rise. There is some logic for his case, but there is also logic against it, and experience, which tests logic, shows it has not worked out on balance the way Gilder thought.

3.4.2 Fisheries. Fisheries are of course, public domain. *Ferae naturae* have long been public under the common law, and the Public Trust Doctrine has applied to shallow waters since the time of the Emperor Justinian. In recent years the "Magnuson-Stevens" Act and its various renewals have created Individual Fishing Quotas (IFQs). These have created a new class of "parlor fishermen". The lucky recipients may now treat working fishermen, and the capitalists who supply the boats and gear, as sharecroppers. Buckley cites cases where the holder rents out his IFQ for 75 percent of the catch of cod, sablefish and halibut by longline fishers (Buckley, 1998). Professor Seth Macinko, University of Rhode Island, confirms that 50-75 percent lease shares are "commonplace". The holders generally testify that the system works well, while those excluded, although a majority, are not polled because they are no longer "fishfolk". They have joined the swelling ranks of *Untermenschen*.

Where new rents are carved out of the public domain, there is "rent-seeking". Macinko and Bromley (2002) attribute overfishing in part to fishermen having expected in the past that licenses would be given in the future based on histories of use: a solution that creates its own problem as individuals race to establish their future grandfatherhood. It is not limited to fisheries: it has happened, and still happens, wherever a government gives away its assets based on histories of use.

3.4.3 Littoral space. For fishermen, access to dry land is also vital, for unloading near processing plants, and docks, slips, moorings, or ramps. Land-based fish processors have acquired many of the new Fishing Quotas, freezing out actual fishermen entirely. Yet there is another kind of competition for the littoral. On Long Island Sound, Macinko writes that the "yachties" would crowd out the fisherfolk completely if the latter did not receive federal subsidies to help with the rent[29]. In Key West Harbor, commercial fishing and lobstering boats are nearly gone. Even recreational moorings are being squeezed out by condos with "dockominiums."

These rents run into billions. In Marina del Rey, CA, dockage for a slip may run at $30 per lineal foot per month. For a 40' slip that comes to $14,400 a year; capitalized at 4 percent[30] that values the space at $360,000: more than the boat, especially an older boat. When such a dock is attached to a riparian lot, as in Newport Beach, it adds even more to the value of the lot. Most yachts, after all, spend most of their time docked. Owners jest that "a boat is a hole in the water into which one pours money", but that is a faux complaint that is more of a boast. Boats are emblems of social and pecuniary status.

As Adam Smith said, "the chief enjoyment of riches consists in the parade of riches". For that kind of enjoyment, some holes in the water are better than others. Veblen, of course, elaborated on the theme and made "conspicuous consumption" part of the language. Dockage in the right neighborhood commands superpremia.

Many marina's are on city- or county-owned land. The operators pay rent to the owners, as they should. However, officially posted rents are usually below the market, for socio-political reasons. Old-timers are grandfathered in, and there have often been political influence and "sweetheart" deals. So there is an active gray market where newcomers buy their way in. The gray market price is, of course, the true value, and the proper basis of valuation for rents or taxes.

There are about a million boats registered in California. They all need space, 24/7. Some half of them overnight on dry land; others at docks or cheaper moorings whence the sailors row to shore. Above-average docks now rent at $14,400 a year or more, as shown above for Marina del Rey – which is far below the rents in premium spots like Newport Beach, or anywhere near New York City.

But who can fit his boat into a 40 foot dock any more? Yachts keep getting bigger. The big are crowding out the small, as the distributions of income and wealth grow more skewed, nationwide and worldwide. Everywhere it is rivalry for limited space, space, space in the right place, so rents keep rising.

In Morgan's day, a 40 feet yacht was the ultimate. Next came superyachts, twice as big; then megayachts of 150 feet or more. Now there are "gigayachts". In 2005 there were 651 mega- and gigayachts under construction, worldwide, on top of the existing fleet. The longest one is 525 feet, for the Prince of Dubai, with Larry Ellison in hot invidious pursuit. That's about the size of a British Navy "dreadnought" class battleship, which triggered off a world naval race after 1906. It is also the size of an average cruise ship, but the private yacht is all for one person and his retinue. (An oil supertanker is about 1,200 feet.) Some of the megayachts also pull tenders to house the owner's toys.

Commerce also needs vast littoral areas. The Port of Los Angeles preempts 7,500 acres, half of it water surface, including 43 miles of waterfront with 27 cargo terminals. The adjoining twin Port of Long Beach is about the same size. Most of this space is exempt from property taxes. The Port of Long Beach does not even pay rent to the City. It internalizes some of its profits by goldplating its improvements; who knows where else they go?

As ships grow longer they are pushing on the limits of harbor space and depth and passageways. Even San Diego Harbor is too small for the longest ships to turn around. Naval bases like San Diego and Alameda-Oakland and Pearl Harbor preempt and sterilize long stretches of waterfronts and water surfaces. These lands, too, are tax exempt.

Meantime many large vessels sail under foreign "flags of convenience", avoiding American taxes. Oil firms transfer profits to low-tax nations to shelter income from US taxes.

On inland lakes, frontage commands high premia. A large chunk of land value in rural regions is not based on cash flow from food and fiber, or commercial fishing, but on amenities. Wisconsin, for example, is a major playground for rich urbanites from nearby Chicago, Milwaukee, Minneapolis and St Paul. "Use-value" assessment exempts this chunk of value completely, for use-value is based on capitalizing the net cash farm income from crops.

In the Wisconsin law it is one specific crop, corn. Owners in Walworth County, near Chicago and containing Lake Geneva, are big gainers. One creative shoreline owner in Fontana on Lake Geneva divided his land into "dockominiums," each consisting of only a small lockbox on dry land, giving access to the lake. Each buyer paid $60,000. Had these titles been valid, each $60,000 lockbox could have have been assessed based on its potential corn crop.

The highest land values per capita in Wisconsin are in Vilas[31] County far up in the north woods, once dismissed as worthless "cutovers." Vilas' acid podzol silvagenic soils are worthless for corn, but sparkling lakes bedizen the County. Market values per capita in Vilas are six times those in Milwaukee. Rich recreationists and "investors" (read speculators) have gobbled up the "wild forties." Shoreline parcels are like diamonds among coal.

Salt beds compete with other uses for littoral space. One still observes the great white sheets of the Leslie Salt Company when flying over the south end of San Francisco Bay. More generally, though, great cities with their towering land prices flourish and spread in littoral areas, and expand onto the seabed in shallow waters. Many people refer offhandedly to landfill as "made land", but no man made or can make seabed or space. Some half of the original San Francisco Bay surface has been taken for urban use, including two major airports, San Francisco southeast of Market Street, Treasure Island, Foster City, and large swaths of other riparian cities. Large parts of metropolitan Boston, including Logan Airport, have been taken from Massachusetts Bay and other waters, shrinking them to the distress and loss of water users and viewers.

3.4.4 Other variant kinds of land. Some dream that the third dimension can free mankind from earthly bounds, but mankind has quickly sliced it into strata titles, take-off and landing slots, and even a few geo-synchronous orbits. Some aircraft are huge, but the small also require vast leeway for safety in the skies, resulting in routine stack-ups and delays at peak-load hours. Even orbits in supposedly infinite outer space are shrinking because one disintegrated space craft would leave thousands of fragments of space junk menacing other ships in its whole orbit, over years or decades. One bit of junk at high speeds could destroy another spacecraft, creating more thousands of missiles, and so on in a lethal geometric progression, so we cannot blithely assume that outer space is infinite. In addition, every spacecraft requires space on the radio spectrum, another limited natural resource.

Airports themselves require vast areas of 2D space, tax-exempt, near cities with high land values. Their areas keep growing as Boeing and Airbus provide us with ever-larger jumbo's. Circumnavigating even a small local airport can add 30 minutes to an otherwise short trip. Every airport also generates a surrounding "footprint" of noise and air pollution in constant conflict with the desires of residents.

Federal regulation preempts local power to tax aircraft landing slots, or tax aircraft for pollution damages, while Federal subsidies pour gigabucks into airline infrastructure, benefiting jet-setters and corporate executives and other air travelers at the expense of median Americans. Here, is advice from Professor Kahn of Cornell, the "Great Deregulator" of the airlines:

> We are pricing those scarce spaces at congested airports at times of peak use insanely [...] The landing fee at Washington National Airport, which is among the most precious pieces of ground in the universe, is 57 cents a thousand pounds. That comes to between $2.75 and $6

> for landing the small craft that my charter operator lands. And a maximum of $700 or $800 for a 727. That's crazy. No wonder you have a shortage. No wonder planes are lined up and queuing the way they do at a meat shop in Poland.
>
> They should be charging thousands of dollars for their landing. That would translate into maybe $25 or $40 a ticket. That means that the people to whom it's important to land at that very precious time and space will be able to do so without delays, weather permitting [. . .] (Bradsher, 1987).

Those figures are from 1987; we should at least triple them for 2008.

3.5 Element No. 9 Unconventional de facto *tenures now untaxed*

The basic "plain vanilla" tenure is fee simple title[32]. Most estimates of rents and land values limit their coverage to such traditional "property". They thus omit other valuable *de facto* tenures that should be part of a land value tax base, as measured by economists.

3.5.1 Land-grabbing capital. Some capital serves its owners or users to preempt public spaces and resources. An example is the wide, ever-lengthening trailer truck, whose owners finance strong lobbies to legalize their preemption of public streets and highways. Taxes on such vehicles, geared to dimension, weight, pollution, and miles driven, would be a way of collecting rent for their use of public lands – and at the same time inhibiting their growth.

Trucks are but one species of a large and varied genus that author John Keats called "the insolent chariots". Among passenger cars there are stretch limousines, beloved by VIP politicians on the crowded narrow streets of Washington, DC. More epidemic are wide-bodied, high-riding, big-tired SUVs, crowding or straddling the parking lines at shopping lots. Even "ordinary" autos loom large relative to compact cars such as pulled us out of the energy crises of the 1970s. Even compact cars intimidate, and thus preempt space from cyclers, pedestrians, the lame, the halt, the deaf, and the blind. They also clog streets and slow the movement of trolleys and buses. All of the above, of course, preempt parking space on the streets, and in free private parking lots, more than in proportion to their dimensions.

Thus, we should include all manner of vehicle taxes, fees and charges, including gasoline taxes, as ways of collecting rent-revenue. Netzer (1966) has recommended untaxing buildings *per se*, and replacing the lost revenue with "a family of user-charges." These charges would be geared to the marginal social cost (MSC) of usage, on principles of marginal-cost pricing worked out by Hotelling and Vickrey and others.

The idea of street revenues has been with us a long time. 100 years ago, single-taxers considered traction franchises as a prime example of land value. Urban single-taxers like Cleveland Mayor Tom L. Johnson, overlapping with Progressives, often subordinated simple property tax reform to the cause of taxing franchises, and/or capping fares (which is a kind of tax). For several decades now, latter-day Georgists have pointed to parking meters as examples of public rent collection. In addition to hogging space, oversized vehicles are "Veblen goods," articles of ostentation and conspicuous waste. Adam Smith favored taxing goods that served mainly "to parade riches". Even Henry George, who favored untaxing capital, agreed to this exception.

Ideally all such charges would be geared to the area and value of space occupied, rather than to the value of the vehicles, but while we move toward that goal, almost any

reasonable charge is better than none. We should count existing revenues as part of current public rent-collections. We would count huge potential revenues, which far exceed current ones, with taxable capacity that is untapped, but tappable.

Many voters perceive such taxes to be novel impositions by governmental tyrants: such is the recent electoral reaction in Virginia and California. Some hyper-libertarian economists brand such taxes as "interventions", a common von Mises censure, although they might rather be likened to a sports referee penalizing a foul. Perhaps, this public has been conditioned by decades of P.R. from "the road gang", consisting of auto firms and dealers and bankers, oil firms and dealers and bankers, cement firms, highway contractors, land speculators, tire companies, auto glass and paint and component companies, auto insurance companies, certain law and engineering firms, repair shops, and the whole train of allied businesses and professions integrated horizontally, vertically, and in conglomerates. A highly audible PR agent is radio voice Rush Limbaugh, whose monologues urging us to drive bigger vehicles and consume more gas merge smoothly into his commercials for GM.

In fact, 80 years ago these "novel" charges were at higher rates than today, and contributed a larger share of state revenues, even though autos and trucks were rare and roads not crowded. "Motor fuel taxes dominated state tax revenues from 1927-45, before being superseded by the general retail sales tax." (Reeb and Howe, 1994).

Veblen, if writing today, would surely see our obeisance to otherwise ordinary people in big cars as an atavism harking back to a peasant's awe of the armed knight on horseback. Our totem of "private property" makes a small person as big as his car, whose space needs assert *lex fortioris* and command priority. Social and economic thinking needs to overcome the psychology that "the car makes the man".

The revenue potentials are impressive. There are about 200 million autos and light trucks in the USA. As a rough cut, say the mean car runs 30,000 miles a year. That is 6 trillion miles. At 20 mpg, that uses 300 billion gallons. Taxing each gallon at $1.00 would yield $300 billion a year. That is from autos and light trucks alone. Other vehicles would add more. Long, wide, unwieldy, space-hogging 18-wheelers with fishtailing trailers and sleep-deprived drivers could rightfully be charged at higher rates, and of course, each big-rig runs several hundred thousand miles a year. Each right-angle turn preempts two lanes; each mile driven wears the pavement more than lighter vehicles.

Higher tolls on bottlenecks, bridges, tunnels, CBD streets, and queued-up confluences, using modern transponder technology, would add more revenues. Vickrey has estimated total social costs of operating autos in CBDs at figures several times higher than the values of the cars. Higher charges for curb parking would add yet more, as Shoup has documented. They should be many times higher in CBDs and other high-rent areas. If cities merely charged for curb parking what private garages and lots already charge for offstreet parking, revenues would soar.

It might be thought that taxing transportation would lower rents on the served lands, offsetting the rent revenues from charging vehicles. There is a grain of truth in that, but more error. Economists working with traffic engineers have established that such charges would actually increase the capacity of streets to move traffic. Shoup's work on curb parking has redocumented this recently. The major social cost imposed by each vehicle is interfering with movement of other vehicles, and of pedestrians.

Roadhogging vehicles are only one genus of land-grabbing capital. Another kind is the motorboat. Moving boats preempt much more space than their little area and volume. One noisy motor boat can steal the peace from an entire lake. Fast power boats occasionally maim and always frighten off swimmers, frighten lifeguards into roping swimmers into limited areas sized for children, drive away those preferring quiet, make wakes to disrupt other boaters and wildlife, and leave oil slicks. Such boats in such places represent a kind of capital we should define and recognize as a class: "land-grabbing capital". Capital like that imposes a *de facto* partial tenure over the nominally public and common water surface, and part of the foreshore as well. Failing direct controls, it would make sense to tax such capital heavily – not as capital *per se*, but for the land and water surface it takes[33].

The same rule should apply to tankers with single hulls, the kind that are prone to spill frightful volumes of oil. Present remedies and constraints working through the courts are totally inadequate. The owners of the ill-famed Exxon Valdez, for example, in June 2008 were still in court trying to reduce damage claims for their 1989 spill in Prince William Sound. They headed for the US Supreme Court, which meantime, in the 19-year wait for justice, has been packed with judges more sympathetic to their viewpoint. On June 25 the High Court cut the punitive damages down by 90 percent. Highly paid lawyers working for deep-pocketed polluters exhaust the resources of ordinary plaintiffs by working the legal system indefinitely, at great cost.

There have been 66 comparable spills. Many economists, sadly, clock in on the polluters' side. First they "teach" everyone the Coase Theorem which equates Exxon's right to slime man and nature with the locals' rights to stay clean.

Then they go further and raise Exxon's rights above the locals'. What is the new sleight-of-hand? It is pushing the "willingness to pay" (WTP) standard of "contingent valuation" to price the damages, instead of the "willingness to accept" (WTA) standard. WTP limits damages to what the locals would be willing and able to pay to have a clean beach, as though they had no such right before the spill; WTA sets damages at what sum the locals would require of Exxon to have sold them *their* clean beach, a much higher figure[34]. We consider this further in Element No. 14, below.

Here, are examples of some other kinds of land-grabbing capital:

- Aircraft preempting airspace, and landing/takeoff slots.
- Satellites to meet usage requirements for allocations of spectrum and slots in orbits.
- Hunting and fishing equipment of superior power.
- Financial capital used to absorb operating losses while establishing required usage of future rent-yielding resources.
- ATVs and snowmobiles preempting open lands, public or private, from other users.
- Deepwell water pumps, sucking up more than their share of "fugitive" percolating underground water, and establishing histories of use to grandfather in the pumper later, when pumping shall be prorated.
- Weirs to divert surface waters, to establish histories of use for future prorationing.
- Capital in fishing boats and nets, used as basis of prorating licenses.
- PA systems.

Radio pundit Rush Limbaugh speaks to a bumptious anarchistic streak in the American psyche, roughly congruent with Chicago and neo-Austrian schools of economics. He advises those who feel crowded by others' "Urban Assault Vehicles" to get their own, and fill them with Exxon gas, the bigger the better, to fight back in the self-reliant way that made America great. By analogy, those troubled by noise from loud parties with PA systems should fight back by buying and turning up their own PA systems. My noise offsets your noise? It should be obvious what kind of "positive feedback loop" that would create, and whither it would lead, and where, with respect to vehicles and fishing boats and deepwell pumps and handguns in public housing projects and AK-47's in drug wars, it has led.

3.5.2 Zoning. Zoning is another form of quasi-tenure. To have the right zoning in the right place at the right time is often worth more than the land without the zoning. Favorable zoning should be considered part of the land tax base. Sometimes it is. Hagman and Misczynski's seminal work on *Windfalls for Wipeouts* (Hagman and Misczynski, 1976) proposed taxing favorable zoning as property[35]. So did Clawson.

Unfavorable (low-density) zoning is usually a reason for lowering assessed values to the maximum value of uses that the zoning allows. This becomes a master tax dodge when the *de jure* zoning is only nominal and is easily broken. It is normal for sales prices of land zoned for a lower use to reflect buyers' expecting or hoping to convert it to a higher use. In order for the property tax to serve its function of taxing unrealized capital gains at the time they accrue, it must be based on market values of ripening land in ecotones ("zones of supersession" is the more cumbersome expression used by land economists).

Free trade zones around airports or ocean ports impart a premium value to land therein, based on an exclusive privilege that should be taxed as rent[36]. Firms located inside the zone may import parts duty-free, assemble, and export them. The idea has spread, so now we have "Enterprise Zones" that allow special city and state aids to industries in the chosen lands. We have the popular tax increment financing (TIF) zones wherein new buildings are tax exempt. When the resulting upsurge in land values raises revenues they are all plowed back into the TIF zone, depriving other parts of town, even when the new uses are "locally undesirable land uses's" (LULU), and even when the funds would be more productive elsewhere. It is a promising idea that has been narrowed and perverted to benefit a few, in the sadly common American way. Landowners inside the TIF zone get the increment; others get the excrement.

3.5.3 Grandfathering. The grandfathering custom says that land uses, once established, may be continued, even though they become illegal for others similarly situated. This would make more sense if the grandfather right itself were taxed as valuable real estate[37]. As it is, it creates an incentive to establish a LULU early on, before it is banned, to establish one's future grandfatherhood. We have seen in (Section 3.4.4), above, how Macinko and Bromley attribute overfishing to this effect.

3.5.4 Licensing. We have covered licenses to withdraw surface waters under the doctrine of prior appropriation. In the dry western states water *per se* is often worth more than dry land. As water grows more scarce and limitational, the value of these licenses might grow to rival that of land surfaces themselves.

Other licenses are so many we mention just a few, to exemplify the genus. In Riverside County, California, a liquor license trades for $70,000. There are many kinds of licenses for selling special goods and services that are in general prohibited:

gambling, prescription drugs, medical services, taxi service, vending on city streets and sidewalks, etc. Numerous other licenses are required to practice professions or run businesses that are thought, rightly or wrongly, to require supervision or certification or limited entry. Some of these are of only trivial value, but others are very dear, and important to include in any measure of rent as a base for public revenue. All of them are territorial, in force only within the jurisdiction that issues them. That makes them like a covenant over all land use in the jurisdiction, hence part of the land tax base.

By general agreement, patent protection has far outgrown its public purpose of fostering useful inventions. The system has been gamed and abused at least since Edison, an early patent bully. Copyright protection has gone to foolish extremes, filled with abuses. There is a wide literature covering these subjects.

3.6 Element No. 10 Salvaging rents now being dissipated

3.6.1 Dissipation by open access and crowding. We have seen how open access to streets and highways and curb parking dissipates the potential rents that arise from crowding. In general, "crowding" is a shorthand way of observing that a resource or facility is used in the stage of increasing social costs, where MSC is greater than average social cost (MSC $>$ ASC). The excess of social cost over private cost is the effect of crowding.

Early single-tax traditions arose in expansive pioneering conditions where many public facilities were oversized, in expectation of growing demand. Even if they were originally undersized there was room to override them with bigger, newer versions of lower average fixed cost. For example, some early dams were drowned out by higher dams below them.

The philosophy and formal theory of "Marginal Cost Pricing", developed by Hotelling, Vickrey, and others, tells us that, under excess capacity, MSC is low, and below ASC. In these conditions we should tax rents from the benefited lands to pay for public facilities like roads and utilities. Often the rough-and-ready formula, requiring no theorizing, has been to finance the fixed capital with general obligation (GO) bonds (liens on land), resorting to user charges only to meet variable costs. Often the latter were lower than the cost of collection, and so not imposed at all.

Such a tradition dies hard, both in practice and in doctrines. Free open access has been a substitute for a more egalitarian tax system, a consolation for losers in the race to fence off land. Thus, many fight user fees at overcrowded National Parks thinking that parks serve to assuage the poor in kind for fencing them out of the mass of private lands. Hunting and gun lobbies play to the same tradition; canny forest owners, to keep their taxes low, have long drawn needed political support from hunters by allowing them access. Well-head price controls on oil and gas were imposed for years in the USA, and still are in some other countries, with the feeling that there is a public equity in subsoil resources found under private lands.

Now, however, many facilities are crowded, hence in the stage of increasing ASC, where MSC $>$ ASC. Roadways are jammed and gridlocked; water supplies are short; power "wheeling" (transmission) is a bottleneck, and usable plant sites are hard to find. These are land shortages: widening city streets nibbles on the very lands the streets are there to serve; water is economic land, i.e. a limited natural resource. A narrow copper wire may not seem to need much space, but high-voltage power lines take up ROWs wider than streets and highways as they criss-cross city and country lands; power

stations pollute surrounding airs and waters – limited natural resources – without compensating the neighbors, who of course, oppose having them near, on the NIMBY principle. Nuclear Generating Stations impose so much risk over such a wide area they could not even afford to exist without the special protection of the Price-Anderson Law. It exempts them from public liability.

Thus, facilities that once mainly shed rents on other lands now also yield rents themselves: the excess of price over marginal cost. Sometimes the undercapacity is short-run only and is curable by adding or upsizing hardware. Often today, though, it is long run average social costs (LRASCs) that are increasing with demand, because the land or resource input is the main limiting bottleneck.

In addition, many natural resources are crowded beyond their carrying capacity, giving an impression of Malthusian scarcity. Many economists quickly embraced Hardin's "Tragedy of the Commons" phrase to express the idea, which is now common coin. Sadly, most writers use this tragedy just to rationalize privatization, rather than the taxation that should accompany it. Major think-tanks, supposedly benign and objective, are funded by the very interests that oppose taxation.

There is high revenue potential from user charges on road crowding, water withdrawals from surface and underground sources, minerals extraction, air and water pollution, spectrum use, fish catches, billboards, and so on. Some of these are major additions to land revenues. For example, California, a major oil-producing state, does not even have a severance tax, not even a token. In the fiscal crisis and Recall melodrama of 2003, 136 candidates ran for Governor, but only one (Arianna Huffington) even mentioned it, so total is the mental blackout. As for pollution charges, we have seen towering estimates of their revenue potential from Barnes, Costanza, and others (Section 3.3.2). States already raise heavy revenues from taxing tobacco.

Products that cause damage, anti-social behavior, and inflated demand for publicly-subsidized medical care may reasonably be taxed. Our most lucrative agricultural industry, pot, would provide high tax yields, should we decide to legalize it instead of trying vainly to suppress it. It is worth remembering that before the 16th Amendment, when excise taxes supported the US Government, liquor supplied a high fraction of all the revenues. As a by-product we would save the high public costs of the "narcocracy," the counter-industry that depends on drug-users for its very existence. We would save a substantial fraction of the money spent on jails and warding. This would make a splendid example of trading "Negabucks for Megabucks."

3.6.2 Dissipation by rent-seeking while tenuring. It is the custom for governments to give away valuable lands and resources to the first users or settlers, conditioned on priority and continued use. The resulting waste offsets much of the future rents, by premature use and racing to be first. Settling the American west under the Preemption and Homestead Acts in the nineteenth century is a case in point, well documented in song and story (but without much economic insight). Here, much of the waste took the form of human suffering. The wives of Norwegian immigrants, forced into isolated farmsteads during the awful winters of Minnesota and the Dakota's, suffered terribly. Thorstein Veblen, a child of such immigrants, alludes to the problem in his *Absentee Ownership*. Ole Rolvaag's novel, *Giants in the Earth,* detailed the psychic costs for the sympathetic readers of the great depression. Teachers assigned it to high school students, but now it is lost in the snowdrifts of time: how quickly we put aside the costs born by others, which later generations can hardly understand.

Meting out licenses to the radio spectrum in "lean territory", subject to use requirements, is a similar story in a new technological environment. Operators are willing to lose money for years in order to firm up future licensure as people and demand spread out, as they have been. Tax-wise, these losses are deductible as current expenses, although in fact they are costs of acquiring land from the government, land of permanent and rising value. They are also a pure social loss, both private and public – a public asset turned into a public and private liability. This whole tragedy would be turned around by the simple measure of taxing the licenses, turning "Negabucks into Megabucks" for the Treasury.

Insider economists tuned into rent-seeking some 30 years ago, it seems – Anne Krueger (1974) usually gets the credit, although Gordon Tullock claims priority from 1967. At any rate, the phenomenon and therefore the concept have been around a long time. Their examples are safely trivial, in the manner of academicians. None of them says much about the monster wastes involved in racing for prior rights to water, to fisheries, to spectrum, to petroleum, to homesteads, and to other natural resources as the trustees of our public domain privatize it in what Kahn calls "insane" ways.

Here, is the example of water. Scarce waters, where demand exceeds supply, yield rent. With demand growing, even abundant waters, where demand is now low, are expected to become scarce, and yield future rents. Waters currently rentable are expected to yield still higher rents. In anticipation, persons and organizations with an eye to future rents are ready to do what is needed today to lay claim to future waters.

"What is needed today," by case law, is to divert water and put it to "beneficial use." This is the prevailing appropriative doctrine of water law, under which no one pays a state to take its water, now or in the future. Rather, one acquires a permit that ripens into something resembling perpetual ownership, by the very process of taking. In practice, "beneficial use" is a token, an economic bad joke. Taking is the essence. Local water boosters call this "foresight," and hail it as a cardinal virtue. "Use" may be wasteful, and often is.

This appropriative doctrine is the *locus classicus* of "rent-seeking,", i.e. distorting present investment to secure future rents. The motive is to divert, develop and half-use water before its economic time, to lay claim to its future.

The concept of "prescriptive rights" is even more perverse. Here, ownership is established essentially by "adverse use,", i.e. interfering with someone else's use. The taker's beneficial use becomes even more incidental. In 1949 the California Supreme Court triggered a "race to the pump house" (Krieger and Banks, 1962) when it proclaimed the doctrine of "mutual prescription" for groundwater basins (*City of Pasadena* v. *City of Alhambra, 1949*). This "encouraged defensive ground water overdrafting by pumpers in other basins who anticipated ground water adjudication" (Gleason, 1977).

Modern privatizers tell us to firm up property rights. Accepting existing entitlements is their first step; then, and only then will the market work its magic. They glide too easily over the process of firming up. They offer no process but giveaway to privatize resources. Yet, claims to water are constantly being made, expanded and firmed up, and any giveaway process violates the virtues a market is supposed to possess. Indeed, giveaway is the essential precondition for "rent-seeking" behavior which, in other realms, economists deplore. The rule for prior appropriators and

adverse possessors is particularly counterproductive: "Waste today, want not tomorrow[38]."

There is a better way. A policy of taxing water withdrawals (as advocated herein), based on the opportunity cost of water, will do the job without giving away the public domain to private usurpers (Gaffney, 1992b). That does mean our own governments must take a hand and assess the market value of water, probably using existing county assessors. It is that or the absentee speculators. Thus, far, the choice has gone to the speculators; the results are neither just nor efficient.

3.7 Element No. 11 Rent gains from abating other taxes: the concept of all taxes come out of rents (ATCOR)

The meaning and relevance of ATCOR is that when we lower other taxes, the revenue base is not lost, but shifted to land rents and values, which can then yield more taxes. This is most obvious with taxes on buildings. When we exempt buildings, and raise tax rates on the land under them, we are still taxing the same real estate; we are just taxing it in a different way. We will show that this "different way" actually raises the revenue capacity of real estate by a large factor. There is much recent historical experience with exempting buildings from the property tax, in whole or part. It has shown that builders offer more for land, and sellers demand more, when the new buildings are to be untaxed. The effect on revenue is the same as taxing prospective new buildings before they are even built, even though the new buildings are not to be taxed at all.

Land value is what the bare land would sell for. It is specifically and immediately most sensitive to taxes on new buildings, and on land sales, as well as to new and stricter building codes or zoning that often discriminate against new buildings. Lowering the income tax rate on the prospective capital gain in land sales contributes also to the marathon runup of our times in land prices.

3.7.1 Examples of ATCOR from experience. The writer has assembled data from the histories of New York City, Hong Kong, Taiwan, major cities in Australia and South Africa, San Francisco after the fire, Chicago in its Progressive Era, California Irrigation Districts after the L.L. Dennett reforms of 1909, Vancouver under eight-term Mayor Edward Denison "Single-tax" Taylor, Cleveland under Mayors Tom Johnson and Newton D. Baker, Toledo under Mayors Samuel Jones and Brand Whitlock, Detroit under Mayor Hazen Pingree, Portland, Oregon, under the indirect influence of Wm. S. U'Ren[39], Seattle under Mayor George Cotterill, Houston under the ministrations of single-tax Assessor J.J. Pastoriza, San Diego under Assessor Harris Moody, and much of western Canada in the era of "Single-tax Taylor" (Gaffney, 1970a, 2007b).

In all those cases untaxing buildings while uptaxing land resulted in higher land prices. The writer has documented this in the work cited. Professor Robert Murray Haig of Columbia University documented it in his 1915 report on the exemption of improvements from taxation in Canada and the USA (Haig, 1915). Haig actually faulted the system for failing to hold down land prices, as some of its champions had erroneously hoped and promised it would, but the relevant point here is that it raised land prices, the new tax base.

New York City exempted new dwellings up to a moderate ceiling value for ten years, 1921-1931. The result?:

> There has been a tremendous increase in land assessments since 1920 in all the boroughs [. . .] The resumption of building has greatly increased the taxable value of the land, which is not included in the exemption [. . .] Tax exemption is creating aggregate taxable values *to an extent heretofore unknown in the history of any municipality added* [40] (emphasis added).

We also observe the ATCOR principle at work in many analogous situations:

- Lowering the corporate income tax rate raises stock prices.
- Lowering interest rates raises real estate prices.
- Commercial rents are multipartite, and a lower share of gross revenues means a higher fixed rent.
- Oil leases are multipartite, and a higher fixed royalty rate means lower bonus bids.
- Wartime taxes depress land prices, while peace dividends let them rise again. There is a long world history of peace dividends followed by land booms.
- The resource curse effect: an influx of mineral revenues, obviating other taxes, leads to land booms.
- The remarkable productivity of the US income tax when wages were exempt, 1916-1930, and we paid for World War I with less deficit finance than any other belligerent.
- The utility-rate effect: lower rates mean higher rents and land prices, as observed in practice and explained in theory by Hotelling, Vickrey, Stiglitz, Feldstein, and others.

3.7.2 The logic of ATCOR. The thesis that all taxes are shifted to landowners follows from three major premises. One, the supply of land is fixed inside every tax jurisdiction, by definition. Two, after-tax interest rates are determined by world markets, so the local supply of capital is perfectly elastic at a fixed, after-tax rate. Three, labor is also quite mobile – that is how most of our ancestors got here, and then migrated and continue to move all over North America, not to mention switching jobs in the same city. Many of the "top ten cities" of 1900 can hardly make the top 50 today, while many of today's top ten were not even on the radar in 1900.

In Ricardo's time much English labor was too poor to emigrate easily, but he and the English Exchequer observed that labor subsisted at so low a level that it could not bear any taxes. Taxes in the form of the corn laws that raised the price of bread were shifted to employers who had to raise wages to keep their workers alive. This is an essential link in classical political economy. Today some 30 million Americans experience hunger and malnutrition, as in Ricardo's time. Today, though, they also have the choice of surviving on welfare, miserable though that is, again making for an elastic supply.

Keynes could assume an elastic labor supply drawn from a large pool of unemployed – his version of Marx's "reserve army". Thus, in Keynes' demand-side macro model higher aggregate demand makes more jobs rather than raising wage rates. This model dominated macro thought for 50 years, and keeps popping up still in the implicit models behind verbal analyses that supposed "supply-siders" deliver. The supply of "work" (as opposed to "labor," defined as so many warm bodies) is highly elastic so long as there are unemployed. When we find work for the unemployed and

underemployed, labor gains without its costing land or capital anything. Property even gains because of lower dole costs, lower crime costs, and lesser social dissatisfaction and rebelliousness. The enhanced psychic benefit of universal job security is also worth a lot. When Keynesianism was in flower, many alleged that the social cost of putting the unemployed to work is zero.

Nowadays Keynes is out of style with the dominant anti-labor schools. Unemployment was the bogey of the Great Depression era, and full employment the master goal, but times have changed. Fashionable Chicago-school *patois* now makes unemployment simply "leisure", just another good one consumes like butter or shampoo, a voluntary choice, a matter of personal "taste". And yet leading Chicagoan Gary Becker freely postulates elastic labor supplies when he routinely blames unemployment on minimum wage laws (Becker, 1995). "It's simple", he opines. "Hike the minimum wage, and you put people out of work"[41]. That assumes an elastic labor supply, as workers move in and out of the "reserve army of the unemployed".

Were we to tax land more and production and consumption and capital less, real wage rates would rise, as better land use and more investing increased demand for labor and lowered product prices. This was the theme of *Progress and Poverty*, and the primary goal of George's reforms. He likened the land market, beset by imperfections like speculation, to an unconscious universal cartel withholding much good land from full use, forcing labor and investors out to worse land.

That was even before we had heavy payroll and income taxes on labor. Now, it is entirely possible for banishing such taxes to let after-tax wage rates rise while before-tax wage rates do not. There is ample "room" in the present tax system for that to be a possible outcome.

In the event, however, that real wage rates should rise enough to absorb some of the gains from tax reform, it would not lower tax revenues from land. The rise of wages in the Georgist system implies a rise of GDP. The rise would result from removing the excess burdens of current taxes, which in turn will first raise the marginal productivity of labor. That would ensue from opening the "internal frontier". One can also view that as ending the artificial scarcity of land. This means that workers who now each add, say, $20,000 a year to GDP in menial tasks, or struggling on marginal land, would instead add $40,000 a year each. While this would redistribute income against rents, much of the increase would come from a net rise of GDP.

The net rise of GDP will raise the demand for land for residential and recreational (R&R) uses, because land for R&R is a "superior good". That means that doubling incomes more than doubles demand for land for R&R. Adam Smith observed that in 1776; George saw it in 1879 (George, 1879), and we have illustrated it above for modern times. Lowering after-tax rents will, to be sure, lower the R&R demand for land, but raising other factor shares, including rates of return on real investing, will replace the lost demand from any given GDP. The rise of GDP will more than replace it.

Even in small closed economies, there is also another kind of "reserve army", that of capital, misallocated or underemployed. This is because the cash return is taxed, so owners park slack money in consumer capital yielding untaxed implicit income as "service flows", and in eleemosynaries, foundations, government works, sterile personal property like yachts, "bling-bling" and arty property like precious gems and overpriced paintings, and relatively undertaxed housing. From this would spring a large supply, if all uses of capital were untaxed, because all capital is fungible each

time it turns over. Here, is more elasticity in the supply of capital, even in a closed economy[42]. During World War II civilians in the USA and other belligerents lived a massive example of how people can draw down consumer capital to meet an emergency need. For 15 years up to 1946, Americans lived in dwellings built before 1931, which simply aged without replacement.

Most modern economists observe elastic capital supply, but only in selected contexts. They write of world markets, rapid transfers, and arbitrage. But early anti-Georgists, in their zeal to protect land from taxation, left a heritage of justifying taxes on capital. When Seligman was bending the twig of modern tax theory, he expressed his point memorably: "There is no fund of capital floating in the air to be brought to earth by the magic touch of Mr George"[43]. Today, Chicago tax economist Arnold Harberger replicates Seligman by promoting his "new view" of the property tax wherein taxing capital nationwide does not lower aggregate capital. This leads to the anomaly that Chicago economists favor taxing capital, while dismissing those who would untax capital as "radical" and "confiscatory". Images, connotations, and associations have trumped meaning and reality.

Modern Marxists have their own way of following Seligman. Untaxing new investing appears to raise investing, they allow, but they hold that this rise is really just borrowing from the future: more today means less tomorrow. Over time, they say, the flow is a fixed "lump", undiminished by taxation. I will show, rather, that the "lump" is full of yeast and can grow:

- by capital formation;
- by better allocation of capital;
- by import of capital, and especially;
- by faster turnover of capital.

This last point played a major role in the classical political economy that derived from Turgot and Physiocracy, and preoccupied Marx himself in Book II of Das Kapital, and Keynes in the *Treatise on Money*, and various Austrian economists over 150 years. Austrians Roger Garrison and Mark Skousen expound it ably today, but many conventional economists today do not seem to get it. They rather follow Clark, Frank Knight, and George Stigler, who did their best to bury the idea. In matters of taxation most economists rallied behind the 1986 tax reform where the catchword was "uniformity". In theory that meant tax all sources of income at the same rate, removing all Heller's incentives for new investing, even though Ronald Reagan had restored them in his first administration.

In practice 1986 was even worse, it meant sunsetting Heller's reforms while keeping and expanding most loopholes for land income. For one brief year, "capital gains" were taxed at the same rate as "ordinary" income, but President George H.W. Bush devoted his entire administration to restoring the difference. It was so important to him that he sacrificed many other objectives, including a second term, to achieve a difference of just one percentage point. Why? It was the thin end of a wedge that has now driven the tax rate down to 15 percent in 2008.

Land value is based at all times on the "opportunity cost" (or best alternative use) of land in its highest future use. The value of this alternative rises by a big factor when future buildings are to be untaxed. The tax relief is tomorrow, but the land value rises

today, however sorry and shabby and dated the buildings in place now. This calls for drastic reassessment of land today when future buildings are to be exempted. The effect on revenues is like taxing future buildings before they exist, although they are not to be taxed at all – indeed, Because they will not be taxed at all. This is the market logic behind what happened in the growing boroughs of New York City in the 1920s, and caused Clarence Stein to exclaim, "Tax exemption is creating aggregate taxable values to an extent heretofore unknown in the history of any municipality".

In addition, more compact settlement, a child of the new policy, would create new rents via the synergies that are now aborted by scatter.

3.7.3 The ATCOR tradition in economic thought. What we call ATCOR was central to the thinking of the French économistes of the eighteenth century Enlightenment. Economists today, if they are aware of it, refer to it by their name, as the "Physiocratic theory of tax incidence". Jacob Vanderlint and John Locke preceded the French, who in turn spread the idea widely among the classical political economists.

Adam Smith, a student of Turgot and Quesnay, deplored the "indolence of landowners" that keeps them from seeing the principle, for then they would see that they hurt themselves the most by shunting taxes off land and onto labor, capital, trade, and production. Taxes on useful activity are shifted to rents, he observed, and more: such taxes impose excess burdens that are also shifted to rents (a point we take up next). Other classical economists, with varied emphasis, saw the same points. (For a reservation about Smith's point, see Section 3.9.4).

More recently we find the same insight in works by Douglas, Bronson Cowan, Ebenezer Howard, David Bradford, Dick Netzer, and others[44]. Harold Hotelling and Vickrey have made much of how lower transit and utility rates are capitalized into higher land values, and a few prominent modern economists like Feldstein and Stiglitz have followed Vickrey in writing on "The Henry George Theorem". Many other economists, sad to say, spin out their theories innocent of the ATCOR principle and the premises behind it, for they are trained to screen out any thoughts based on distinguishing immobile land from mobile capital.

3.7.4 The muddied waters of modern theory.

3.7.4.1 Forward shifting of taxes. Many economists have all taxes, like an excise tax, imposed on a sale of a "commodity". Then it is split between amorphous buyers and sellers. At no point do they distinguish among the factors of production on the "supply curve". They make land supply as elastic as any other because land can shift among uses. At no point do they face the basic premises of ATCOR, that land is fixed inside any taxing jurisdiction, by definition, while labor and capital in the aggregate are highly elastic.

Musgrave, who trained and swayed so many prominent tax economists of today, applied this model to the property tax on housing[45], as though a property tax on the land in housing is automatically shifted to tenants. It is what Howard Jarvis seized on in 1978 when he promised tenants that lowering property taxes would automatically lower their rents, since property owners, as he put it, do "not pay one cent" in property taxes, but shift them all to tenants. As soon as Proposition 13 passed rents shot upwards, and have never looked back (except in the volatile micro-market of cyclical Silicon Valley).

This is one result of displacing production theory by price theory in economic doctrines. In production theory you would assume elastic demand, and focus on the

effect on factor proportions (changing productive processes and products, *à la* Kneese and Bower).

3.7.4.2 Making capital stand still. John B. Clark, who devoted much of his career to abusing Henry George, equated capital and land by the device of modeling only a "static" economy in which the supply of capital is fixed, by assumption[46]. He devoted another chunk of his life to chipping away at Eugen von Böhm-Bawerk for the Austrian solecism of focusing on how fast capital turns over. Clark made a point that capital does not turn over at all, thus again helping to erase a difference of capital and land. The meaning for tax policy, driven home by Clark's colleague and Chair Seligman and by Charles Spahr, is that we should not untax capital while taxing land.

Chicagoan Arnold Harberger disagreed with Musgrave *et al.*, but by an equally fallacious route that he and others modestly called "the new view" of property taxation as they revived Seligman, Adams, and Clark. Harberger has the supply of capital fixed, like land, again melding land and capital. This is the Chicago-school position.

3.7.4.3 Abusing the Ramsey rule. Ramsey, mentored by Pigou, in 1927 published a Rule for avoiding excess burdens in taxation. The Rule is that taxes should be inversely proportional to elasticities, whether of supply or demand. Putting it positively, taxes should be higher on tax bases that cannot escape the tax. This Rule leads directly to land value as the best tax base. Ramsey, a cautious young academician, left it to his readers to see that point, but then died young, so there it rests. The point, however, is plain as day (Ramsey, 1927).

Most of his readers, however, failed him. His Rule has become a standard feature of works on public finance, but the authors leave out the supply side. McLure and Zodrow, for one example of many, cite Ramsey as saying that tax rates should be inversely proportional to demand elasticities (McLure and Zodrow, 1994), never mentioning supply. The result is that many well-read and well-meaning economists believe the Ramsey Rule applies to demand elasticities only.

The rare correct reference is by Joseph Stiglitz, who writes that the "Ramsey tax rate is proportional to the *sum* of the reciprocals of the elasticities of *supply* and demand" (emphasis added) (Stiglitz, 1986, pp. 403-4). Some readers' eyes may glaze over at the verbalized mathematics, but think about this one. Stiglitz mentions both demand and supply. The supply elasticity of land is zero; the reciprocal is infinity. So the rule leads us right to an infinite (or very high) tax rate on land.

Consistently, Stiglitz adds that:

> [. . .] the burden of the tax on capital is not felt, in the long run, by the owners of capital. It is felt by land and labor [. . .]. in the long run, workers will emigrate [. . .] this leaves land as the only factor that cannot emigrate [. . .] the full burden of the tax is borne by land owners in the long run. [. . .] While a direct tax on land is nondistortionary, all the other ways of raising revenue induce distortions (Stiglitz, 1986, pp. 567-68).

The Rule goes on that nothing should be taxed at all if there is an alternative tax base whose supply or demand is more inelastic. Here, is Pigou, Ramsey's tutor:

> By analogous reasoning it can be shown that, when one source of production yields an absolutely inelastic supply, [. . .] a given revenue can be raised with less sacrifice by concentrating taxation upon this use than by imposing uniform rates of tax on all uses [. . .] If there is any commodity for which either the demand or the supply is absolutely inelastic, the formula implies that the rate of tax imposed on every other commodity must be nil, i.e. that the whole of the revenue wanted must be raised on that commodity (Pigou, 1928).

Allyn Young, reviewing Pigou in 1929, quotes him that tax rates should "become progressively higher as we pass from uses of very elastic demand *or supply* (emphasis added) to uses where demand *or supply* (emphasis added) are progressively less elastic." Young continues, "This suggestion is joined (by Pigou) to Mr Ramsey's findings (Young, 1929; Musgrave and Peacock, 1959). Allyn Young, unlike modern text writers, had no problem understanding Ramsey and Pigou and citing them straight.

It appears that Pigou and Ramsey were willing to follow their predecessor Alfred Marshall and endorse the ideas of Henry George, provided they could do so in a suitably obscure and indirect academic way[47], not mentioning George, and avoiding all the slings and arrows their colleagues, and Marshall himself, had once directed at George *ad hominem*.

What about zero demand elasticities (vertical demand curves)? Are there such things? If there were, each one would make an infinite tax base. It would mean that we could raise tax rates to the blue sky, and buyers would not slack their purchases but pay whatever the seller charged. Obviously that cannot be. Vertical demand curves are conceivable within short reaches of a demand curve. Above that, high prices cut demand by impoverishing buyers. In Economese this is an income effect. That is, a high tax taken from a buyer lowers her real income (and wealth and liquidity, too) so that even if she is a, say, drug addict, buying compulsively at any price, she is soon broke.

3.8 Summary on ATCOR

The revenue capacity of land, when it is substituted for other tax bases, is comparable to current revenues. Owing to efficiency effects, and renewal effects, it is actually higher, as shown next in Element No. 12. The major reservation is that the supply of labor is not totally elastic, so some of the revenue gains may be "lost" in higher wage rates, but on the whole higher wage rates are socially desirable, and serve to lower many public costs as for welfare, policing and jailing, aggressive military spending, make-work projects, etc.

3.9 Element No. 12 Gains to rent from removing excess burdens: the concept of EBCOR (Excess Burdens Come Out of Rents)

3.9.1 Logic of the EBCOR effect. "Excess Burdens Come Out of Rents" (EBCOR), so removing them adds to rents. Alfred Marshall saw that clearly, but his cautious motto that "Nature makes no leaps" trapped him in a creeping marginalism that still confines conventional neo-classical analysis. There are important marginal benefits from removing excess burdens, it is true, but the greater benefits are more than marginal because they entail quantum leaps from lower to higher uses of land. Again, these benefits accrue to rents and land prices.

A common neo-classical saw is that public policy is a tradeoff between efficiency and equity. Applied to land tenure that identifies "equity" with Hardin's idea of "the commons", with its tragedy of crowding and depletion. Applied to taxation that identifies "equity" with progressive income taxation, with its disincentive effects and misallocation of resources. Neoclassicals urge us to give up common rights and/or progressive taxation, to enjoy the benefits of secure land tenure and the prosperity flowing from incentives in a free market.

As George showed, however, we can have both the common rights and the incentives, through tax reform, but the point is stronger than that: we cannot have one without the other. We must support government from land revenues to have a truly free market, because without taxing land we must tax work, production, trade, and capital formation, distorting, weakening, and possibly destroying free markets. The obvious manifestation and measure of that excess burden is shunting land from more to less intensive and productive uses, as we will show in detail.

The very people who gave us the slogan *laissez-faire* made socializing land rents a central part of their program. These were the eighteenth century French *économistes*, sometimes called "Physiocrats," who were the tutors of Adam Smith. They inspired land reforms throughout Europe until stifled after 1815 by The Holy Alliance led by Metternich. They also inspired more enduring land reforms in the USA, through their influence on many Founding Fathers, including Franklin, Jefferson and the long dynasty of Jeffersonians who followed him. The best-known *économistes* were François Quesnay and A.R. Jacques Turgot, who championed land taxation. Walras, their militant disciple, called it the "co-proprietorship of land by the state".

Since their time we have learned to measure land values, and we have broadened the meaning of "land" to comprise all natural resources. Farmland *per se*, which they emphasized too much, ranks well down the list in terms of total market value. A land tax is not primarily a tax on farmland that produces food and fiber and fuel, as shown earlier. That is an old idea that dies hard, even though obsolete.

In addition, if we untax work, trade and capital we thereby add a great deal to the value of land on which one may now work, trade and build free of the former taxes, and free of their excess burdens: a double gain to land rents. The net advantages of doing so are our theme here.

Conventional analysis of excess burdens uses the model of an excise tax in a commodity market. Supplies of land, labor, and capital are melded in a commodity supply curve in which even land supply is elastic because it may be shifted from producing other commodities and services. Excess burden is shown as the area of a trivial little triangle where supply and demand curves cross. These have become known as "Harberger Triangles" (although they antedate Harberger). The analyst then assumes he may aggregate these for the whole economy, Heaven knows how. Then the analyst dismisses excess burdens as minor.

The model does not fit the case. It does not deal with a whole taxing jurisdiction, within which supplies of labor and capital are highly elastic, and of land perfectly inelastic. It does not show how taxes prevent quantum leaps into higher land uses, as from parking lots to high-rise apartments, or from 80-year old firetraps to modern offices, or from ancient generators with fireboxes leaking pollutants to modern ones with the latest environmental safeguards.

The method here is to infer the biasing effects of taxes from their differential effects on rents of rival uses for land. A local tax jurisdiction is an open economy. The simplifying premises here are that arbitrage equalizes all after-tax rates of return on new investing, at levels determined in world capital markets. Labor is free to come and go, so wage rate structures tend to a common level, like interflowing waters of the sea. Product prices are set in world markets. Given those premises, all taxes are shifted to land, the only factor fixed in an otherwise open economy. Tax jurisdictions are defined as fixed areas of land.

3.9.2 A simple test for tax neutrality. Using the simple premises lets us devise a simple test for tax neutrality[48]. Taxable surplus is what we can tax without driving land into the wrong use. It is not enough that the land supply is fixed: a tax must not force underuse or other misuse of the fixed supply. A neutral tax is one that does not change the ranking of land uses in the eyes of the landowner. Treat net rent of land as a residual. Calculate the ratio of after-tax rent to before-tax rent. If the ratio is simply $(1 - t)$ (where t is a tax rate), the tax is neutral – the highest and best use of land after tax is the same as that before tax. The ratio $(1 - t)$ is independent of any parameter the landowner controls. The tax base on marginal land must be zero, lest the land be sterilized.

The simplicity of the technique allows for complexity in the applications, without losing any threads in tangles of detail. We may incorporate time and capital theory in the model simply by shifting from "rent" to the DCF of land in perpetuity (DCFP). The writer has done this elsewhere (Gaffney, 2006); the present exposition is limited to giving a fragment of this work in Appendix 2.

In a free market, the function of rent is to sort and arrange land uses: landowners allocate land to those uses yielding the most net product, or rent. This is socially advantageous: the net product is the excess of revenue over all human costs, so land yielding the highest rent is adding its utmost to the national product.

When we base our tax on the net product (or rent), the ranking of rival land uses remains the same after-tax as it was before-tax. That is, if use "A" yields 20 percent more rent than use "B", and a tax takes 50 percent of the rent, then use A still yields the owner 20 percent more after-tax than use B, and the owner still prefers use A. We will see below that when we tax something other than rent (say the gross revenue, G), we will drive the land into less intensive uses, or out of use altogether.

A related advantage of taxing rent is that we can often levy the tax on the land's potential to yield rent, regardless of what use the owner actually chooses. This is how the property tax works, at most times *de jure* and at many times *de facto*. It is possible because buyers and sellers trade land based on their estimates of its maximum rent-yielding capability. The tax valuer observes and records these value data, and uses them to place a value on all comparable lands. Many books and manuals and professional journals have been published on the techniques used: it is a well established art, with its own professional associations, of which one of my sources, Ted Gwartney, is a leading member. (Gwartney is Director of Assessments, City of Greenwich, Connecticut).

Such a tax is limited to the maximum possible rent, and so will not exceed a landowner's ability to pay, if she uses the land in one of the best uses. That does not mean stark uniformity or monoculture, because as market forces lure many lands into what looks like the single best use they create an equilibrium where each individual landowner has several choices, if not blocked by zoning. For example, the presence of many apartment houses in a neighborhood creates a need and demand for complements like stores and restaurants and medical offices. The presence of many peach growers in a farming region creates a surplus of labor during slack months, promoting other crops with other peak seasons, as happened on the east side of California's Great Central Valley under the spur of land taxes used to finance irrigation works. A tax on land value will not interfere with using land in one of the

best ways, but will discourage wasting or misusing or neglecting it by using it any other way, e.g. by growing cotton at State and Madison in Chicago's Loop.

3.9.3 Algebra of EBCOR, and a numerical example. We can raise output and jobs and investment opportunities and tax revenues above their present levels, by removing tax bias. This is the heart of the thesis. When we base a tax on taxable surplus, and keep the tax proportional to taxable surplus, we levy taxes without changing the land manager's ranking of land uses, as noted earlier. On the other hand, if we tax on some other basis (gross revenue, for example), we bias the owner against uses more heavily taxed. To repeat, we assume here that the seller is a "price-taker," meaning he sells on a world market and cannot raise the price, or otherwise shift the tax, so has no choice but to bear the tax.

Net revenue of land IS the Taxable Surplus: we cannot tax more than that without aborting the land use. The ratio of costs (C) to gross revenue (G) varies over a wide range, from zero up nearly to one (and even above one for subeconomic uses which, however, we do not want). Let's compare two rival uses, A and B, for the same piece of land. Use "A" yields more net revenue (N), but has a higher ratio of C/G. We levy a tax of 10 percent on gross revenue (G). To simplify, expenses and capital costs are consolidated as "C", so $N = G - C$. Table I shows the effects of the tax on net revenue after tax (NAT).

Use A produces more goods, makes more jobs, and yields more net product: it is clearly the higher use. The tax on G, however, turns A into a lower use than B, in the eyes of the landowner or manager. A 10 percent tax on G is a 100 percent tax on the N from use A, wiping out the entire incentive to put land to use A. It is also a tax on the N from use B, but only a 40 percent tax, leaving 60 percent of the Net Product for the landowner. The landowner would choose use A in the absence of taxes, or with a tax on N; but the tax on G forces him to choose use B, which is socially inferior. This, in a nutshell, expresses the damage done by imposing taxes on bases other than N, the net revenue of land. The tax lowers output, employment, and investment opportunities for capital, all three. Fourth, it lowers tax revenues well below their maximum possible level of $10,000, the net revenue from use A.

More generally, a tax on G is a tax on N at a rate equal to G/N times the tax rate on G. Algebraically:

$$\mathrm{NAT} = N - tG = N(1 - tG/N) \tag{5}$$

The ratio G/N is a multiplier on the impact of the tax rate, t.

For every parcel of land there are usually many alternative uses, and even more alternative intensities of any given use, a whole spectrum of choices. Up and down the spectrum, a tax on G systematically aborts the "higher" (more intensive) uses in favor of lower uses. The effect is like a "scorched-earth" policy, but not one we inflict on the invading enemy in wartime: we inflict it on ourselves in all times, war and peace, by adopting a suppressive tax policy.

Table I. Effect on net revenues of a 10 percent tax on gross revenues

Land use	G ($k)	C ($k)	N ($k)	G/N	Tax ($k)	NAT ($k)	Tax/N (%)
A	100	90	10	10	10	0	100
B	20	15	5	4	2	3	40

If we tax *C* instead of *G*, we can illustrate the effects by another table like Table I, but this is now a simple exercise that I leave to the reader. Here, the bias is in the same direction – toward lower uses – but the tax as a fraction of *N* will now be the tax on *C* multiplied times the coefficient *C*/*N*. To visualize this effect most simply, premise a third land use, "*D*", that yields some *G* without using any *C* at all – a parking lot is a near-example. Use *D* would now be tax free, while uses A and B would still pay a tax on gross revenue (*G*), and be displaced by use *D* (parking lots). Parking would be ample, but there would be little there to park for.

There are many more possible tax types we might consider, taxes imposed on parts of *C*, but not all. A payroll tax is an example. This tax would discourage the use of labor on land, but not the use of capital, and so would have two biases: less labor use, with the same capital use, or even more capital use as capital substitutes for labor. It would be tedious to spell out here all the many such possible variations of tax policy. The major point is that taxes on any base other than *N*, the Net Product of land, bias the market against the best and fullest use of land.

Champions of taxing personal income used to push their case, years ago, with reasoning parallel to what I have applied above to taxes based on "*N*". It does not change how people allocate their time or other resources, they said, because it does not change the ranking of alternatives. However, the reasoning does not fit the personal income tax. Take labor, for example. Most costs of creating new human beings and equipping them with "human capital" are not deductible, or exempt from "consumer" taxes. Human capital is not depreciable or expensible. It is the modern fashion to snicker and scoff at people who say it should be, but US Supreme Court Justice Brandeis pointed the way, 97 years ago:

> [...] the expense of securing indemnity against [...] accident, sickness, invalidity, premature death, superannuation, and unemployment, should be recognized as part of the daily cost of living [...] So far as it is a necessary charge, it should be met now as a current expense; [...] (Brandeis, 1911; Graham, 1971).

Personal labor supply is also highly elastic through migration – the "brain drain" effect, for example. Personal and corporate income also include value-added by equity capital, whose supply is highly elastic everywhere except in the unworldly Harberger model or "new view" of the property tax.

3.9.4 The broader reach of a narrower tax base. "Less is More" when we banish "broad-based taxes" in favor of the land tax base. When we focus taxes on the net product, *N*, we can raise the tax rate with no ill effects on land use, but with good effects instead. By contrast, we cannot raise taxes on *G* (gross revenue) very high without catastrophe. A high rate will drive all land out of its best use, and some land completely out of use, a ruinous outcome. To avoid the ruin we must lower the tax rate, but that means we cannot collect in taxes all of the rent from land uses like B, or much of any from uses like *D*. Thus, with taxes on *G*, we first abort some of the taxable surplus, and still fail to collect all that remains. In Table I, the tax collected is only $2,000, or 40 percent of the taxable surplus (*N*) from use B, and only 20 percent of the potentially taxable surplus of $10,000 from use A. With taxes on *N*, we can collect the entire taxable surplus from use A, $10,000, while aborting none of it.

Naturally, the owners of superior resources realize this, and therefore devote their efforts to persuading the public to support taxes on *G* and/or *C*, hurting their

marginal competitors while sparing themselves. This carries the double benefit of stifling their competition while maximizing political demands to hold down the tax rates. Adam Smith missed a trick when he called landowners "indolent" for failing to see their self-interest in lowering non-land taxes. Indolent they may have been and be in many ways, but they have a self-interest in retaining tax bases whose rates cannot be raised to the blue sky. Buchanan has made something like this a central part of his anti-tax "public choice" philosophy. He writes that a tax with more excess burden is better than one with less, because government, if allowed to tax in the less burdensome way, may get more revenue, which he opposes (Buchanan, 1987). Here, however, we are refuting the more common fear that public revenues will fall too short.

With taxes on *G*, as opposed to *N*, there is the danger of a fatal Laffer-curve effect. For example, in shifting from a property tax to a sales tax, and maintaining revenue neutrality, it may be necessary to hike the sales tax rate again, and again, and again, as its suppressive effects kick in and abort the tax base. This may help explain why the California State sales tax, for example, has risen from its original 2 percent (1933) to 4.5 percent in 1977 to virtually 8 percent now (counting city and county add-ons), without apparently abating the State's fiscal poverty, while neighboring Oregon lives nicely with no sales tax at all. So do New Hampshire, Alaska, Montana and Delaware, the other states free of sales taxes, and the Province of Alberta.

That conclusion understates the matter a good deal, because the neo-classical type model leaves out income effects, liquidity or cash-flow effects, and wealth effects. A land tax is not simply neutral, it puts positive pressure on holdout and laggard landowners by "dessicating" their liquidity and lowering their wealth and net incomes if they do not put their land to its highest use. At the same time, it tends to raise the creditworthiness of potential builders, and other land users, by raising their incomes-after-tax. A full consideration of these matters is beyond the scope of the present simple model, except to say they are probably as important, if not more important, than what is encompassed in the simple approach of our model[49].

Some critics of the land tax policy allege that the land tax base is "too narrow," and cannot support the government. They seem to have it backwards. Table I, and the reasoning behind it, tell us we can collect more by taxing land, and exempting *G* and *C*, than in any other way. A real-world example that approximates the model might be the enclave of Hong Kong, at least before 1997, where taxes on *G* and *C* were very light, and the public coffers overflowed with land revenues.

The present model suggests a much more severe excess burden than traditional Chicago-style or "wedge effect" models. Those "wedge-effect" models deal only with single uses of land, and do not allow for shifting to higher uses.

The simple model given omits the tax treatment of durable capital inputs, to keep matters short and simple. The writer has modeled capital inputs elsewhere (Gaffney, 2006). In addition, Appendix 2 summarizes the model and its findings.

4. Group C. Uncapping the tax rate

4.1 Element No. 13 Freedom from the constraint of excess burden

4.1.1 Absence of taxable event. The property tax on land value ex buildings is based on owning land, not on using, improving, buying, inheriting, bequeathing, or selling it. There is no taxable event, hence no Laffer-curve Effect or Excess Burden Effect to cap

feasible tax rates. A main exception is where the inhibitory effect is deliberate, as with "green" taxes targeted either to ease crowding or to conserve exhaustible resources. We have also shown how to restructure income taxation on land income to minimize its excess burdens while tapping unrealized capital gains.

4.1.2 Raising the tax base by taxing it [sic]. Using the land tax to obviate other taxes raises the tax base via three effects: the ATCOR Effect (Element No. 11); the EBCOR Effect (Element No. 12); and fostering better allocation of land, the tax base, by the cash-drain effect on dilatory owners of derelict land (Section 4.1.5). Better allocation and use of the land base raises its taxable capacity, so the higher the tax rate, the higher the base – a remarkable and counterintuitive finding.

There is even a fourth effect, a by-product and corollary of the third. This is enriching and updating the assessor's data-base of market sales by speeding the ownership turnover of land.

4.1.3 Cutting waste in government. Another effect is using taxes to finance public works and services. On balance these raise land values by at least the amount of the expenditure, but there are exceptions, some blatant. There is waste as legislators roll logs and trade pork, misappropriating billions for subeconomic public works. They avoid full-funding any works in order to authorize too many, stringing out construction over years and decades, sticking the taxpayers with wasted interest all the while.

However, a land-value tax contains a strong antidote to waste: it automatically raises taxes on the major culprits. These are local landowners who expect to gain unearned increments from and lobby for such waste. Modern academic and media critics miss the mark when they make universal scapegoats of "bureaucrats" and "politicians". It is true that these are human beings with their own agendas, as Buchanan and the Austrians say, but they paper over the larger truth: the scapegoats are puppets for the underlying private interests that pay the pipers and call their tunes.

A social dividend is a possible expenditure that would raise the demand for land. It is a lovely ideal, and implemented in small ways here and there. Even Renaissance Florence had its *monte delli doti*, a fund to endow each newlywed couple with a dowry from the fisc. However, first we should want to bail out extant underfunded quasi social dividends like social security, welfare, medical care, public health, public schools, libraries, parks, veterans' benefits, and others now starved for funds.

4.1.4 "Tax capitalization" does not erode its base. The tax on land value does not erode away its base. With a property tax on land value there is no taxable event to avoid, as mentioned, hence no Laffer Effect. In addition, even with a tax on land income, the land does not move away or diminish.

Some economists have mistaken "tax capitalization" for erosion of the tax base. To make this point they leap in fancy to an extreme tax rate so high, and public services so low, there is no land value remaining. This is assuming the tax money is all wasted (as by invading a foreign nation and losing), so the taxes are what Marshall called "onerous" and not "beneficial".

Even under that extreme assumption, however, a higher tax rate on land value never causes lower tax revenues. Few have carried this beyond cocktail party chatter, but such banter often betrays underlying doubts that have simply not congealed enough to be published. Murray Rothbard is one who has published the view that the tax destroys its own base. "[. . .] the single tax would yield no revenue at all. For if rents

are zero, a 100 percent tax on rents will also yield nothing." (Rothbard, 1997, p. 298). This is simply bad algebra – very bad – as I will show.

"Tax capitalization" refers to the effect that a tax on land value has of lowering the value of land, its own base. Let V, value of land; a, annual rent; i, interest rate; t tax rate; and T, tax. Let "a" be unaffected by lowering other taxes or by improving public services. Then:

$$V = (a - tV)/i \tag{6}$$

Rothbard stops here. He notes that V is a decreasing function of "t", and then imagines that a very high "t" means no V, and no yax.

Generations of appraisers and assessors have carried their algebra beyond where Rothbard stopped, and avoided this fallacy. One simply collects terms, and then:

$$V = a/(i + t) \tag{7}$$

Equation (7) is a simpler form of equation (1), above, with $g = 0$. The denominator on the right side, $(i + t)$, is the "cap rate" (capitalization rate), found in every appraisal book and assessment manual. Adding "t" to "i" is called "tax capitalization".

The tax (T) is tV:

$$T = tV = t/(i + t) \times a \tag{8}$$

The effective tax rate on "a" is $t/(i + t)$. That ratio is always an increasing function of t, approaching 100 percent asymptotically.

Note in passing, from equation (6), that the tax base, V, is the after-tax value of land. This makes the real tax rate much lower than the apparent rate. To this extent, Rothbard is on target. It is as though the personal income tax were based on after-tax income, in which case a rate of 100 percent would take just 50 percent of income. So, to tap the land base we need tax rates higher than are considered normal or possible today, when buildings and fixtures and (in many states) inventories are part of the tax base. This is, indeed, a major reason why landowners want to keep them part of the tax base: not that they like paying taxes on buildings, but the landowners need arguments for holding down property taxes.

4.1.5 Better allocation of land. The tax fosters better allocation of the tax base, raising its taxable capacity. Untaxing production is the carrot that moves landowners; taxing land is the corresponding stick.

The land tax imposes a kind of "negative excess burden", that is a positive push to use land better. The land-value tax is a fixed annual charge that stimulates owners to seek the highest and best use of their land. For many wealthy and retired people, landownership is just a place to park slack money where it will keep safely and grow slowly without their bestirring themselves to manage or supervise it much. Turgot, Smith, Mill, Walras, George, and others all observed this. Turgot noted landowners' "dilatory" habits; Smith referred to the "indolence" of landowners whose easy life so cosseted them that they could not perceive their own best interest; Mill said they "grew rich in their sleep". The cash drain of a regular land tax awakens them.

Clawson, observing the slack management of our National Forests, wrote we should evaluate managers as though the forests carried a mortgage lien equal to their value. Interest on that would be an annual charge; the measure of the managers' performance

would be profit above that deductible. That describes the situation of the landowner subject to an annual tax based on land value. Tideman has written about the theory of it (Tideman, 1999). Experience has shown this factor to be powerful. California's Irrigation Districts when young and vibrant, 1909-1938, are a good case study.

The problem with many landholders is not indolence so much as aggressive oligopolistic or cartel behavior. Major chain retailers acquire advance sites routinely in the course of expanding; house-builders do so in the course of turning over finished improved sites to customers; oil firms in the course of finding and extracting their product. These land banks serve them not just for their own expansion but to block competitors.

In the serious game of oligopoly, as in the child's game of Parcheesi, a player will often choose to set back a rival even at the expense of his own advancement. The British Competition Commission has recently documented how widespread and stifling these practices are in Britain (Her Majesty's Government, Competition Commission, n.d). Of course, parallel findings have been common over many years in the USA. What is less common, sadly, is the modern pundit who sees this as the major problem that it is, and sounds the alarm.

A tax based on the value of these land banks would shrink them routinely without needing heroic investigative reporters to sound the alarms, and face the personal and professional costs of offending powerful civic "leaders" and advertisers. It would also be important to include in "land" the value of covenants against competition held by some sellers as liens on the lands of buyers. Better yet would be to illegalize such covenants as being in restraint of trade, but meantime we can tax them heavily, perhaps into extinction.

In addition, "green" or Pigovian taxes open new horizons for improving resource allocation by targeted use of inhibitory taxes. Some of these taxes, as noted in Elements No. 5 and No. 7, offer huge revenue potentials. The writer has explored this subject elsewhere (Gaffney, 1998a).

4.1.6 Capital formation and macro stimulation. The tax encourages both saving and investing, leveling them upwards, the macro-economists' dream. It raises both supply and demand, satisfying both supply-side and demand-side economists.

4.1.7 Equity-cum-efficiency-cum-incentives. The ownership of the tax base is highly concentrated, making the tax progressive in impact. One-third or more of Americans do not even own their own dwelling places, hence pay no land tax. The tax burden is not shifted, so the ultimate incidence is the same as the impact. This progressivity minimizes the number of true hardship cases, and hence the cost of relieving them. Ownership of wealth generally, and land and capital gains – mostly land gains – are especially concentrated, much moreso than incomes from productive labor, and increasingly so. Most of the poor have to work for taxable income, just to eat and survive, so they do pay income and payroll and sales and excise taxes, but not land taxes.

Thus, taxes based on land rents and values are progressive in their impact and incidence, at the same time they are pro-incentive in their allocative effects, as well as stimulating in their macro-economic effects. This combination of virtues is unique. It belies the neo-classical cliché that policy-makers must always choose between equity and efficiency in taxation. It makes it possible to raise tax rates to high levels without

either stifling good incentives or embracing regressivity. This greatly enhances the revenue potential of such taxes[50].

It is widely alleged and believed that the property tax on housing, taken by itself, is regressive with respect to income. The data, when reasonably analyzed with a modicum of common sense and statistical sophistication, do not support this claim. Rather, they show the reverse. The writer has published his data and proofs elsewhere (Gaffney, 1972, 1993b, 2008a).

4.1.8 Local multiplier effect. The tax hits absentee owners of land, without discouraging the inflow of capital. There is a strong local multiplier effect from this (Element No. 16).

The sum of the eight items 4.1.1 to 4.1.8 above is that to focus taxes on land, and sunset other taxes, is to raise the feasible tax rate almost "to the blue sky". I say "almost" because when we get into uncharted territory there will be surprises, and new problems of measurement, moral hazard, agency, administration, and adjustment. The writer has anticipated some of them, but we must allow for the contingency that there will be others (Gaffney, 1991c).

The "blue sky" conclusion applies to taxes on the value of space and location. When it comes to user charges for extracting exhaustible resources, and green taxes to control crowding and pollution, we are back to tradeoffs, balancing costs and benefits in the old neo-classical way, aiming for optimal rather than maximal rates. In part *3.3.4* of Element No. 7 I have suggested how, in many cases, we can combine fixed with variable taxes to solve such trade-off problems and still impose high tax rates.

4.2 Element No. 14 The unseen reservoir of high internal valuations and holdout prices

4.2.1 High internal valuations. Observed land markets understate the value of land to most landowners. These owners' internal valuations are above the observed market: that is why they do not offer to sell. In commodity markets annual ownership turnover is 100 percent or more, as new goods flow through and are consumed. These markets give a true idea of value. In land markets, on the other hand, there is no real turnover (production and consumption), and ownership turnover is 5 percent or less. That is 5 percent of the parcels, and less of the total value, since smaller parcels turn over faster. Assessors take that tiny sample to estimate the value of the whole. The other 95 percent of landowners in effect "sell" or "rent" to themselves each year, at values not recorded.

How well does the 5 percent turnover represent the entire invisible "market" for land? Not well: the active market is below the holdout market. Many owners routinely declare "this land is not for sale, get away from my door," or "I will not sell for any price." Some take it as a matter of pride. "I will never sell!" vowed Mahlon Vail, heir of the 87,000 acre Vail Ranch in Riverside County, in 1956. Vail added, "At least I won't sell until taxes get me." It was just the "western branch" of Vail's Empire Land and Cattle Co., Arizona. In 1964, taxes did get him and he did sell: Vail Ranch became the present cities of Temecula and Murrieta, housing over 100,000 people (*The Press-Enterprise*, 2004). If Proposition 13 had passed before 1956 Vail might, indeed, never have sold.

4.2.2 Tricks with "Contingent valuation". Modern environmental economics has spawned the discipline of "contingent valuation" to appraise damages to resources that seldom pass through markets. It turns out there is a major difference between

willingness-to-pay (WTP) values, or what will you pay for cleaner air, and willingness-to-accept (WTA) values, or what must I pay you for permission to pollute *your* clean air. These values are far apart. Where there are market dealings to observe, they are based on WTP values, so the observed market conceals WTA values, which are high above the active, visible "market."

The "willing seller" concept is mostly fictional: it is the "motivated" seller who makes the market – the observed market, that is. Most sellers are in some way motivated, and thus in some way "forced" – that is why they are selling. Other owners hold out. Knetsch and Hanemann and others have shown that WTA >> than WTP[51].

Survey findings that WTA >> WTP shake status-quo theory to the roots. Fashionable economists' criterion for acceptable policy changes is based on Pareto's and Edgeworth's notion that we must not deprive one billionaire, even to help a thousand starving widows, orphans, and wounded veterans, because we cannot compare their subjective feelings. When, however, we acknowledge common birthrights to a clean environment, the shoe is on the other foot. Now you cannot pollute anyone's air or water because the victims own it. They can be as unreasonable as any great landlord.

This explains the busy-ness of theorists seeking to plug the dike. It was 1974 when a survey first showed WTA >> WTP, "in contradiction to received theory". This sent dozens of think-tankers scurrying to torture the data and logic until they confessed otherwise, and get everyone in step with Coase and Stigler. Mitchell and Carson slog through a long literature survey, apparently impartially, but in the end, like many conventional economists, find ways to deny the data and stick with WTP after all.

The survey data is still there, however. It means we can raise tax rates and not suddenly flood the market with distress sellers. Potential buyers seeking affordability will have to wait until tax rates rise a few notches; owners and fisc officials and lenders can breathe easier unless or until the rates do soar. In either case we can raise great revenues from land, which is the present point.

Another side of high internal valuations is the practice of some major retailers, home builders, grocers, and others to hold back sites from potential competitors. The writer has amassed many ordinary press reports documenting this cartel-like behavior in southern California. More generally, as noted earlier, in Britain, the Competition Commission has found it to be a major barrier to trade and homebuilding (Her Majesty's Government, Competition Commission, 2000, 2007a, b).

4.2.3 Low internal valuations by non-owners. The flip side of high internal valuations by owners is that roughly one-third of American families rent their abodes, and a few homeless ones cannot even afford that. A high fraction of businesses rent their premises, and a few operate without premises. Their internal valuations of what they rent are obviously lower than the asking prices of these or comparable quarters; otherwise they would have bought them. These low internal valuations are outside the market, however, while the high internal valuations of owners are part of the market, the very core of the market and the tax base.

5. Group D. Moot new elements of taxable rent

Here, are two more supplements to the land rent tax base. I am not counting them among the basic 14 because they entail novel thinking, outside the box, and are fraught with controversy, such that they might divert us from the main chance.

5.1 Element No. 15 Mortgage interest as land rent

Let us begin with municipal bonds (munis). When a government borrows on the security of land revenues, it is in effect selling those revenues to the borrower. The bondholder becomes a landowner, and could be taxed as such. Today such bondholders pay neither property tax nor income tax. If the municipality sold lands instead of borrowing on revenues therefrom, the buyer would be subject to taxes. It would seem equitable, then, to tax municipal bonds as property, and their income as income.

A private mortgage is like a public one, it is a *de facto* sale of rents to the lender. "Intangible" paper assets are said to be too concealable to tax, but this kind of paper is systematically recorded at the county level: mortgages, or deeds of trust, are of public record. It is administratively feasible and enforceable, therefore, to put these into the property tax base, as UCLA Law Professor Don Hagman, before his tragic death, kept urging.

Their interest could also be put in the income-tax base. The doctrine of separation of powers is used to keep them out, but that need not be hard and fast. After all, the same doctrine kept salaries of municipal workers tax free until 1940 or so, when suddenly they became taxable. "Separation of powers" antedated the income tax, and one might challenge its application thereto. It would make an interesting case, as the lawyers say, and it is outside this writer's expertise.

So it may be possible, but is it desirable? A tax on mortgages would be mostly shifted to borrowers in the form of higher interest rates, the supply of mortgage funds being highly elastic. Thus, to tax mortgages is indirectly to tax real estate.

Holders of existing mortgages would suffer, but phasing-in is possible. Someone suffers with any change of tax or other public policy, there are always winners and losers. It is a risk all investors take knowingly.

But, would new lending be discouraged? Yes, at the margins. The most sensitive margin is one which most people would not perceive at first, that is the margin of durability or longevity. The more deferred the benefit of an investment, the more interest-sensitive is its present value. However, is that bad? We are conditioned to answer "yes," but as an economist, I doubt it. More funds would be released for other kinds of loans, shorter-term loans, causing higher turnover both of loans, and the nation's capital stock. Both can be shown to have positive macro-economic effects (Gaffney, 2003).

Most beneficial would be the effect on stability of lending institutions. In 1988 we were looking at a $50 billion bailout of S&Ls which failed by lending on real estate. Many commercial banks were deep in the same mire. In 2008, nothing wiser for the chastening of 1988, we face the "sub-prime" meltdown. It may be time to revive the old "commercial loan" theories of banking, with their emphasis on liquidity and quality of credit, achieved mainly by sticking to self-liquidating short-term commercial loans, and avoiding long and speculative loans secured by real estate. It is a subject too big to open here, but we will find plenty of support in the history and theory of banking for keeping lenders out of mortgages.

It is widely assumed that cheap long-term credit is essential to let most people buy real estate. Unfortunately that reasoning overlooks the nature of land values, which makes it circular. The main effect of long-term loans has been to inflate land prices,

creating the very problem it offsets. It is a treadmill effect, a positive feedback loop like overspraying pesticides.

Another benefit of including mortgages in the property tax base is to counter the argument that the property tax discriminates against equity holders of real estate. Many have questioned the equity of focusing taxes on the person with 5 percent equity in a parcel, while exempting his bank. The California Constitution of 1879, at a peak of populist fervor, contained a provision to tax mortgagees and limit landowners' liability to the equity. It has since disappeared without a trace, but it shows what is possible.

5.2 Element No. 16 Improving our balance of payments: the multiplier effect of taxing absentee owners

A high percentage of real property is owned from out of the state, and even the country. The public dialogue is curiously silent on the point. California's Legislative Analyst, William Hamm, estimated in 1978 that absentees own over half of the value of taxable property in California. This is a bold, bare, enormous fact, but few paid much attention. Many Californians vote in the delusion that the property tax falls mainly on their homes, so they passed Proposition 13 in 1978, shifting taxes off all this foreign wealth and onto their own consumption and personal income and most small businesses that rent their premises.

Voters are also swayed by the argument that they need to hold and attract capital. That was relevant to Proposition 13, which lowered property taxes on capital as well as land; but it carries no weight when considering a tax on pure land value, ex improvements.

There is another kind of local multiplier gain from raising state or local property taxes, under current law. Net federal income tax payments fall because property taxes are deductible, while sales and nuisance taxes that we raise to replace lost property taxes are not deductible. Sales of local GO bonds (liens on property) stop. Cities use revenue bonds instead, with higher interest rates. Fire insurance rates must rise as fire departments shrivel. And private spending substituted for public spending has a higher propensity to import. Public spending goes for policemen, firemen, teachers, local contractors, and so on; much private spending goes out of state and keeps the UPS trucks busy helping local customers avoid the sales taxes raised high to replace property taxes. This substantial leakage of economic base results in multiple declines in state income.

Absentees are not just Japanese banks and English dukes. Corporate-held property comprises much of the real estate tax base. If California's share of the stockholders equals California's share of the national population, then 85 percent of corporate property is absentee-owned. The percentage may be lower, but it also may be higher because many shareholders are aliens like the Sheiks of Araby.

Transferring rents from absentee owners to our fisc, spending the proceeds locally, improves the state economic base and balance of payments. Convention says we must not tax absentees, because they bring needed capital into our state, but that is misdirected when we discuss taxing land ex capital. Absentees cannot remove space and location, the source of most land values. They can remove exhaustible resources by extracting them, but at this point a severance tax can reap the rent for the fisc.

A democratic sovereign state reports to the resident voters, not to absentees who stand between the resident and the resources of her homeland. Absentees generally worsen the quality of life when they displace local owners and turn local people into

tenants and migratory workers. Chauvinism and localism can be ugly, it is true. When it comes to discriminating against immigrant workers, xenophobia fills the air, even when the immigrants are stricken Americans like the droughted Okies that Steinbeck dramatized. Taxing alien property pushes a different button; materialists welcome rich aliens *et dona ferentes*. Yet, here is one instance where localism may be harnessed to help create a healthier society.

Offshore oil and gas is outside state sovereignty and escapes all state and local taxation. One result is unbalanced state hostility to offshore leasing, for the locals suffer the degradation without sharing the gains. Some provision for state sharing in offshore revenues seems indicated.

6. Summary and conclusion

Previous estimates of rent and land values have been narrowly limited to a fraction of the whole, thus giving a false impression that the tax capacity is low. We are adding 14 Elements to the traditional narrow "single tax" base, plus two moot elements that we advance for future consideration. These 16 Elements come in four Groups.

6.1 Group A: How conventional data sources hide land values

Element No. 1: Correcting omissions and understatements in commonly used data sources.

Element No. 2: Updating ancient sources that use obsolete low values.

Element No. 3: Raising the land fraction of real estate values.

Element No. 4: Farmland.

6.2 Group B: Broadening the meaning of land and its rent

Element No. 5: Adding rents that are best taxed by use of variable excises.

Element No. 6: Adding rents taxable by income taxes.

Element No. 7: Taxing for conservation, in lieu of subsidizing.

Element No. 8: Novel, unseen, and unobserved lands.

Element No. 9: Novel tenures now untaxed.

Element No. 10: Rents now dissipated by correctable policy.

Element No. 11: Rent gains from banning most existing taxes.

Element No. 12: Rent gains from removing excess burdens.

6.3 Group C: Uncapping the tax rate

Element No. 13: New freedom to raise tax rates.

Element No. 14: Reservoir of high internal valuations.

6.4 Group D: Moot new elements of taxable rent

Element No. 15: Mortgage interest as rent.

Element No. 16: Balance of payments multiplier.

Any one of those 16 elements indicates a much higher land tax base than economists commonly recognize today. Taken together, they are overwhelming, and cast an entirely new light on this subject.

Notes

1. Governor Jay Hammond, a Republican, set up the Alaska program. Alaska Senators Stephens and Murkowski, along with other Republicans, pushed the Alaska model for Iraq. Democratic candidate Hillary Clinton touted a national social dividend for the USA, keeping the issue alive but also drawing the fire of partisan politics which is outside the scope of this paper. The point is that both major parties show a sustained interest.
2. A notable exception was John Nagy, activist reformer with the Homeowners' League of San Diego, an offshoot of the Henry George School of San Diego, in the 1970s. Ted Gwartney, a professional assessor and appraiser, came out of the San Diego School tradition and has reformed assessments in several cities and the whole Province of British Columbia over a long career. He is currently Director of Assessments in Greenwich, CT.
3. McLean, in an otherwise good chapter, has pulled his own teeth by expressing and halfway endorsing that fear (McLean, 2005).
4. For more on this topic see Gaffney (2007b).
5. The Empire State Building is at 34th Street; the 100 percent location is at 57th.
6. The map is published in Clark (1965).
7. This seemingly obvious relationship is missing from the encyclopedic and "definitive" works issued from Resources for the Future, Inc., which have undergirded an unwarranted resource optimism for the last 50 years.
8. The Lincoln family behind the Lincoln Institute of Land Policy has long been invested in the Cyprus-Bagdad Copper Corporation, a Delaware corporation, now merged into Phelps-Dodge, with open pit mines in Yavapai County, Arizona. The corporation also owns the town of Bagdad. Said Institute, which might do so much to fill this vacuum, has never done so.
9. Some US Census data lower this average by counting any tiny "establishment" as a "farm" if it sells $1,000 or more farm products a year, or could, or normally does. Farm economists do not take this definition seriously, but focus on the much smaller number of much bigger "commercial" farmers who make, or could make, a living from farming. The Census definition has the effect, intended or not, of making casual readers think the typical farm is much smaller than it really is.
10. *TIME,* July 25 1955.
11. "Land use changes," 1997; Gaffney (1997), Fulton (1996).
12. "I think that I shall never see, a billboard lovely as a tree. But now unless the billboards fall, I'll never see a tree at all". – Ogden Nash.
13. Gaffney (1994, p. 36) and Jorgensen (1925, pp. 8-9). They were a sub-bloc in the larger bloc of 50 Populist Congressmen elected in 1894.
14. *Pollock* v. *Farmers' Loan and Trust Co.* (1894), 157 US 429.
15. The USSC upheld the tax and its legal rationale in *Flint* v. *Stone Tracy Co.* (1911) 220 US 107.

16. A good source on this is Brownlee (1985).
17. Going further back in history it is of interest that a social dividend is not a new concept. The city-state of Florence, a pioneering capitalist and banking polity, used a *catasto* or property tax to finance its *monte delli doti*, a form of social dividend distributed to each newly married couple. At the same time it also raised money to defend itself against a larger neighbor, Milan. The leader in introducing the *catasto* was Giovanni de Bicci de' Medici, founder of the banking family. 40 percent of the base of the *catasto* was real estate other than housing, which was exempt (Young, 1930, p. 34; Veseth, 1990, p. 43).
18. The ITC was Heller's favorite idea, because he saw how easily fast write-off could be twisted, as it has been, to allow repeated write-offs of old buildings, and of land. This information is from Professor Heller, Jr of U.C. San Diego.
19. Phillips (2008). It was actually a President who did this, to camouflage a lag in national income, but economists have been complicit.
20. Other champions, to their credit, are A. Auerbach, E. Sunley, Jr, J. Minarik, and J. Stiglitz (Vickrey *et al.*, 1992).
21. For more general models (Vickrey, 1971; Gaffney, 2006, 2008b).
22. In case it should become an issue, note that taxing gV does not lower either g or a. These are both before-tax values, independent of the tax rate on land.
23. McBride (1924). On the difference between "property" and a "permit" see also *US* v. *Fuller* (1973), 409 US 488, 93 S.Ct. 801 and *Public Lands Council* v. *Babbitt*, 120 S.Ct. 1815 (2000).
24. Gaffney (1982a). Professor Albert Church invited me to submit this paper for a special issue of the *Natural Resources Journal*, which I did. Meantime there had been a tectonic shift in the power structure at the journal, and the new editors gave the paper to an industry spokesman who reviewed it savagely and returned it. That's the kind of thing that was happening in the academic world in that era.
25. A comparable privilege is enjoyed by orchardists who write off their early thinnings as abandonments and thus take off three-fourths of the capital cost before a grove is even mature. One writes off the abandoned trees *pro rata*, but as the others grow into the space thus opened, no offsetting appreciation is recognized. In both cases this ranks as an extraordinary privilege, open to few.
26. To be sure, Section 1231 assets enjoy a small taste of the same advantage: they, too, get capital gains when they rise, and unlimited ordinary loss deduction. But the restrictions are much tighter. The class of assets excludes inventories held for sale to customers (oil deposits are certainly that). Gain and loss are recognized on a net basis only, not a gross basis. The net basis means that to take an ordinary loss, you must first report all your gains as ordinary income-quite a difference. And excess depreciation is recaptured.
27. The source, from an association of small oil firms, is rather fugitive.
28. A researcher might begin with Appalachian Landownership Task Force (1983), Fair Tax Coalition (1982), MACED (1999), Horton (1993) and Horton(n.d). It was noted that one coal company that made $100 million in profit did not pay enough taxes to purchase a school bus; Gaventa (1982). Gaventa and Lewis (1991).
29. Cynics will deride or berate the cross-purpose of subsidizing an industry with one program while cutting the numbers of fishermen with IFQ programs. This kind of cross-purpose is, of course, found in other public programs. Critics blame "bureaucracy", a handy all-purpose scapegoat; but the point of consistency is usually to push up land prices. Recall, too, that the imputed income from yachts and their moorings is tax free.
30. The low cap rate allows for general inflation, and future growth of the rent. One could justify greater such allowances, which would lower the cap rate and raise the present value.

31. Data from *The Wisconsin Taxpayer*, February 2003.
32. It is not really so plain or simple: law schools give courses on its nuances and complexities, which are not covered here.
33. By the same logic, intrusive ATVs, snowmobiles, and vehicles like the Harley hog designed deliberately to make maximal noise should bear heavy taxes, if not outright prohibition.
34. For an extended analysis see Gaffney (1997), module on "Entitlements, the Public Trust Doctrine, and Allocation".
35. Timidly, they proposed this only for the benefit of other landowners who got less favorable zoning, the "wipeouts". Today, "property rights" lobbies are demanding compensation for the wipeouts, leaving the windfalls to landowners.
36. In doing so the tax authority should take care not to have the zoning classified as "property", which would endow it with additional protections. I leave this tricky matter to a sympathetic lawyer.
37. The sanctity of grandfathering is ironic, because the original grandfather cases, in MD and OK, from which the concept got its name, were thrown out as unconstitutional. These were laws that allowed only those blacks to vote who could prove that their grandfathers (or other ancestors) had voted.
38. "... farmers or cities first divert and use water by crude systems. Conservation measures often are delayed until the pinch is on." (Patterson, 1991). In 1962, The Orange County Water District sued every upstream diverter on the Santa Ana. In the 1969 judgement, "each water agency's allotment is based on historical use." (Patterson, 1991).
39. U'Ren was the father of the "Oregon System" of Initiative, Recall, and Referendum, a system he pushed to further his ultimate aim of moving Oregon to the single tax. He succeeded in the former, making him a great power in Oregon and even national politics. He failed to boost the latter quite over the top, but by making the effort he won many concessions like making tax assessors put higher taxable values on land.
40. 3-14-24 report of the (Clarence) Stein Committee, cited in Pleydell and Wood (1960).
41. BW 6 March 95. David Card and Alan B. Krueger say otherwise. Becker cites studies saying it is so, by Donald Deere and Finis Welch, TX A&M; Kevin Murphy, U of Chicago. Papers at Jan AEA mtgs.
42. George recognized this, although he had his own clumsy indirect way of expressing it. He did not regard consumer capital as being "really" capital, but he did observe people living on it while they produced other capital.
43. Seligman (1895, Chapater. III, §4) repeated through 10 edn.
44. These works are cited in Gaffney (1972).
45. Musgrave *et al.* (1951). For a list of others see Netzer (1966, pp. 247 ff), and the Netzer book itself, Chapter III.
46. For extended documentation of Clark's vendetta against George, see Gaffney (1994a, pp. 47-59)
47. For Marshall's endorsement see Gaffney (2004a, last 4 paragraphs).
48. Some analysts prefer to treat rates of return after tax (RORAT) as the residual, and the criterion of neutrality. Others object to that approach, with doctrinaire fervor. We do not enter that thicket here. For those preferring the RORAT approach, the writer has run such a test elsewhere (Gaffney, 1967a, b, c). The results were broadly consistent with those presented here.
49. For more on the point see Gaffney (1967), available at: www.masongaffney.org

50. That is, if one believes, and the voters believe, that taxation should be progressive, and/or responsive to the voters. It meets opposition from critics like Jon Coupal, leader of the Howard Jarvis Taxpayers' Association, who favors limiting the franchise to landowners, and opposes majority rule because "you are essentially allowing those who don't own property to levy taxes on those who do." Coupal (2003). Shades of Hamilton, Madison, and the Federalist Papers!
51. For a literature survey see Gaffney (1997).
52. Adding to the deception, tax rates are often expressed in mills. Thus, a tax rate of 50 mills is fodder for scary oratory, but it means 5 percent, and if that is applied to a base valued at 20 percent of market, 50 mills means 1 percent.
53. In 1977-1979 this writer held a vacant lot in Riverside, CA, that sold for about 40 times its assessed value – property taxes were derisory, except to the escrow agent who made a great show of apportioning them to the penny between buyer and seller, and charged more for this service than the taxes themselves.
54. Ted Gwartney, then a Professional Appraiser for the Bank of America in Riverside, CA, and now Assessor of Greenwich, CT, researched this datum.
55. For more on this topic see Gaffney (2007b).
56. Thanks to Jonathan Rowe for alerting me to this, when I thought I knew more than he did.
57. SP, which once owned 5 percent of California, has now spun off some of its lands into the Catellus Company, a complex and underreported transaction we do not try to unravel here.

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Appendix 1. Thirty-one reasons why land valuations assessed for tax purposes fall short of market values

- Conventional use of fractional assessments in many states. This makes the nominal tax rate much higher than the real rate, while hiding the real value of the tax base[52]. Some surveys based on assessed values correct for this obvious downward error, but some do not.
- Tendency to assess land on the assumption that current uses will be permanent. The market values much land higher, often much higher, than its current use warrants, based on a prospective quantum leap into a higher-valued use. Most state laws specify market value assessments, based on the economists' "opportunity cost", and the real-estate man's "highest and best use"; but many assessors honor this law only in the breach. Many other specific laws, cited below, encourage this practice for specified classes of land or land use; but it happens anyway, without specific laws.
- Lag of assessments behind rising land values, and behind falling building values. True building values fall constantly with depreciation and obsolescence. Increasingly, this extra-legal assessment-lag has been institutionalized, as in Proposition 13, California, which freezes land assessments at the 1977 assessment (plus a nominal 2 percent annual rise, and reassessment on new buyers). 1977 assessments of vacant land were obsolete even in 1977[53]. Startling examples of the results come to light when a public agency condemns land and is forced to pay a price based on current market values. In 1995 a jury

awarded $43 million to the Domenigoni family for their land near Hemet, taken for a water reservoir by the Metropolitan Water District of Southern California. That price was about 40 times the assessed value for tax purposes[54].

- Use of capitalized income method for assessing business properties (other than apartments). The bias is against more intensive business uses in every choice between lower and higher uses. The cash income of a vacant parcel, for example, is zero, but that is only one extreme case. More generally, vast and valuable lands are "derelict", i.e. used below capacity. One reason for that is to avoid the very taxes that land-value taxes would obviate.
- In a rising market the bias is against owner-occupied residences, because these are assessed on the basis of comparable current sales. In a rising market, comparable sales include a premium based on expected higher resale values, while capitalized income is based on current income alone. Robert Kuttner has attributed the agitation for Proposition 13 in California to this disparity. In the absence of understanding panic played on fear-haunted minds, skillfully stampeded by cooler ones (Kuttner, 1980).
- In dividing land vs building values, failure to assess land first, using maps, with building value as the "residual". This simple matter, so easy to state briefly here and pass by, involves huge values, bleeding land value into building value[55].
- Conventional preference given to acreage, regardless of location. An example, one of millions, is the southwest corner of the Allis-Chalmers plant site in the northeast corner of downtown West Allis, Wisconsin. The unsubdivided land in the industrial parcel is assessed much lower per square foot than the otherwise comparable commercial land on the other three corners. The assessor declines to recognize and value the subdivision potential in acreage.
- Omission of acreage from otherwise helpful studies by Allen Manvel with The US Census of Governments. The Census published these from 1965, quinquennially, until terminated in the Gingrich era. Illinois Senator Paul Douglas, former Professor of Economics at the University of Chicago, had supported Manvel's work, and used it in his Report of the National Housing Commission, 1967. Manvel relied on sales/assessment ratios from a huge data-base such as only the Census could assemble. These showed systematic bias in assessed values, undervaluing land relative to buildings. Manvel's work, however, blanked out unsubdivided acreage, the most underassessed class of land even then, and moreso now[56].
- Classification of land for taxation, with preferential low assessment for lower uses. In California, some favored use-classes are farming, timber, and private golf courses. Alabama has another set of low-tax classes, favoring land in forests and hunting grounds, catering to the Heston gun vote, in league with absentee corporate owners (and, for no theological reason, organized churches). Lands in the favored use-class are assessed by capitalizing their visible money income from the official use only, thus exempting from the tax base all values from manorial, recreational, and blood-sport uses, and all speculative values derived therefrom. In vast rural and sylvan and littoral areas these other influences are the main source of market value.
- Retention and expansion of lands in low-taxed use classes. The Los Angeles Country Club, with 39 de luxe holes, preempts about 500 acres (est.) of the most valuable space in southern California. It runs north from Century City at Santa Monica Boulevard, straddles Wilshire and continues north through Holmby Hills toward Sunset Boulevard. It abuts 9900 Wilshire Boulevard to the east. 9900 Wilshire sold in April, 2007 for $62 million per acre, a record price for Los Angeles (the Macy's there was a tear-down). At that price 500 acres would come to $31 billion, in round numbers, but you will find no such calculation on the assessment rolls. The California Constitution, Article XIII, Section 13,

limits the assessed value of members-only country clubs to capitalized income, which is near zero. A few golfers, rich as they are, could not hang on to such an asset if taxed *ad valorem* like their neighbors. But they do hang on, and new golf courses are multiplying like rabbits in the Coachella Valley (Palm Springs), which now has over 100 courses, soaking up scarce waters in a Sonoran desert and taking lands off the tax rolls while the Governor and leading water officials exhort median, taxpaying citizens to conserve water by drinking, bathing and flushing less.

- About one-third of the privately owned land in the USA is in timber. Timber lobbies are quietly powerful, and have made "Smoky Bear" part of our value system. Their P.R. machine and allied Schools of Forestry condition minds so successfully that all the USA. States have preferential tax laws. They exempt standing timber from property taxes, substituting a "yield tax" at nominal rates that are far below being revenue-neutral.
- In California, I have estimated the value of timberland in Mendocino County (prime redwood country) at $1,400 per acre for the land value based purely on timber culture, considering no other values. Yet, under California law its assessed value for taxation is only $156, about 11 percent of its true value just for timber culture. This is accomplished by legislating the valuation formula in Sacramento (California Revenue and Tax Code, n.d). The formula mandates that "income-based" assessments be derived using past prices, projected into the far future with no adjustments for inflation, but discounted at a high interest rate (i.e. a rate not adjusted for inflation). It is clear for whose benefit this law was framed (Gaffney, 1995). Timber counties, stripped of their natural tax base, replace their revenues by pleading poverty to get subventions from state and Federal taxpayers. Federally, Congress has made timber a "capital asset", so the gains of growth are taxed only at sweetheart rates as "capital gains", with many loopholes available. At every turn, timberlands and timber contribute little or nothing to public revenues, while their fiscal potential is hidden under legislated low assessed values, and low reported taxable income.
- Assessments capped by large-lot zoning, or exclusive farm or timber zoning, even when the market does not believe the zoning will endure, or be enforced. In the case of California timber, landowners can withdraw their land from the tax-favored timber preserve zone at will, with no penalty, and no back taxes.
- Regressive assessments, swayed by case law that reflects differential ability to finance lawsuits and appeals, as well as by the NIMBY bias against poor neighbors. The land use LEAST likely to be underassessed is rental housing, especially apartments. Then the resulting hardship cases are used in campaigns to demand lowering assessments on owners, often painted as poor widows. For poor and pathetic, look to the tenants evicted daily, with little keening from the Howard Jarvis Taxpayer Association.
- Discounts for oversized lots that should be further subdivided.
- The opposite of discounting for oversized lots is discounting for undersized lots. In the language of appraisers, that is failing to value the "plottage" potential of undersized lots. "Plottage" is the premium value per square foot that is gained by assembling undersized lots into optimal sizes. This is a major matter where high-rise buildings are trying to supersede older low-rises on small lots, and malls are trying to replace retail strips, and subdivisions are trying to replace mini-lots in strings, each with its own driveway accessing a state or federally financed highway. Not only does the assessor miss the speculative plottage value in the small lots, he obstructs their assembly into optimal sizes and shapes by raising assessed values after the assembly occurs, when and if it does. To solve this problem, many cities have been lending their power of eminent domain to private developers, generating fierce ideological battles pitting doctrinaire libertarians against city officials, while private parties quietly skim off the cream.

- Where rents are capped by law, failing to value the equity that the protected renter has carved out of the landowner's equity.
- Failure to publicize assessed values. In some states the values are closed to public inspection, defying "sunshine" laws. Reynis has attested to secrecy enforced by law in New Mexico (Reynis, 2004).
- Exempt lands, owners, and land uses. Churches, often targeted, are relatively minor offenders. Cemeteries are major. These include secular commercial ventures that hold vast lands for future gravesites and monuments. Sacred or profane, they consume more than their share of water, often at preferential rates. Full or empty, they get in everyone's way as one navigates around town. In industrial-dependent Milwaukee, cemeteries preempt more space than all industry, which helps account for the city's 20 percent population decline since 1960. One of San Francisco's assets making it so famously livable is its absence of cemeteries, banished to outside the city limits since about 1900. The US Navy ties up much of San Diego's waterfront. The Marine Corps has the Miramar Air Base, while to the north it keeps Camp Pendleton on 13 square miles of prime coastal land. The March Air Force Base keeps 14 square miles (9,000 acres) in the growth paths of Riverside and Moreno Valley, CA. New York City and Washington, DC, are notorious for their "free lists" of exempt lands. Once an agency acquires land it never again appears in the budget, so bureaucrats squander it.
- Homestead exemptions, in some states. These are a good idea, but widely abused to exempt most owner-occupied home values from taxation, to justify shifting fiscal burdens to rentals, and to sales and excise and gambling taxes aimed at the poor.
- Preferential underassessment of lands with low turnover, legalized in California and widely practiced elsewhere, legal or not. The result is extreme underassessment of lands that do not sell, like corporate holdings, member-only golf clubs, and dynastic holdings of inherited lands.
- Rail and utility adjunct landholdings, i.e. other than their ROW. These are state-assessed, not on local tax rolls; and are usually assessed as acreage. Taxes, such as they are, are passed on to ratepayers in the rate-regulation process. Vast holdings by rails include 10 percent of Chicago, just off The Loop; 5 percent of Milwaukee, centrally sited in the Menominee Valley; vast SP holding south of Market Street in San Francisco, and statewide[57].
- Hydrocarbon holdings by regulated utilities.
- Rights of way. Assessors ignore monopoly power inherent in rights of way, and assess ROW land on its value in the best alternative use.
- Discounts to large owners who have policy of slow sales or leasing. Such discounts are given to Oregon timber; to Appalachian coal; and many extractive resources. They are also given to laggards in ecotones, in consideration of their policies of selling slowly to the cream of the market.
- Conventional reluctance to base assessments on speculative values, even when condemnation awards are so based.
- Downvaluing land when the title is clouded by a covenant against competition, or other reservation held by a former seller against a present owner. Where such covenants are allowed at all, the beneficiary of the covenant should be assessed for the loss of value – but never is, to my knowledge.

There, then, are 31 reasons why reported assessed values of land understate its true value. This should serve as a caution against accepting data simply because they are "official" or "standard", or because "errors will tend to offset one another", as Ernest Kurnow alleged. Kurnow assumed

errors were random, and did not consider they might be systematically biased downwards, as they are. Yet, in spite of these biases, and others to be shown below, The California State Board of Equalization reports that 42 percent of the assessed value of real estate in the State is land value. The true figure is surely higher than 42 percent, for the reasons given, yet even 42 percent makes a mockery of the widespread belief among economists, promoted by Northwestern University Professor Mills and others, that "real estate" value is mostly building value.

Appendix 2. Rounding out the EBCOR model, treating capital costs explicitly

In the core model (Table I, in the text) we simplified by consolidating expenses and capital costs as "C", so $N = G - C$. For many readers this will be enough to make the point, and what follows is more, and slower slogging, than they need or want. Those readers may stop here: the main points have been made.

Others will demand a fuller and more sophisticated accounting, which follows. Accountants generally divide these mobile human inputs (C) into two parts: current expenses and durable capital. The durable capital has to be converted to an annual equivalent, to make capital costs commensurable with annual expenses. This is done by multiplying the value of capital on the land times the sum of an interest rate plus a depreciation rate. Summing that up in one line (but still oversimplifying):

$$N = G - E - K(i + d). \tag{A1}$$

where:

- N – net revenue.
- G – gross revenue.
- E – expenses (current).
- K – capital, at current value.
- i – interest rate.
- d – depreciation rate.

It is common to simplify the expression by consolidating the first two terms into one, called "cash flow." Thus:

$$G - E = \text{"cash flow"}. \tag{A2}$$

Likewise, $K(i + \mathrm{d})$ is called the "user cost of capital:"

$$K(i + d) = \text{"user cost of capital"}. \tag{A3}$$

Net Revenue is also called "Rent." Thus:

$$\text{Rent} = \text{Cash Flow less User Cost of Capital}. \tag{A4}$$

Defining and measuring rent then resolves itself into defining and measuring each of the component terms, in some detail. That is a 2-h lecture at least, which time precludes here, and which some of those who have read this far (presumably those who relish the challenge not to quit earlier) could deliver themselves, anyway. Two points should be made immediately, however:

(1) "$K(i + d)$" overstates and oversimplifies the user costTPZt of capital in all years after the first, because the relevant value of K falls each year, with depreciation. A normal way of handling this is to multiply K times the installment plan factor (IPF), aka the "Capital Recovery Factor," (and by other names) to get a level annual flow. It yields a value

somewhat higher than Ki, and lower than $K(i + d)$. Finding the IPF requires a life estimate for K, which gets interesting but is beyond the present scope.

(2) An easier way of handling this matter is to shift the analysis from "rent," an annual flow, to DCF of land; and finally from DCF based on one life cycle to DCFP, accounting for all future life cycles of replacement capital. An example is given below, using DCFP.

Having set up the model in either of those ways, we are equipped to forecast the likely results of various alternate tax policies that distinguish among the variables given: capital, expenses, gross revenues, life of capital, ratio of capital to land value, etc. I conclude by showing how such a model is set up, in a simple case.

A model incorporating capital theory

Gordon Tullock has suggested (at least orally) that the model below merely replicates the thesis of Henry George. It is true, of course, that George favored land taxation, for approximately the reasons advanced above, but he was innocent of any correct capital theory. Many aspects of his work suffered for it. The model below is based on a kind of capital theory Wicksell certainly, and Böhm-Bawerk probably, would have loved, but George never developed, and never could have developed without repudiating the unfortunate Book I ("Wages and Capital") of *Progress and Poverty*.

Treat the DCFP derived from a land improvement as a residual, and impute this residual value to land. Find algebraically the ratio of after-tax land value to before-tax land value. If the ratio is simply $(1 - t)$ (where t is a tax rate), the tax is neutral – the highest and best use of land after tax is the same as that before tax. [The ratio might also be $1/(1 + t)$, or some equivalent, and be neutral.] The value of the ratio $(1 - t)$ is independent of any parameter the landowner controls. To repeat, the tax base on marginal land must be zero, lest the land be sterilized. [A zero tax on marginal land implies a zero tax for the marginal investment on all land, a requisite for neutrality.]

We can analyze or just inspect many parameters in the ratio to find what specific avoidance maneuvers a tax will induce, and to estimate what excess burdens will result. In this paper, we analyze effects on substitution of capital for labor and for land, including effects on capital turnover and frequency of site renewal. We analyze differential effects on different grades or qualities of land. By modeling different kinds of tax regimes, we can also show how to find revenue-neutral tax rates, when tax A is substituted for tax B. We can point towards dangerously snowballing "Laffer-Curve Effects," and how to minimize them by selecting more neutral kinds of taxes.

The present example uses timber culture, because this enables a simple analysis, along with continuous grounding in reality. Timber is a good allegory for all other forms of investment. It also occupies 32 percent of the private land area of the nation, and is weighty in its own right (Daugherty, 1955). This short paper does not treat other kinds of capital explicitly, but does explain a simple means of modifying the analysis to do so. The writer has published the relevant mathematics elsewhere (Gaffney, 1976a, esp. Appendix 1).

The present example models just one kind of tax, a harvest or yield tax. "Yield" taxes are imposed on the harvest value of timber ("stumpage"), net of harvest costs, but gross of up-front capital costs. The tax rate is flat, at rate t. The taxable event is timber harvest. Yield taxes are widely alleged to be neutral, because the growth rate of stumpage after-tax is the same as it is before-tax. Our analysis is more comprehensive, however, considering the whole investment cycle, and finds several dimensions of heavy bias. First we set up the model:

- S – site value from DCF absent taxes
- R – revenue from "stumpage" (sale value net of harvest costs) at maturity (year "m")
- m – maturity (years from planting to harvest)
- i – relevant interest and discount rate

- i – tax rate applied to the base "R" after m years
- P – planting cost, year zero

One may incorporate intermediate costs and revenues in the model, without disturbing it, either by compounding them forward to year m (where they are commensurable with "R"), or discounting them to year zero (where they are commensurable with "P"). This lets us analyze cycles of timber culture in their totality, unbound by the simple case where all costs are incurred at time zero, and all revenues come at one other point in time. Better yet, this is the simple means wherewith one can generalize the model from timber to any other kind of capital-improvement, whatever its time-pattern of costs and revenues.

Site value (S) is the present value of timber less its planting cost (P). That residual value is imputed to the site. To make it hugely more general and useful, and only marginally more intricate, we assume the investment cycle to be repeated every m years, in perpetuity. That accounts for the " -1" in the denominator of equation (5):

$$S = \frac{R - Pe^{mi}}{e^{mi} - 1}. \tag{A5}$$

Equation (A5) is Faustmann's formula for "Soil Expectation Value," widely discussed in the literature. It is derived by discounting the numerator not just once, but as an infinite chain repeatable in perpetuity (Gaffney, 1957; Scott, 1987, and works there cited). [A simple derivation is to begin with $(P + S)e^{mi} = R + S$, and solve for S.] An advantage of this model is to dispense with any arbitrary limit on the time horizon; it lets us treat capital turnover and replacement.

To show the effect of a yield tax, let:

σ, site value after yield tax

$$\sigma = \frac{R(1 - t) - Pe^{mi}}{e^{mi} - 1}. \tag{A6}$$

By inspection, since P is not deductible, there is a leverage effect in the tax: it falls harder on marginal investments. It induces entrepreneurs to abort marginal investments on all land, and all investments on marginal land, causing an "excess burden." By assumption, this excess burden does not result from forward shifting to consumers with elastic demand; nor from backward shifting to suppliers of capital or labor. It results from "downward" shifting to land. It changes what now appears to the owner as the highest and best use of land, after-tax.

To measure the bias, we find σ as a fraction of S:

$$\sigma/S = 1 - t\left[1 + \frac{P/S}{1 - e^{-mi}}\right]. \tag{A7}$$

Equation (A7) is smaller than $(1 - t)$, except when $P = O$. Simple inspection of the algebra now lets us identify several kinds of bias. Eaution (7) is highly sensitive to the parameters P, S, i, and m. (7) is a decreasing function of P, and an increasing function of S, m, and i. Thus, the yield tax biases landowners in the following ways:

- against intensive planting (high P);
- against shorter cycles (low m); and
- against marginal land (low S).

It also magnifies the advantage of those with strong financing (low i) over those with weak credit. The last force will act towards fostering higher concentration of ownership.

Taxes on marginal land are greater than zero. (7) may easily become zero or negative, meaning land will have no use at all (without adapting the parameters to avoid taxes). If after-tax

land value is zero or less, land-time has no value to the owner, and there is no economic reason to restock land. The combination would lead to a bias in favor either of non-use, or of "volunteer" regeneration, where P is held at zero. This comes at the cost of deferring m and lowering R, possibly to zero. Bias is a maximum against marginal land (low S) and, by clear inference, against marginal increments of P and R to all land.

Table AI displays the bias by numerical example, using $i = 0.07$ and $t = 0.40$. The 40 percent yield tax rate is chosen because it is the revenue-neutral rate corresponding to a one percent property tax rate, as explained and calculated later.

To avoid taxes, landowners are induced to move from the upper right towards the lower left in Table AI:, i.e. from high P/S and low m to low P/S and high m. The resulting loss of net present value before tax is a measure of excess burden. Just how far each landowner will move depends on a host of particulars far too numerous to treat in the small compass here. The point is that the tax introduces a powerful arbitrary bias acting in predictable directions.

Laffer-curve effects. Using the above modeling technique, the writer has calculated the effect of a property tax on standing timber (exempting the site) on the DCFP after taxes on the timber. Using an assumed tax rate of 1 percent, and setting this DCFP equal to that of timber after a yield tax, it is possible to estimate the revenue-neutral yield tax rate corresponding to a property tax rate of 1 percent. The calculation and the parameters are not all shown here, but it turns out to be about 40 percent, if tree-life is 50 years.

Thus, a yield tax rate of 40 percent is needed for each 1 percent cut in the property tax, for revenue neutrality. At such a high rate, there would be a severe "Laffer-curve Effect": a higher rate bringing in lower revenues. This Effect might be so strong that no yield tax rate, however high, could replace property tax revenues.

In most states, however, the yield tax rate is much lower. In California the rate is capped at 2.9 percent, levied in lieu of a 1 percent property tax rate. This entails not just a change in the tax base, but a near approach to tax exemption. The low tax levy makes yield taxation popular with forest interests. It conceals the severe excess burden yield taxes would impose at revenue-neutral rates. (Another factor, in *Realpolitik*, is the insurance against double taxation such as might occur if an owner were to pay property taxes for many years and then be faced with a newly enacted yield tax).

Shorter rotations make the revenue-neutral yield tax rate lower, but even where rotations are 15 years instead of the 50 years used before, it still takes a yield tax rate of 20 percent to be revenue-neutral. That is lower than 40 percent, but still consistent with our basic finding that very high yield tax rates are required for revenue-neutrality.

In addition, there are other taxes to consider. The yield tax levied in lieu of a property tax induces foresters to lower both the amount of P and its frequency as well. Lower and less frequent P also means lower and less frequent harvests, where most payrolls are generated – and taxed. Payroll taxes, income taxes, sales taxes, gasoline taxes, and all other activity-based taxes come along less often and in lesser amounts. If we summed all taxes generated in forests, and in ancillary activities, yield taxes higher than the 40 percent shown would be needed for revenue-neutrality. Again, rates this high would cause a heavy "Laffer-curve Effect" such that revenue neutrality might never be attained. Certainly it never HAS BEEN attained.

The landowner subject to yield taxes is in the same position as a share tenant. Modern work on share tenancy, following Gale Johnson and Stephen Cheung (1969), also stresses the logical counterpart: crop-sharing motivates tenants to take up land without limit. Private landlords big enough to dominate their markets use their bargaining power to prevent that, by limiting the land they mete to each tenant; but the fisc (viewing it as the landlord collecting a crop share) has no such power over private landowners (viewing them as tenants of the fisc). A by-product of yield taxation is, therefore, a tendency toward reenforcing concentration of ownership of forest land.

Many forest outlays come well after time-zero: examples are thinning, pruning, fire and pest control, and timber stand improvement. Each such outlay is a separate investment cycle of shorter life than m. Its resulting revenue is the increment it generates in total R. Each such cycle

	$P/S = >$	0.2	0.5	0 .75	1	1.5
m	$1 - e^{-mi}$	–	–	–	–	–
5	0.30	0.33	−0.07	−0.40	−0.73	−1.4
10	0.50	0.44	0.20	0.00	−0.20	−0.60
15	0.65	0.48	0.29	0.14	−0.02	−0.32
20	0.75	0.49	0.33	0.20	0.07	−0.20
50	0.97	0.52	0.39	0.29	0.19	−0.02
60	0.99	0.52	0.40	0.30	0.20	−0.01

Notes: Values of σ/S (from Equation (7), where $i = 0.07$; $t = 0.40$

Table AI.

would be punished by a yield tax in terms of its own short life, not the entire tree-life cycle of m years. The bias against such outlays is, from Table AI, obviously extra heavy.

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