

Redding: MS for speech

Call Jack - how soon

Introduction by John Zivnuska, University of California, Berkeley.

Good evening, Ladies and Gentlemen. As the moderator of the program it is my pleasure to introduce our speaker for this evening, Mason Gaffney. After talking with Mason earlier this evening we found we had a number of things in common. One was a beautiful little island off the coast of New Guinea during World War II. He found it badly deforested. It so happened I was one of the people who helped to deforest it. Bombs and artillery fire can be just as devastating as power saws.

Mason Gaffney is an economist with a Ph.D. in Agricultural Economics. I first became aware of Mason before I met him. He had published a rather lengthy discussion of financial maturity. After reading it I discovered that a relatively unknown economist understood more about one aspect of my field than most of us who claimed to be forest economists.

Mason has followed a varied career and this has continued to be one of his attributes. He started young and eventually attended both Harvard and Yale. This somewhat disillusioned me because I thought that if you went to one you couldn't go to the other. Perhaps his case is an exception because he attended Yale courtesy of the Army Air Force.

After his military service Mason graduated with a degree in economics from Reed College. He then did his Ph.D. work in Agricultural Economics at the University of California. Unfortunately I didn't meet him there until he had almost finished his program. He then began a career during which he served as a faculty member at the University of Oregon, North Carolina State University, the University of Missouri, and the University of Wisconsin. He left the University of Wisconsin to join Resources for the Future in Washington D.C. In 1973, he left Washington to become Executive Director of the British Columbia Institute for Analysis of Economic Policy.

Throughout his career, Mason has maintained an interest in forestry, although his main interest has been taxation. Forestry has provided him an especially interesting example of taxation. While at British Columbia he has been actively involved in forest management and policy, largely a result of their economic importance to the Province.

I think Mason Gaffney is a man who has done a lot of original thinking. He has never been intimidated by conventional wisdom, and has been quick to call attention to much that is folly.

It is my pleasure to present to you our speaker of the evening, Mason Gaffney.

MASON GAFFNEY:

Thank you very much. When John itemized the itinerary of my career, he might also have observed I don't get along with people very well. I appreciate John's confession that I knew more about at least one aspect of forest economics than he did. This was most generous of him although I think his praise is somewhat excessive. The same impression has never existed on the campuses of the various universities where I have served. I do believe in sustaining the ego, however, and I can prove that. My oldest child is 22 years old. We expect another in August.

More relevant to our topic, I might note there's a Gideon Bible in my room. As many of you know, it tells the story of how God took six days to create heaven and earth and to rescue us from chaos. When they organized this conference, John Walker and Jack Keane and their friends only gave us two days to rescue you people from the chaos that exists in forest economics. I hope you will be tolerant, therefore, Don't expect miracles nor hold me to exacting standards of proof.

I think it is worth knowing at the outset that private business operates on the principal of maximizing discounted cash flow. This is really the essence of financial maturity and soil expectation value. It is incorrect to suggest that people who preach this doctrine are proposing something

new. It's at least as old as Adam Smith, whose publication "The Wealth of Nations" is having its 200th birthday this year. 3

My subject is "The Conservation Ethic and the Economist." It seems to me we can begin with something we all have in common; we oppose waste. At least I think we do. This unanimity permits us to start with a common foundation, a common philosophy if you will, marred only by the vagueness which arises because we haven't defined yet what we mean by waste. But first, I would like to say a word in favor of straight talk.

Now, I am very much in favor of straight talk. As most of you know, I have had problems with the bureaucracy of British Columbia. By the way, John, if you feel that I have had an influence on them you greatly underestimate their powers of resistance. If you feel the U. S. Forest Service is a closed system, try combining its attitude with provincialism, paranoia, and anti-Americanism.

Last December an election was held in British Columbia. Many of my supporters were voted out. As a result, I began getting strange signals and reading things in the paper that bothered me a little bit. Finally, I had enough, and since I had a nice offer from another place I went to the Chairman of my Board of Directors and told him, "Why don't you go to the Minister and tell him that I want to know in words of one syllable just what his plans are for our organization and where are we headed." He did and the word came back in a brief letter. "Dear Mr. Gaffney, your position has been terminated." Now that's what I like. Say what's on your mind. I'll try to do that this evening with my topic.

Another thing I assume we all have in common is that we favor "conservation" somehow defined. Gifford Pinchot when asked what conservation meant was reported to have answered, "I don't know what it means but it's awfully hard to oppose."

I once collected definitions of conservation from various philosophers and authors. I consulted nine and found eleven different definitions. It's obviously an elastic term and is used frequently in legislatures to ferti-

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lize new crops of statesmen. There must be something there we should try to understand. Economists, in particular owe a great debt to conservationists because of the extent to which conservationists have kept abreast of the importance of economizing the use of land.

The importance of land may seem self-evident, but to many economists it is not. Until fairly recent times it has been quite common for economists to define efficiency in terms of output per man, regardless of the cost in terms of other resources; land, water, energy, or whatever. This view of equating efficiency with maximum output per man suggests a labor theory of value. Conservationists are very alert to inputs other than labor, but they seem to go to the other extreme and think we should maximize output per acre of land regardless of cost.

Recently we have been getting all sorts of oddballs constructing such concepts as an energy deficiency standard of value and an oil balance of payments. Others think nothing is productive unless it brings in foreign exchange. Generally, is not useful to go to any extreme, rather to mediate among them, and to avoid unbalanced extremes and develop something we might call "total factor productivity."

A second debt we owe to conservationists is their emphasis on putting resources under responsible management. Resources which were not subject to tenure control, such as ocean fisheries and forests during the Middle Ages, were, as Barney Dowdle argues, subject to over-exploitation. To digress briefly, whenever I give a talk in British Columbia I always have to preface my remarks by saying, "Of course, I don't go all the way with Barney Dowdle but." If I didn't, no one would listen. Perhaps its not so much Barney Dowdle but the fact his analysis is too far ahead of political realities. There was this wonderful headline in the Vancouver Sun about two years ago. The headline said "Who is Barney Dowdle?" It turned out that he had committed the sin, the unpardonable sin, of having been born in America and was then hired to give an opinion on economic policy for British Columbia.

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One of the greatest contributions of the conservationists. it seems to me, was to emphasize the importance of economizing a natural resource over time. Something is given up this year in order to get something more in some future year, or the other way around. Viewed in this manner conservation and economics are much the same thing. They have a lot in common. Each involves careful use of valuable assets, planning over time, avoiding waste, and trying to increase future wealth. I am happy to say Funk and Wagnalls dictionary agrees with me. Conservation is defined as the preservation of natural resources for economic or recreational use. Economists are all aware that recreation is an economic use.

Conservationists have also given great emphasis to side effects of resource use, what economists call "externalities." In recent years economists have been catching up with this issue. Of course, they can find historical references which allow them to claim that they have been doing it all the time. But the truth of the matter is that side effects ("externalities") were long neglected and many of them still are. I remember an economics professor at UCLA many years ago objecting to regulations to control air pollution as being improper interferences with personal freedom and the workings of the free market.

By harping on these kinds of problems conservationists have performed a useful function. They cause problems themselves, however, because often they go too far. As economists rightly observe, a preoccupation with side effects could result in never changing anything. Stagnation and other economic anomalies could occur. We have a good example in southern California where it is impossible to change the point of water diversion. The law doesn't say that compensation must be paid for any damages inflicted from diversion. It says simply and unequivocally that no one will be damaged. In 150 years no one has been able to meet that test. As a result there has been no diversion. In order to get water where you want it you must go down stream to an ancient and honorable point of diversion and then pump the water back uphill parallel to the river.

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This is conservation carried to an unreasonable extreme.

Another debt we owe to conservationists is that they remind us there is a community interest in land. Land is peculiarly affected with a public interest. As an economist, I like to see this public interest asserted through the tax mechanism rather than by regulations. Regulations inevitably seem to lead to distributional effects which I find highly distasteful. Wealthy, special interest groups are too frequently the winners.

Conservationists also keep reminding us that natural resources are a source of livelihood and employment. Economists are supposed to monopolize this field, to tell us how to create jobs and keep the economy fully employed. Natural resources may have a more important place in formulating employment policy than economists have recognized. Too often, it seems, economists use econometric models to forecast and determine how to control the economy. Their conclusions; when in doubt recycle money faster. If that doesn't work, print some. That's the way to make jobs. I don't think the conservationists buy these conclusions and I don't think they should.

Finally, conservationists would like to think they have kept us aware of the fact that natural resources have to be renewed and replaced. I must disagree with this belief. I don't think conservationists have a monopoly on that particular observation. Over 100 years ago, John Stuart Mill said that if resources were to be maintained it would be by perpetual reproduction not by preservation. He was talking about forests among other things.

Having considered a number of contributions made by conservationists I think it is now appropriate to ask the question, "Where has conservation gone wrong?" I have already alluded to a few limbs on which conservations have managed to perch themselves. Conservation may be a good antidote to the excesses of economics, but an antidote without the poison can itself be a poison. Let's take a look at some of the places where conservation may have gone wrong.

With apologies to some of my friends in the Forest Service, let me suggest that conservation has gone partially wrong by letting itself become identified with bureaucracy. Bureaucrats have some traits which seem to be endemic to the species. I should also note, some individuals who happen to occupy bureaucratic positions may be free from them.

Any bureaucracy has a mission, a reason for being. It has objectives additional to selfpreservation and the survival of bureaucrats. In the pursuit of its objectives it's also important for the bureaucracy to make people think its objective is good. A good example is wood. We have all been exposed to lengthy bureaucratic orations on how "wood is good".

There is a serious conflict among the owners and the managers of a large collection of resources. Their interests are not always the same so they must bargain with each other. In the case of the public lands in the United States the owners are all the citizens. They are largely disorganized ^{and} although ⁱⁿ represented by Congress they are not capable of arguing effectually with the various bureaucracies which manage their assets. Interest groups, of course, get very good at bargaining. Bureaucracies get awfully good at bargaining too. Based on my observations I would rank the military first and the Forest Service a close second. The bargaining tool of the military bureaucrats as you know is, "the Russians are coming." The bargaining tool of the Forest Service is that we are running out of wood. As successful as campaigns of these kinds have been in the past, this might be a good time to suggest caution against hitching one's wagon to any of them.

As I read the newspapers, it seems to me that a reaction against bureaucracy is rising throughout the land. In the academic world University of Chicago School economists seem to be gaining stature everywhere. Professors Buchanan and Tullock at Blacksburg, Virginia have been beating the drums about irrational patterns of bureaucratic behavior. Perhaps more to the point, our Presidential candidates seem to feel that running against Washington, and all its evil ways, is good politics. If you really want

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to hitch your wagon to the bureaucratic star for the next 20 years it might be best to move to Canada.

Let me list a few examples of irrational economic behavior traditionally associated with bureaucracies. The most outstanding one is the tendency to treat capital as though it were free. I don't mean, of course, that you lend your capital to others freely. Perish the thought. This isn't a symmetrical process, it's a one way trip. You stress a great need for capital and all the things you will do with it. Once you get it you treat it as though it were free. This means, of course, that before long you run out and then you ask for more.

Needless to say, these pleas are either implicitly or explicitly based on a belief the social rate of time preference is below the market rate of interest. This all sounds very profound, but its something we know because we have read the golden tablets. The world ~~must~~ be held in trust for future generations. I'm for future generations too, but we should ask if this is really the best way to take care of them. What social time preference has meant in practice is that capital is allocated without proper regard for its productivity. The reason we have an interest rate is simply because we don't have enough capital to go around. If we let one group of people invest it at low rates of productivity, that means that other people have to go to marginal sources to obtain their capital.

We are inclined to look down on the Indian peasants who go to the money lenders to borrow at usurious rates of interest. They finance consumption activities at the expense of productive activities. When we borrow at 10% and then turn around and invest it in public capital at 1% we do much the same thing. There is a 9% deficit there that has to be made up. I suggest that this is a good way for a nation to get into trouble.

One of the authors of one of the eleven definitions of conservation that I consulted defined conservation as not exploiting raw materials. I always regarded that as somewhat parochial and I guess I still do. The practice of selling our land to foreigners because of the scarcity of capital in the private section is abetted by the waste of capital in the

public sector. Is this not an anti-conservationist practice?

We also believe that when you cut a tree, you plant a tree. That's supposed to be a good policy. Economists differ, from conservationists by saying, we should renew our forests but we should do it more often and we should also do it on better sites. To suggest maximizing mean annual increment of wood, as conservationists commonly do, is to suggest treating the interest rate as though it were equal to zero. This is also to treat capital as though it were free. Naturally, this is one way to increase output per acre per year. Practices of these kinds may seem to be obeying the conservationists' exhortation to economize on land. By not charging for capital and applying it lavishly we maximize the return to land. We could also grow more corn per acre per year if we treated fertilizer or labor or any other input as if they were free.

The problem here is that we have a turnover problem with no inventory constraint. When the rate of interest is treated as if it were equal to zero you can justify building up inventory, or growing stock of timber, until output can't be increased anymore. No private business does that. Private forestry doesn't do it. Why should public forestry?

The secret of balance as the economists see it is to maximize total factor productivity. That may sound a little obscure but it really isn't. Simply, we must put a fair cost on all inputs and then maximize the bottom line, if you'll pardon the expression. All costs must be deducted. We may select various bottom lines to maximize. Generally, we think in terms of maximizing the net return to land, present net worth, or discounted cash flow.

Discounting the future does not mean to say the future is unimportant. It is just another way of charging for the use of capital over time. Using capital as though it were free, as public foresters, do is simply a bureaucratic thing to do. There is a very good reason. The reason is that capital costs are invisible. When you have capital in your possession, under your control, then it no longer appears in the budget. Payrolls are

visible. They are always there in the budget. It's a cash outflow each year. Even though the cost of capital is invisible, it's still there. It's what economists call an opportunity cost. The reason economists and bureaucrats tend to be natural enemies is because economists job try to make invisible input costs visible.

In its accounting of its management of the national forests the Forest Service should include an entry which indicates a 40 billion dollar mortgage on the land and timber being managed. I'm using 40 billion dollars as their value because that estimate has been made by Marion Clawson. Marion, as you know, rides a pretty fast horse and that was the best estimate I could find.

If the national forests are worth 40 billion dollars, and you economize on their use, you than must pay interest on them each year. At 10% this would come to 4 billion dollars a year. You should probably pay property taxes besides that. But why quibble.

The Forest Service is not earning 4 billion dollars a year on this resource. It only gets about a half a billion gross. Its net, without counting capital costs, is frequently negative! This is not a good way to run a 40 billion dollar railroad. Is this not one way of asking if this enterprise is really being operated in the national interest? Economists and bureaucrats are natural enemies. Perhaps this example enables you to see why.

It has already noted that present forestry practices may take capital from more productive sectors of the economy. We may also neglect higher uses within the forestry sector itself. Intensive management on the best sites may be neglected. This means we neglect efficient use of both capital and land. There are two ways to apply more capital to the land, the quick way and the slow way. The quick way is intensive management. The Forest Service, so I'm told, tends to neglect that. The slow way is to let the trees stand a long time and pile up plowed back capital and unrealized rents. This is what tends to happen if you use long rotations. The use

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of culmination of mean annual increment as an objective is not only a slow way of growing timber, it also tends to rule out quick capital turnover. If the cycles are long you can't justify intensive management. Bill Hyde and John Walker have both called attention to this problem. They have shown that by using shorter cycles and increasing the management input you get your money back much faster.

A third weakness of the conservation movement, in its marriage with bureaucracy, is toward cross-subsidizing. Its related to "defending the borders voters," otherwise known as "land grabbing." The idea is to earn money from good land. Instead of reinvesting it where its most productive (on the good sites) you then develop the marginal sites. You neglect the good sites because they are firmly under your control and somebody else might want to get his sticky fingers on the marginal sites. This is all summarized by the phrase, "A little of everything, everywhere." The policy is similar to how Mayor Daley tells his people to vote, that is, early and often.

Regeneration is not made on the basis of productivity but the availability of money. Much money is frequently made available from cutting mature timber. This is the so-called "allowable cut effect" you have heard so much about. There are additional biases. Logging at elevations that are too high and invading recreation land. I won't take time to go into these this evening. ^{least.}

186/1 Conservationists have developed the concept of "even flow". Not even a government agency could think of doing that. This is sometimes referred to as a biological concept, although I'm certain Charles Darwin and his followers would have difficulties believing the state of nature is a static state. The law of evolution, and survival of the fittest, would appear to call for the kind of mobility and flexibility which strangely enough the free market tends to create. With its emphasis on obsolescence and replacement the competitive market seems much better designed than "even flow" to prepare us for a golden age in the future.

The fifth problem that conservationists may be perpetuating is their conviction that free markets are essentially malignant and irresponsible and

bureaucracies are mostly benign. Economists have worked out the basic tendencies of the economic system in a very persuasive way. They have also investigated carefully, alternatives to the free market. It is regrettable conservationists have gotten themselves off on this tack of seeming to support authoritarianism. The culmination of authoritarian system was Louis XIV. I just don't think we ought to go back to that.

My next to last criticism of conservationists is the importance they attach to natural resources as a basis of employment. If you analyze this situation it would appear they mean the substitution of capital and land for labor. They mean that wood is grown with lesser input of labor and a greater input of capital and land. This would not be a good thing for employment. Economists have been preaching for years that the way to make jobs for labor is to make work for capital.

Another problem that conservationists have gotten into, is to create a system in which there is no trade-off between wood products and the other products of the forest. Now, if we are going to have trade-offs between wood and other forest products, we have to have a common measure in order to know which trade-off is optimal. When we go to non-economic standards of rotation, and abandon the concept of soil expectation value or maximizing the present net worth of land, then we have abandoned the only common measure there is between wood and other forest outputs such as water, wildlife and recreation. Economics has been critized because it doesn't measure these non-wood outputs. Neither does the culmination of mean annual increment. Economics does provide a basis for making trade-offs between wood and other products which the other system doesn't. The principal argument for using the price system is that it does give you a basis for making choices.

Finally, capital is kept in existence age to age not by preservation but by continual production. This means more than when we cut a tree, we plant a tree. We might quote Emerson, the transcendentalist, who once went to India. Like the Beatles, he spent a lot of time with the Hindus and studied the Indian philosophy about the many forms life can take. Economists

frequently think of capital in this way too. It is a collection of physical objects which can take many forms. We don't have to replace wood with wood. We could cut down part of the timber inventory, if there is an excess, and replace it with gymnasiums, hospitals, bars or bowling alleys. If we maintained our capital stock, we haven't lost it. We have made it much more useful. We haven't failed to take care of the needs of the future. We have made the future better.

As a concluding note, I might observe that after spending three years in British Columbia I found the place to have many charms and virtues. It is however, something of a closed society. I suspect for the next 20 years the British Columbia Forest Service will act much like the U. S. Forest Service has for the past 20 years. In the United States we have a potentially more productive situation. We have a vigorous private forestry sector which ^{is} growing trees, making profits, and paying taxes. They are shortening rotations. They are providing guidance for public foresters. This is a great American tradition. It would appear the U.S. is on the cutting edge of progress in forestry. In spite of this progress we are still left with the question, "How long can the old ways continue to hold out without modification?" That is the question I will leave to you.

Thank you for your patience.

Forest Mgmt., The Conservn. Ethic, & the Economist.

1 have a joke - on p. 7.

God required 6 days. Jack & John & Co. only have 2
also, don't hold them to unfair burdens & standards rationalizing
forests, as tho they were eccentrics w. novel ideas. Pvt. bus. operates on
max DCZ -- bureaucracy is

1. Mgt., Conservationists & Ecsts. all have much in common -

they're all vs. waste. I think. Anyone here for waste?

~~Begin~~

Everyone we hear from shares that common premise.

Leads to remarkably divergent conclusions, but it's a start.

Leaves rampant the great enemy of progress: vagueness.
Need for straight talk. E.g. new Gov. in B.C. "Your position has been terminated."

2. all for conservation. How far does that get us?

Pinchot: "I don't know what it means, but it's

unfurlly hard to oppose." More vagueness.

Eleven defs. An elastic term, slung around legislative
barricades to fertilize ea. new crop of statesmen.
Yet has some substance.

A. Ecce. on land.

i.e. don't buy that throwaway of eccs. where
"Effic" $\equiv$ output per man, no matter how much land & material
you waste to do it. If that's what eccs. means, include me out.

There's been a lot of that. Labor thy. of value.

Counts. may go too far, to other extreme, max. output/acre
regardless of cost. But we owe them a debt for balancing
out the labor productivity extreme.

(Now we're getting energy-effici; oil balance of payments;
residuals - balance; intl. balance of payments or ec. base acctg;
wood balance; etc. Job of ecc is to mediate, avoid such
unbalanced extremism.)

Ecsts. process. w. labor leads ~~to~~ in 2 directions. If they
don't like labor they say labor is surplus; if they do like labor
they promote waste eccs, waste for work-relief, anything for jobs.
Either way, land is neglected.

B. Put res. under responsible mgmt. To show due concern for future. Give today's mgr. an interest in the future. Bay limits.

C. Economize on nat. res. thru time.

Wanderup insisted it was something more, but he convinced me that's exactly what it is.

Intertemporal choices where there are intertemporal interdependencies in land use.

Thus cons. & eco. are the same thing. Each involves careful use of valuable assets, planning over time, saving, charting the best path into the future, avoiding waste. Frank & Wagnall agree: "Pres. of nat. res. for ec. or econ. use."

D. Recognize side-effects or spillovers

Belatedly, econs. are catching up here, but conservationists were ahead.

Again, however, cons. may go too far. &

ecst. warns that an undue preoccupation w. avoiding side-effects can only result in never changing anything - stasis, or stagnation. And since everything is always wearing out, leads to world withering away.

It's like having the old family homestead owned jointly by ten heirs. Kaweah R. ~~the~~ Adopting natural conditions as a norm, even the man often improves on them.

E. There is a community interest in land.
Peculiarly affected w. a public interest.

F. Land is source of livelihood, employment. Some ecsts. wd. just recycle money faster.

G. Res. should be removed, replaced? No, only a ~~J.S. Smith.~~
concept of const. to think this idea peculiar to them. Leads
to next topic

3. Where has coun. gone wrong? Have already alluded to a few. Coun. a good antidote to poison of profit motive, but the antidote w/o the poison is also poison.

A. Become identified w. bureaucracy in govt. & a

bureaucracy in particular. (you may know which, but like a bull? won't specify)

B. Free Capt. (aid & comfort from New Eng.)

& internalize rent. & can come in, but must never go out.

C. Cross subsidy - neglect good sites. Had me "early & often", as Richard Dailly says. ~~to~~

D. Rigid standards & requirements. not recognizing range of substitutability. Wood standard of value.

E. Lack of back up, rely on easy solutions.

F. Impose subjective values on others.

G. Conviction that natl. are essentially malignant, & bureaucracies benign.

H. Steer as a worm. Forget Darwin was a biologist, adapt or perish. Undervalue survival value of adaptability, mobility.

I. Convertibility of value. Only trade wood for wood

J. Free xptr.

K. Lack of commensurability. Forest measurements forgotten.

3,

A. Bureaucracy

All bureaucracies share certain traits.

Have a mission, is their mission regardless. Is up to others to hold them in check.

Self-preservation. Self-aggrandizement. Self-justification. (What's good for wood is good for all, but wood is good for you.)

Bargaining for budget. Conflict of owners & mgrs. This can be as great an obstacle to Comm. as mkt. failures, externalities, etc.

They get awfully good at it. Older ones, esp. -- military

& F.S. The Russians are coming. We're running out.

Beware. Reaction vs. bureaucracies is in full cry.

Niskanen & Stockfish. Carter & Brown & Reagan.

No time to hitch your wagon to that star, not in U.S.

(go to Canada.)

Certain ec. fallacies peculiarly assoc. w bureaucracy. F. S.
exemplifies. Indeed, has been the teacher of bureaucracy.

B. Treat K as tho it were free

I don't mean you lend it to others freely.

Perish the thought. This is not a symmetrical principle. It's a one way trip.

On contrary, you internalize all income you can, stress your

great need for K. But once you get it, treat it as tho

it were free -- if you run out, ask for more.

You say social rate of time pref. is below the mkt.

You know that. You hold the world in trust for future

generations. I'm for future gens, but is this the

way to take care of them? What this means in

practice is that the agency can control & invest large

units of public K w/o regard to productivity. (We have 120 bcs. there is enough K to go around. If force it into low use, are creating scarcity elsewhere.)

We look down on Indian peasants who fall in grip

of money lenders by borrowing at hi rates. But we

are selling land -- rising fr. ownership. Capt.

xfr. - at mkt. i. Then invest at 10%, we are

in trouble. [Conserv. to Van Hise, was stopping export of land, Conserv. shd. be vs. forcing foreign purchase.]

But Don't it all, wd. you have us be savants
savages, fail to renew? No, renew. Is a gr. of
when, where, & how.

Conservationist, did not invent renewal. All K is
constantly being used up & replaced. J. S. Mill.

Cut a tree, plant a tree.

Econ. differ in saying - do it more often. (our good
sites)

~~It~~ Max. mai is max. output regardless of cost.

Is full maturity when $i = 0$, when there is no inventory constraint, you select that inv. that max's output.

No other business does - why forestry?

The secret of balance is to achieve total factor productivity.

Sounds obscure, but you do it by putting a fair cost on all inputs and then max'g the bottom line, after all costs.

Usually max. ret. to land, or DCF. In forestry, DCF

called SEV, same thing. "Discounting" just means

putting a price on capital. You have to pay for every

year of it you tie up.

Wasting K is not peculiar to F.S. It's the bureaucratic thing to do, bcs. it's invisible. Once you get your mitts on K , its annual cost disappears from the budget. Bureaucrats & econs. are natural enemies bcs. the

costs' job is to make these invisible inputs visible.

Opp. costs, imputed costs.

F.S. budget shd. be drawn as tho there were a \$40b mortgage on it, half for timber & half for land.

Cost is \$4b a year at 10%, plus prop. taxes.

Are you earning a return? Rws. are .5b, outlays are 1b, & that's a hell of a way to run a \$40b railroad.

~~There are~~
Present practice not only keeps K from other sectors, it keeps it from higher uses in forestry.

~~There~~ Intensive mgmt. on best sites. There are 2 ways to ~~to~~ apply K to land, quick & slow. Quick way is intensive mgmt. Slow way is long cycles, let invisible inputs build up, rent & unrecovered K. Cmai uses slow way, but also rules out quick way.

Bes. at long cycle, can't justify intensive mgmt.

Walker & Hyde have shown where you can actually
↓ Δ man by going to shorter rates w. higher Co.
More visible input, less invisible.

C. X subsidy.

Is related to defending the borders, or land grabbing.

Develop the border lands & neglect the core. "A little of everything
everywhere" - Clawson.

An ec. policy wd. use the good lands
the way Mayor Bailey has his troops vote, "early & often."
F.S. policy makes funds available based not on their productivity
but their availability from long old growth in some
even flow mix. Ties up some good land holding invs. of old growth,

Too long roads. Cut too high. Invade
reem. land. Etc.

D. Status as a norm.

Only a govt. cd. do that. Biological viewpoint?

Hardly. Law of evolution is change, adapt or perish.

Survival calls for mobility & flexibility. That's the teaching of both biology & econ.

E. Conviction that free markets are essentially malignant & irresponsible, & bureaucrats are benign

I hate to see Comtr. go off on this authoritarian tack. Mkt. system does have a rationale, studied by econs. over 200 yrs. The culmination of authoritarian system was Louis XIV.

F. Forget employment as a goal. Make work for K, rather than labor.

G. # Lack of commensurability

By abandoning max PV as norm, F.S. has abandoned the only common measure for trade-offs between wood and: water, wildlife, recre.

Ecs. has been criticized bcs. doesn't measure nonwood (over) convertibility of value. J.S. Mill again. But

Emerson. Transcendental essence -- subsistence for labor as it replaces. Needn't replace wood for wood. Maybe a fork lift, a gym or hospital.

In Canada & B.C., closed society, provincial & proud of it. F.S. in saddle for another 20 yrs. But in U.S. there is a vigorous part. forestry making profits ~~and~~ & paying taxes (well, sort of), shortening rotms, needing the Feds., the cutting edge of progress in forestry, ~~How~~ ~~can~~ reinforced by mood of suspicion toward Wash., reaction to 40 yrs. of big brother knows best.

outputs. But neither does cma.

Ecs. provides a basis for trade-offs. Mai doesn't.

No wonder F.S. hasn't produced neg. studies.
Has no philosophical basis for them.

$i=0$, all values infinite, no basis for choice.

How long can the old ways hold out?

I leave that for you.

Speakers.

A 1

1. Congratulate all
2. My favourite subject

Me win the Wayne Hays award

1. Jack Krane. "Travelling companion". of Lloyd Butten, Super. of Phummas Nt.

Starting from ground zero.
"Biological viewpoint"

Can shorten road system, leave ungd. land alone, use good sites early & often.

2. Bowdle. "The French don't care what you do, actually, ---"
"I don't go all the way w. BD, but ---"
Ecs. conflicts w. tradit. model of forest mgmt.
Objectives determine the appropriateness of model. "What's the name of the game."
Muc ~~of~~ DLT is not "short term", as alleged by Sen. Committee.

Slash problem gets worse with older stands, there are more dead trees.

Might descend into the inferno of zero supply? No, bcs. of price adjustments.
not content w. present value, looks into past.

Feudal basis of S&E7. Peasants' right to cut wood
(when rights are expressed in kind, lose mobility - French equity.
Money the great compensator & translator. Our cultural pluralism, anti-commercial spirit, closed societies.)

Open access forests, had to put bag limit on trees.

Douglas, cont.

Trade-offs betw. wood & other things - where is data?
Can get more wood & also more sun.

Mr Kilgop "I'm keeping an open mind". One of Barber's ways of avoiding decisions.

Klaus Barber. Aswood

11 yrs. (he likes to make lists) as someday it may happen that a victim must be found. "I've got a little list"
Enemies list?

Q1.

Intolerant species culminate faster (Pond, intd. of shade)

Hi sites culminate faster

Density, understocking - "when in doubt, mumble." "In this business, a little vagueness goes a long way."

Thinning shifts growth to base - bad, pyramided trees. But then, having made a big point of it, says it doesn't make that much difference.

Q2.

Trees culm. later than stands, b/c. of mortality.

(Brown-Rund. can't see the stands for the trees)

Q3.

Higher mortality on good sites

Poor sites have more stems, at given age

(Thinning shd. be weeding)

Wild understocked stands, c mai comes -- later?

Cautious vs. silly rules of thumb. Need for such cautions makes me wonder what people have been doing before

Fact that such rules cd. be used displays lack of normative rules. "What's the name of the game?"

(There are 2 ways of applying more capt. to land.
 1. - Visible inputs, input.
 2. - Invisible inputs, time.

Ec. valuation leads to more 1 & less 2.

Walker

Higher price, use less wood. MR curve.

TC , AC , MC . MC is supply curve.

S & D .

Intensify input, use best opps. first, move out along S curve.

Mc Killop - lag in supply response

Thinks Walker misinterpreted Outlook study.

Re defn. of supply curve.

Voise: equates AC & supply. AC is vertical line, no response to price.

Utilizn. goes up -- 2×4 is getting smaller.
(Same on higher price)

"Change in Techn." shifts S curve.

Dowdle Investment analysis

Use compound interest.

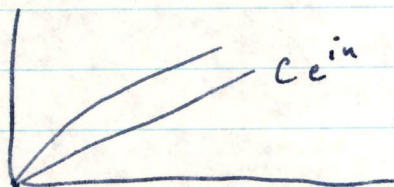
Consolidate ownerships in the marketplace, rather than vertically integrating by assumption & requiring even flow from ea. unit.

Ref. forest w. cmai, turnover is so slow, inventory swells up so you can't cover interest on it.

Demand is more elastic than Walker makes it.

ECHO gets you from excess inventory liquidates excess inventory along opt. path.

McKillop Fuel maturity



$$F = (C + S)e^{in} - S$$

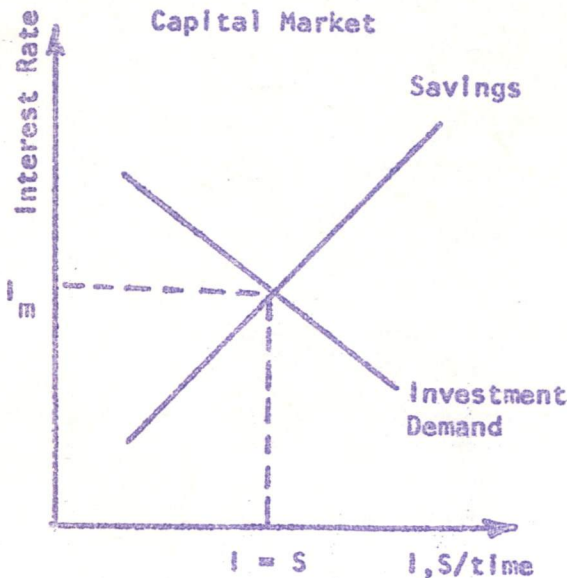
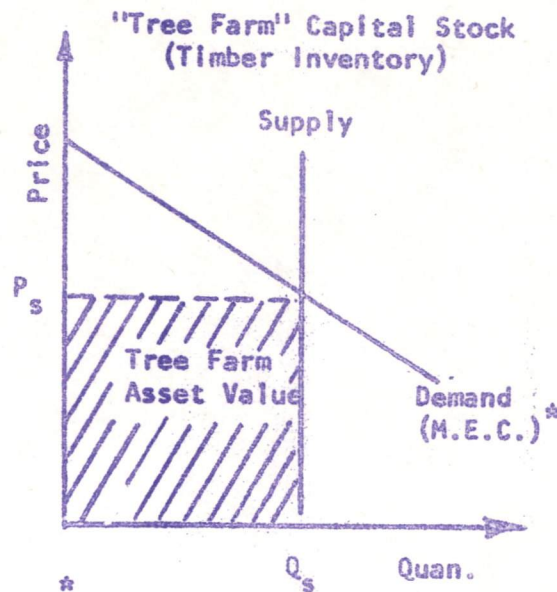
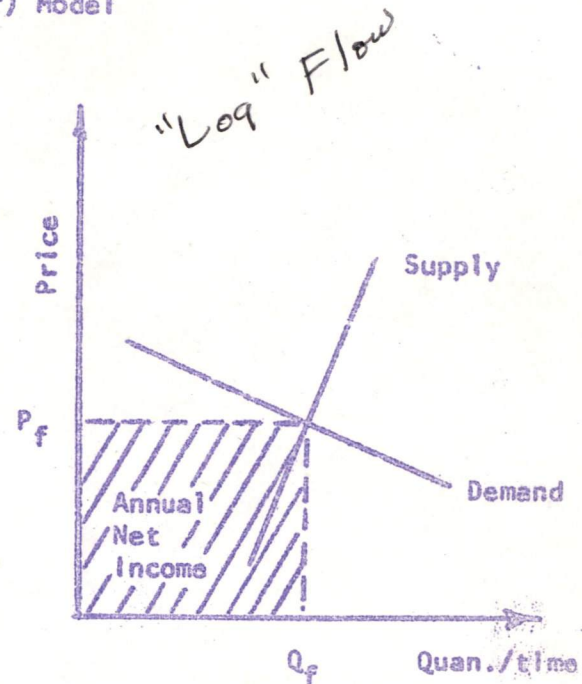
$$\frac{dF}{dn} = (C + S)ie^{in}$$

$$S = \frac{F - Ce^{in}}{e^{in} - 1}$$

$$\frac{dS}{dn} = \frac{dF}{dn} - ie^{in}C$$

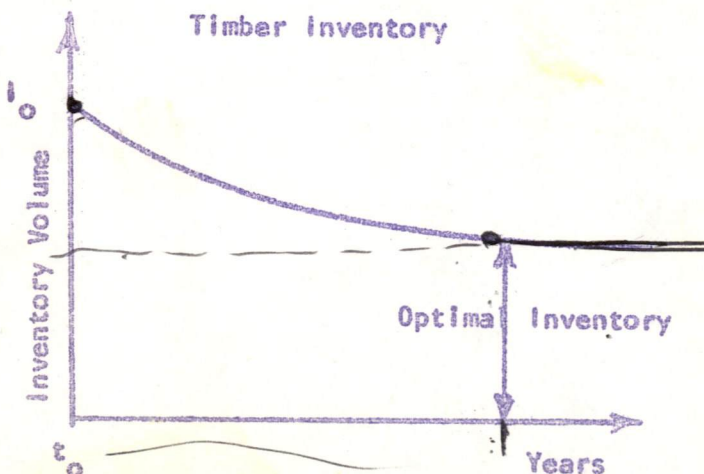
Double

A Simplified Economic ("Sustained Yield") Model



* Marginal efficiency of capital if rate of return used on forest on opt. path.

ECHO gets you from t_0 to regulated ordinate, forest on opt. path.



In equilibrium: Market rate of interest = $\frac{\text{annual net income}}{\text{asset value}}$

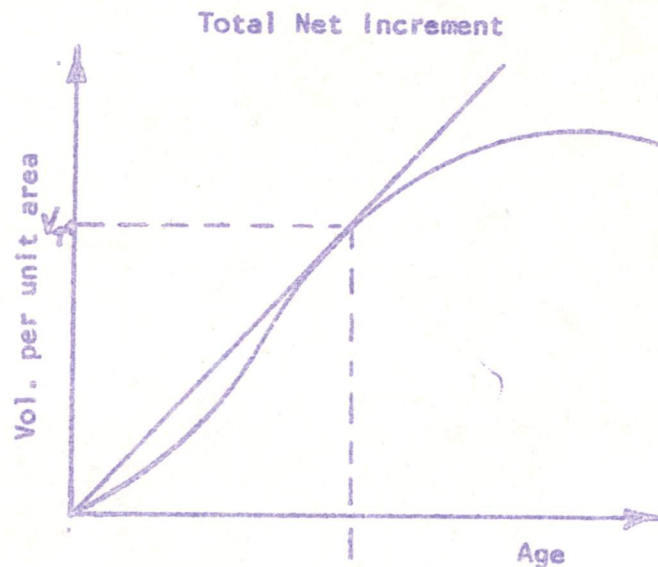
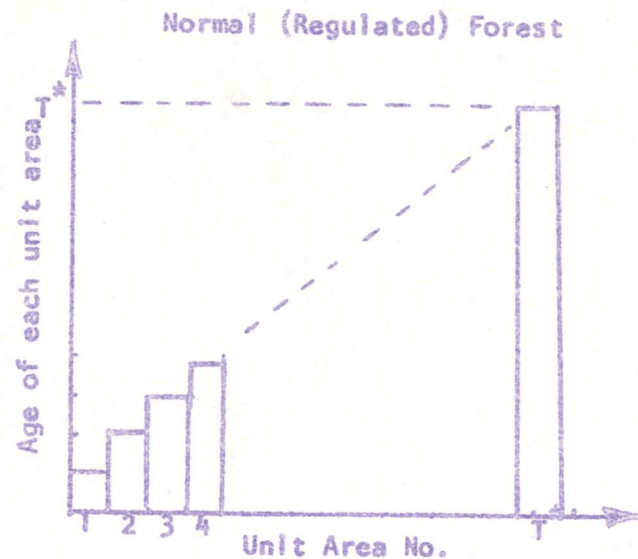
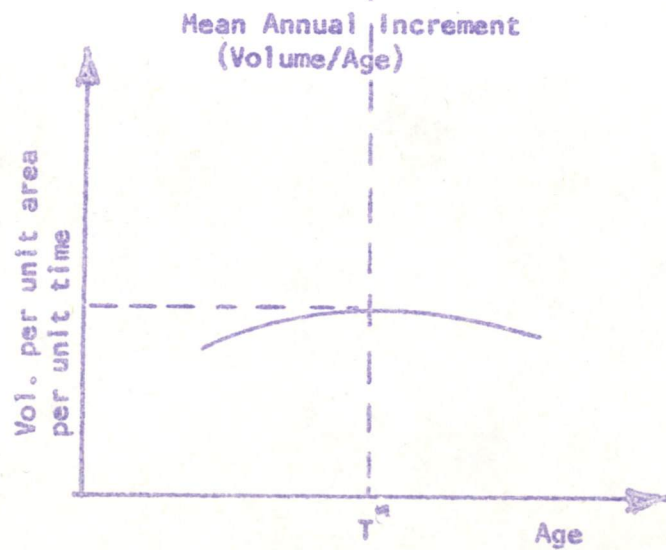
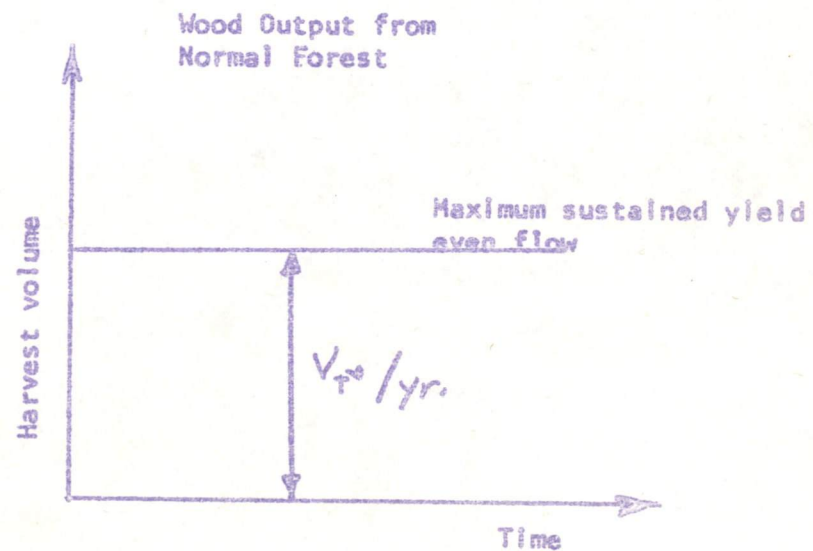
$$= (P_f Q_f) / P_s Q_s$$

Equilibrium rate of inventory turnover: $= (i_m) (P_s / P_f)$

BD
6-3-76

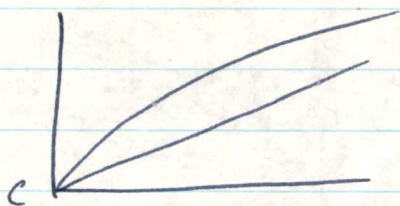
Dowdle

A Simplified Traditional ("Sustained Yield") Model



$$\text{Rate of inventory turnover} = V_{T^*} / \sum_{i=1}^{i=T^*} V_i \approx V_{T^*} / (1/2 T^* V_{T^*}) = 2 / (T^*)$$

A4 $\frac{1}{2}$



$$F = Ce^{in} + S(e^{in} - 1) = (C+S)e^{in} - S$$

$$F+S = (C+S)e^{in}$$

$$\begin{aligned} \frac{dF}{dn} &= iCe^{in} + iSe^{in} = i(C+S)e^{in} = \cancel{i(Ce^{in} + Se^{in})} \\ &= i(S+F) \\ &= \cancel{iCe^{in} + iSe^{in}} \end{aligned}$$

Maturity comes when tree stops growing this fast.

Josephson

1. Why max monetary values.
 Even flow may be less important. Future gens. instead

2. We don't have much of non market effects

3. I.e. to me,

Real Δ in stumpage price, 4%.

Walker & Keane use 6%.

F.S. has used 5%. Even flow is 0%.

For. might go for 6%.

4. Δ cut wd. lower price. Conspiracy for greedy consumers.

4. Elast. of demand is low

5. Political acceptability.

E.F. has support. Δ as unlikely.

Burden of proof on side of challengers.

(Proof wd. have to be forthcoming from F.S.)

Enoch Bell

A 6

"What is the name of your game?" Objective fn. Game's over.

LP

1. Simulating

2. Optimizing

Optimizing

Simac

RAM

Model 2

LP is way of optimizing with 2 or more constraints at once

Simac is assumes even-flow as objective. 400 yrs.
Liquidate old growth, ~~to go to highest c.f.~~
in 150 yrs.

RAM can't handle very many constraints. 350 yrs.

RAM gives lower c.f. than Simac has.

RAM liquidates old growth ~~only~~ ^{only at} end of program, ~~at~~
350 yrs.

Seems to be a way of applying Hauszlik.

Can be 2 stages, step down.

Model 2 doesn't work yet.

Walker

ECHO equates discounted MR in different years, & schedule harvest accordingly.

I'd like it better if he equated discounted AR.

ECHO finds an initial harvest level that is optimal by maxing PV.

All the other harvests are tied to the initial level b/c. MRs must be equal. So

Initial level requires so many acres, & takes down inventory so much.

You cd. do it by hand.

you find MR in pd. one, then determine harvest level required in all later periods to yield that DMR.

But MR has to keep rising - is that right?
Trees grow & values rise, OK. (also, demand elast. rises, maybe).

By using DMR to max, J.W. is underharvesting early yrs.,
probably — overcompensating for price effect.

at time 8, start all over again, because the solution goes haywire: either exhaust inventory, or get negative cut.

Walker, new Topic

Higher i , ~~shorter rota.~~ lower harvest age

Use smaller wood, lower harvest age.

Effect of site quality - shorter harvest

" " intensive mgmt.
Higher PV

McKillop -- mouse who roared.

Faustmann can handle MR

ECHO is an extension

Faust can handle intermediate rotas.

ECHO is quadratic programming

ECHO is no subst. for LP (but LP isn't
fund. maturity)

Walker

3 RAM runs.

1. Vol. max. Cuts all in 1st 10 yrs., then ca. 90 yrs.
W, no flow constraints.

2. Big step down

3. Nondeclining yield. Hold old growth for 350 yrs.
Lower than min.

Once it harvests a block of acres, can't split
them up again later

RAM is a scam. Want not a choice, but an ECHO.

~~Not an echo, but a choice? No, echo~~
~~echoes Faustmann, & that's a good choice.~~

Walker says RAM "degenerates" into Faustmann.
when you see $i > 0$. (??)

J

Ecsts. wd. review & update continually.
Recognize obsolescence. Demand changes, supply must adjust.

~~Ecsts. wd. make all values commensurable.~~

Ecsts. wd. let external ecst. express selves where possible. E.g. comm. stability. Let people build less stable comms., change more, if they will. Actually, they probly won't. Not every comm. can be stable, or needs to be. There are plenty of mobile people.

Ecsts. must no rigid rules of thumb. Explore all dimensions of change. E.g. invest Co to shorten rotas. Consider other species; new stock; spawning; ~~utilization~~; mensuration.

F.S. has been unspeakably derelict in accum. this info. Where have they been? What doing?

Ecsts. don't believe bur. defense needs. -- Kl. Bender's list.

Ecsts.

(Are vs. irreversible waste, ephy.?)

What is waste?

Water is waste ~~when~~ if run down S of R & out the GG.

So are unreaped harvests of idle land. Irreversible. Down the river & out the gates of time, there to sink into the past beyond recall.

Does F.S. waste land?

- Spreads input. thin on area basis, a little of everything everywhere. undermanages good sites, (& on balance probly undermanages on the ave.)

- uses land for dead storage. Hamchik.

- other hand, emai treats both cap. & labor as fra, cd. be interp. as exp. on land alone. In practice, in forestry, capl. is so much more input. that this comes down to overapplying K & underapplying labor, which is the usual pattern.

Does F.S. waste capl.?

a big yes. Same as most public agencies.

(Pub. forest mngs do too, (but less so,) bec. of true bias.)

Here is biggest waste. Forestry no diff. from

In forestry, somehow slow use of ex. res. got mixed up w. renewable res. -- & renewal got lost. So did pres. of wild life, & moral uplift. Low-grading may have gotten lost in battle vs. clearcutting. Selective logging could mean high-grading, leaving weed trees behind.

Even-flow, added by F.S. ? Staris goes back to von Liebig.

Cons. is ~~one of~~ more elastic terms ~~than~~ ^{spins around the legislative} ~~about~~ bannards to fertilize each new crop of ~~politic~~ statesmen.
 ~~Exclusion dips, etc.~~

Frank & W. dist. as good as army. "Preservation of nat. res. for economic or recre. use." Took me back to Wanting.
 ~~us. of cons., cons. is economizing on nat. res. thru time.~~

Thus to me ~~cons & cons.~~ are the same thing. Involve saving, fighting waste, putting to best use, etc.

This is ~~probably~~ ^{doubtless} why some converts regard ex. res. ~~as~~ ^{as} punching bags. They are not infidels but heretics; not unbelievers but rival prophets. & nothing is more hateful than that.

Redding, points

"Forest Mgmt, the Conservation Ethic, & the Economist."

B.1

1. We are importing K at mkt. i by selling land
If we let public agencies invest low, we are like Indian peasants who borrow for weddings & funerals.

B.3

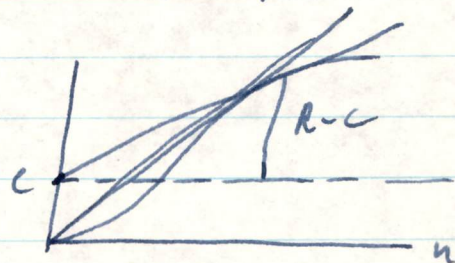
2. Doctrine of low social time pref. means in practice that public agencies can waste K.

3. I.e. doesn't discount future but charts bare pathway there.

4. Evenflow ignores demand, which is uneven.
(See Kanwisk study for ideas)

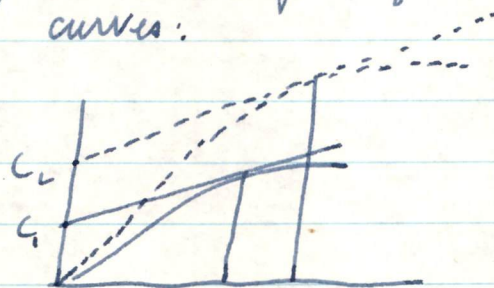
5. Max inv regardless of cost - makes no sense.

6. $\frac{R-C}{n} < \frac{R}{n}$



When deduct C , and max $\frac{R-C}{n}$, get longer n than when max. R/n .

7. When $\Delta C \rightarrow \Delta R$, may lengthen or shorten cycle depending on shape of curves.



8. F.S. max's min in physical terms

With assumed level of input & utilization.

So there are several unclear aspects

a. Max min instead of def

b. ~~to~~ Fail to deduct C

c. C_0 not determined early. They may assume to number too little. Probably too little, but that's what they do.

d. Use wrong physical terms?

Use Scrubber rule, too much quality factor
bes. wood not counted until gets hi quality.

e. Arbitrary utilization factor.

9. W. long min rotm, can't justify C_0 . $\therefore$ don't get much regen. invt.

F.S. can't argue that scs leads to low regen. It is their present ways that lead to it.

10. It is conceivable the ex. rotu. with ex. Co, and produce high mai. Hyde & Walker claim so.

11. Forecasting is tough. True -- calls for shorter cycles.

12. If max mai, how choose among species?
Choose species of max mai, I suppose.
But how equate? If one worth twice the other pbf, is that allowed?

13. For Tradeoffs between cellulose & other ^{site} wood products, require a common measure.

If use mai, how value loss of cellulose? If use d.f, & use $i=0$ i.e., get very high d.f, so wood looks better than other uses. Result could be to overvalue wood vs. runoff.

→ Or, if we discount nothing, all values inf., no basis for choice.

$$i S_e = i \frac{R - C e^{in}}{e^{in} - 1} \quad \text{Let } i \rightarrow 0$$

$$i S \rightarrow \frac{0(R - C)}{1 - 1} = R - C \quad \frac{0}{0}$$

$$\frac{di}{di} = 1$$

$$\frac{de^{ni}}{di} = ne^{ni}$$

$$i S_e = (R - C) \frac{1}{ne^{ni}} \quad \text{but with } i = 0$$

$$= \frac{R - C}{n}$$

No rent $\approx$ min when $i = 0$.

$$\text{Does } S = 0? \text{ No, } S = \frac{R - C}{n \cdot 0} = \infty$$

[But what if I put i on rt. side first?

$$S = \frac{R - Ce^{ni}}{e^{ni} - 1} \quad i \rightarrow 0$$

$$S = \frac{R - C}{1 - 1} = \infty \quad \text{OK, is same}]$$

Once you abandon rationality you run into endless contradictions.

5

14. Max DCF is to be compared to max mci, not to multiple use.

Except DCF is commensurable among all uses, mci is not.

15. "Stability" in practice means stability of empl. dependent on NF timber.

But area stability wd. call for compensating for other changes.

16. If empl. is the goal, calls for shorter rotation, less long ones sub. capt. for labor.

17. F.S. has failed to develop data on Trade-offs, timber vs. other values

Has failed to update yield tables. Who is pioneering in genetics, etc. to speed growth.

all F.S. does is ask for more \$. The prototype of a self-serving bureaucracy. What's good for F.S. is good for America.

Debilitated by their abandonment of rationality, F.S. can't do anything well.

18. Double standard used in refuting ECHO. It's not broad enough.
 Mai isn't broad enough either. But ~~mai~~ ECHO is commendable, mai isn't.
19. Pvt. forestry thrives on def. Is the norm, not the freak.
20. Are NTs hung up on saw timber?
 Has gov. ext. done the pulp mkt. all alone?
21. Josephson figures ECHO wd. raise NT cut above present evenflow for 1st 90 years!
 Then go to 86%.
22. Walker has shown of a RAM model you can improve it by getting more in decade one, and no less thereafter.
23. Constantly amazes me how seriously people still take all this junk, self-serving bureaucratic arguments. They are classic stockfish.
24. F.S. has recently, 1975, shifted emphasis from "community stability" as a rationale to equating the interests of present & future generations.
 (Rawls)

25. S. 3091, The Humphrey Bill, or "N.F. Mgmt. Act of 1976."

New Sec. 11 establishes in law the F.S.'s recent even-flow non-declining yield policy, w/o using those words. (F.S. introduced the policy w/o basis in law.) Sec. 11.

New Sec. 20 lets F.S. require higher standard forest roads.

26. NF total costs are about \$1.6/yr.
" receipts " " .56/yr.

27. On 3/10/76, WTA thought S. 3091 wd. meet the Monongahela issue, i.e., allow clearcutting. Now I guess they are unsure.

Monong. was a court case re 1897 Act. There have been later acts.

1960, Multipl. - use S.F. Act, MUSA.

1974, Forest & Rangeland Renewable Res. Plan Act. RPA

28. Sen. J. Randolph wd. make Monong. permanent by S. 2926.
So wd. George Brown, HR 11894.

29. Randolph - Brown wd. define maturity in terms of individual trees, rather than stands.
This comes later, bec. the no. of trees declines.

F

The enemy is vagueness, ambiguity. The way they went from applied Hanzlik, dropping suddenly from original to depleted inventory basis.

30. 54. is now on a N.F. basis — i.e. the N.F. is the working circle.

Randolph - Brown wd. reduce this to Ranger Distr. basis.
Reduces pooling, reduces cost.

31. ACE must be based on something other than Hanzlik formula. What? They've gone from Hanzlik to RAM

32. Nat. F.P. Assoc, Wash DC, is not above claiming ripple effects as benefits.
Not charging planting costs against concurrent harvest revs.

33. OMB has set 10% as a guideline for fed invts.

34. F.S. now sets rotn. age at 100 - 140 yrs. for most western species.

35. Knutson - Vandenberg Act, 1930, requires funds set aside from harvest, to be used for reforestation. Limit was limited, however. NFA wants to keep it limited.
S. 3091 may remove limit.

36. George Brown's objective, he says, is to raise demand for timber from priv. rural landowners.
He appeals to "rural life supporters".

Wd. restrict clearcut to 25 a. max.

Humphrey & indy. criticize Brown-Randolph for being "prescriptive" — legislating ~~standards~~ methods rather than performance.

37. Forest Land is rated on basis of ave. height of dominant trees at age 100.

But age 100 may be irrelevant to highest use.

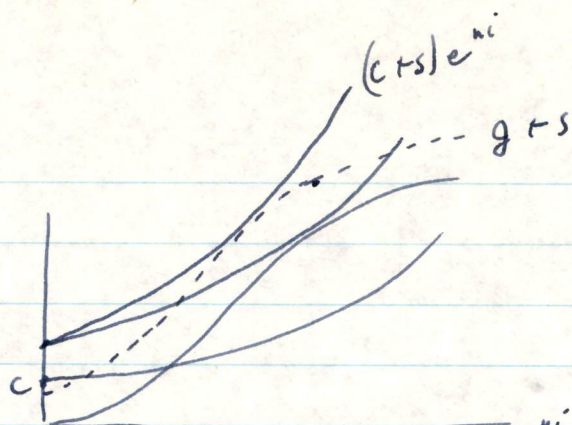
E.g. Timber site class has little effect on yield of grass.

38. In n.w. Cal. Site I grows in 30 yrs where Site IV does in 60. (Doug. Fir)
Site I mai peaks at 50 yrs.

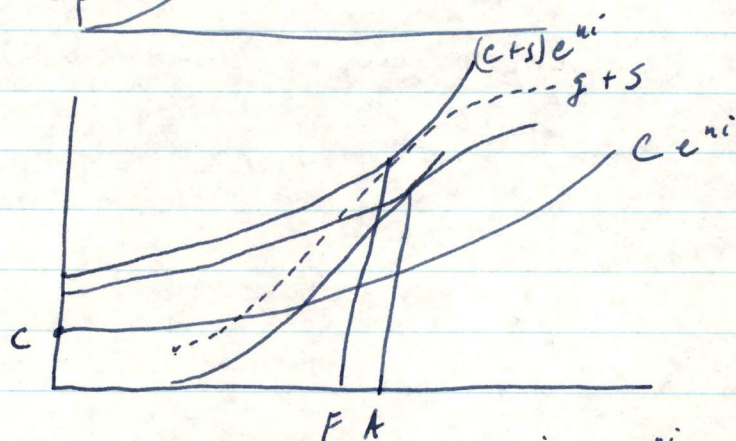
Clawson est. NF land worth same as NF timber -- \$206.

39.

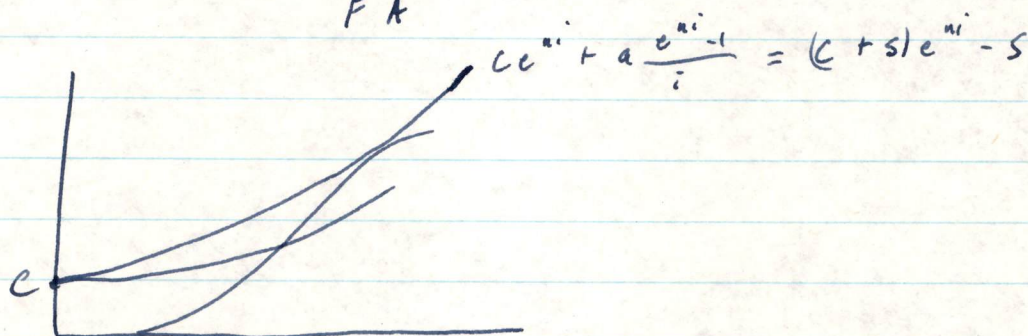
i)



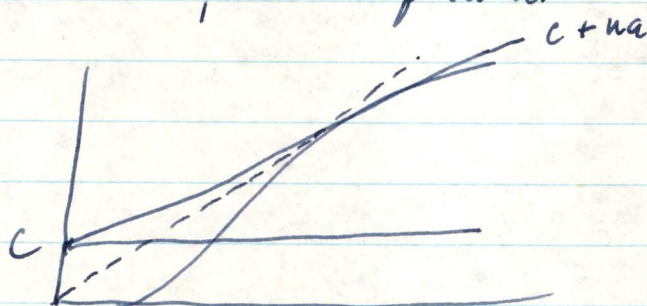
ii)



iii)



Use #3.

As $i \rightarrow 0$, curves flatten.

$$\text{Max } \frac{c+na}{n} = \frac{c}{n} + a$$

Let $C=0$, max mai , However, $C = \frac{1}{126}$ or so of f_1

and i . that difference has negligible effect.

Thus I cd. show max. $\max$ is $i = 0$

Abolence:

What will hi energy costs do to pulp mills?

"Fallacy of fixed coeffs."

"It costs" so much to plant one acre.
Thus don't consider more intensive input.

→ W. shorter rotm. you can justify more C_0 (intensive input.) Walker has shown you can thus also Δ mai as cfd. to cmai under current C_0 .

Owners max profit serve society better than bureaucrats max — staff, budget, perms, etc., whatever bureaucrats max.