

Ad. 203, Winter '78, Used Notes

Idea, elements of good play.

— Be aware of ²⁰ likely errors, fend off each.

— ~~Why~~ = unqul. allocn. Why of K? Res. this is the resource controlled from center.

(Cf. adm. by Xerox machine.)

They can get other res. via market, which = unqulizer auto-matically.

Thus, limit the no. of things one must control.
Treat all else as cost; max. residual. Show logic of max. resid.

Show how to define i , and solve for i .

1. $P e^{in} = F$

~~or~~ $e^{in} = F/P$

~~$i = \frac{\ln F - \ln P}{n}$~~ ~~or~~

$$in = \ln F - \ln P$$

$$i = \frac{\ln F - \ln P}{n}$$

or $(1+i)^n = F/P$

Go to #6

$$i = F/P^{1/n} - 1$$

Rejert, for Jan. 23, 1928

3.

$$P_1 = \frac{\sum [R_n - C_n] e^{i(m-n)}}{e^{im}}$$

one cycle.

Inf. cycles,

$$\sum P = P_1 (1 + e^{-im} + e^{-2im} + \dots + e^{-\infty})$$

$$= P_1 \frac{1}{1-r} = P_1 \frac{1}{1-e^{-im}}$$

$$e^{im} \cdot (1 - e^{-im}) = e^{im} - 1$$

$\therefore$

$$\sum P = \frac{\sum [(R_n - C_n) e^{i(m-n)}]}{e^{im} - 1}$$

7. Gilmore & Brandenbury
Anatomy of Corp. Play.

Synergy

9. Tiller
Making Strategy Explicit

Make it explicit so you think about it.

Air Quality Plans
Good model

~~Govt. policy leaving mineral lands.~~

Adm. 203, Jan. 30, '78.

I. How to define i , and solve for it.

A. P/P0

$$P_0(1+i)^n = F_n$$

$$i = \left[\frac{F_n}{P_0} \right]^{\frac{1}{n}} - 1 \quad ; \quad \frac{F}{P} = 2$$

n	$\frac{1}{n}$	$2^{\frac{1}{n}}$	$2^{\frac{1}{n}} - 1 = i$	$\frac{i}{1/n} = ni$
1	1	2	1.0	1.0
2	.50	1.414	.414	.828
3	.33	1.260	.260	.780
4	.25	1.189	.189	.756
<hr/>				
10	.10	1.0718	.0718	.718
20	.05	1.0353	.0353	.706
40	.025	1.0175	.0175	.700

B. Add overhead, properly allocated.

Inv. which turns over uses part of capacity of K
which doesn't. $\equiv K$

$$(P + K)(1+i)^n = F + K$$

$$i = \left[\frac{F + K}{P + K} \right]^{\frac{1}{n}} - 1$$

$$F = 2$$

$$P = 1$$

$$K = 1$$

$$\frac{2+1}{1+1} = \frac{3}{2}$$

n	$\left(\frac{3}{2}\right)^{\frac{1}{n}}$	$\left(\frac{3}{2}\right)^{\frac{1}{n}} - 1 = i$
1	1.5	.50
2	1.225	.225
3	1.145	.145
4	1.1067	.1067

10	1.0414	.0414
20	1.0205	.0205
40	1.0102	.0102

cf. this with T.A. and ~~the~~ changing overhead cuts
return approx. in half.

C. Why you should always use daily interest, 2/0-
log. form.

Annual int. is clumsy; for short periods; and
gives false hi return, by ignoring comp. opps in
less than one year.

For daily interest,

$$P e^{ni} = F$$

$$ni = \ln \frac{F}{P}$$

$$i = \frac{\ln F/P}{n}$$

$$\text{Let } F/P = 2$$

$$\ln F/P = .693$$

<u>n</u>	<u>$\ln(F/P) \div n = i$</u>	<u>$i/n = ni$</u>
1	.693	.693
2	.347	.693
3	.231	.693
4	.173	.693
<hr/>		
10	.069	.693
20	.035	.693
40	.017	.693

Meaning:

a) You can double your money in one year at an $i = .69$, provided you turn it daily for

a gain of $\frac{.69}{365}$

b) You do cut your i in half each time you double n .

c) If $\frac{1}{n}$ is turnover, $T \neq n$
and
 $\frac{F}{P} \equiv \text{"margin"}$

then

rate of return is $T \cdot \ln(\text{margin})$

Of the two, T has a direct effect.
But $\ln x$ does not double with x , when $x > .69$

$$\ln 2x = \ln 2 + \ln x = .69 + \ln x$$

So you raise return more by ~~halving T~~
doubling T (halving n) than by doubling F/P .

Conclusion:

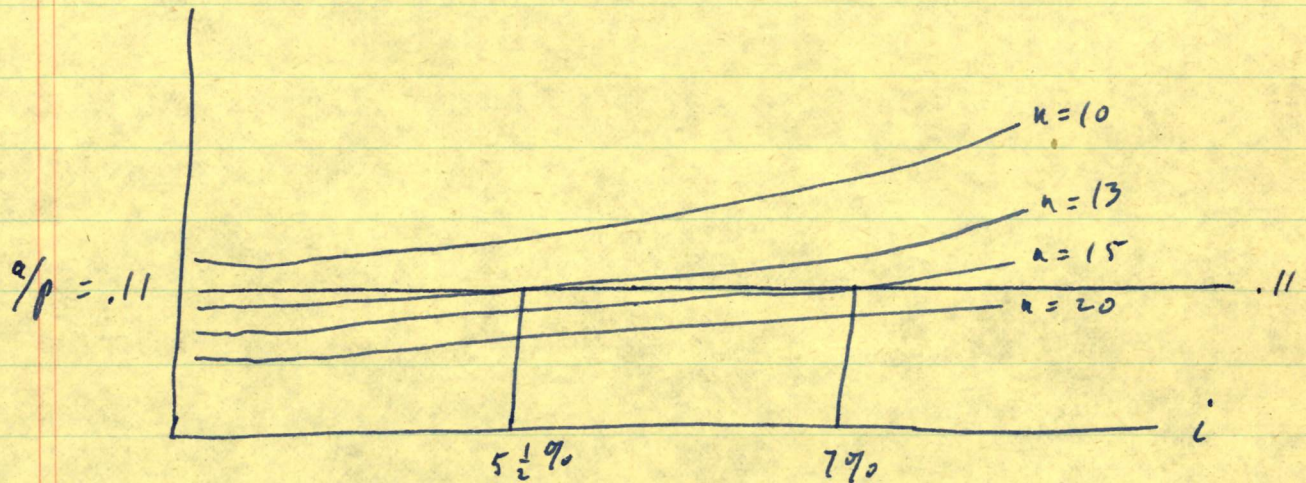
Turnover is not only as important
as Sloan said; it is more important.

D. ~~Level~~ Level annuity

$$P = a \frac{1 - e^{-in}}{i}$$

$$\frac{a}{P} = \frac{i}{1 - e^{-in}} = \text{crlf.}$$

One
curve is
enough



Use tables; or calc.

"Hire a Technician to do it." This technician is more likely ending up hiring you to work for him.

Errorous need for top mgr. to understand basic arithmetic of finance. Be sure you grasp basics --- here, & in Fac. course.

If overhead:

$$P + K = a \frac{1 - e^{-iu}}{i} + K e^{-iu}$$

$$P + K(1 - e^{-iu}) = \frac{a}{i} (1 - e^{-iu})$$

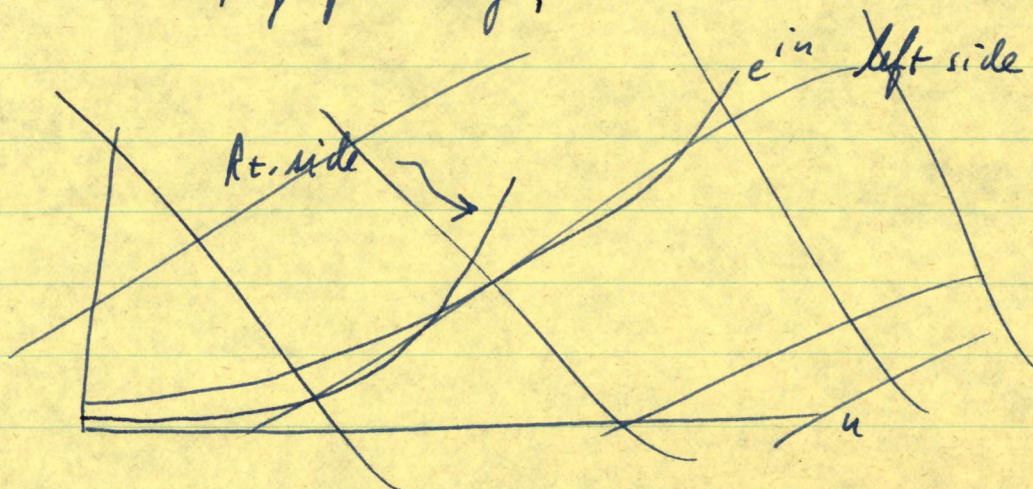
$$P = \left(\frac{a}{i} - K \right) (1 - e^{-iu})$$

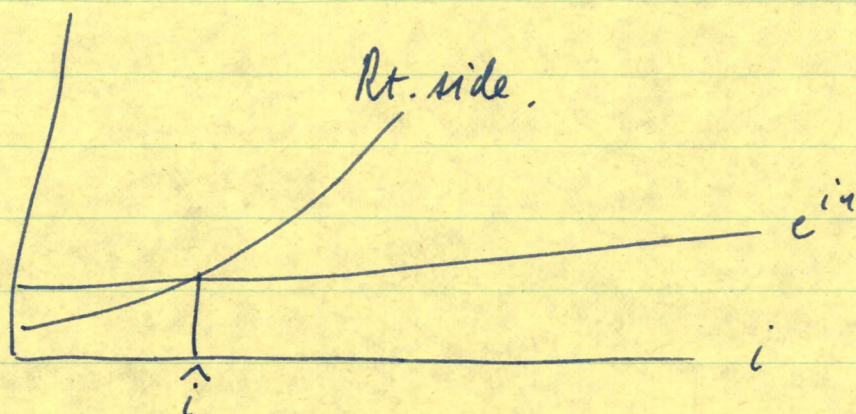
or

$$(P + K) e^{iu} = a \frac{e^{iu} - 1}{i} + K$$

$$e^{iu} = \frac{a \frac{e^{iu} - 1}{i} + K}{P + K}$$

To solve, graphically,





E. Any pattern

$$e^{i\eta} = \frac{\sum (R_n - C_n) e^{i(m-n)} + K}{\rho + K}$$

F. Alt. approach, solve for K , max. PV or DCF, given i .

$$K \text{ (crossed out)} = \frac{\sum (R_n - C_n) e^{i(m-n)} - P e^{i\eta}}{e^{i\eta} - 1}$$

This is equally good, usually, and many prefer it. Here, we haven't time for this debate, it's another course. Crucial thing is, enter all elements into the eqn.

Elements of Planning

I. Ideas from M-4 (Repetitive; thin on ideas)

A. "Functional dynamics" -- his turn for system approach,

B. Need to work w. uncertainty, & inadequate data.

Problems w. training in math, sci.

-- Michale & map

-- An cons. comm. Commission of Haagen-Smit.

Concepts re "hard science".

(Adm. is ~~not~~ ~~making~~ a soft sci. ~~to~~ whose job is making hard choices among hard sci. w. soft programs)

Wait for perfect info.?

C. Long checklists of internal & external factors, re problem ident.

D. Build in flexibility, bcs. intst. demands change.

Prevent ful. specialists from bldg: monuments; utopias; integrated comprehensive systems; steady-state normalized & self-contained systems.

Engineering tasks usually have a fixed "mission".
Mkts. keep changing.
(8 engineers keep doing jobs. Middle-age
crises.)

"Leathercraft" e.g. Long, mediocre story.

End M-4.

idea from A - 2

c.E. Lindblom, Art of Muddling Thru.

Re public prog.

Essentially a ^{case} ~~piece~~ for flexibility; warning vs. rigidity, overorg., narrow dogmatism?

No, a case for incrementalism -- creeping evolution.

Highly conservative.

E.g., the Kaweah R. mess.

Differences between root and branch policies.

Read from pp. 44-45.

1 deal from A-8

Smelter & Ruggles, 6 business lessons from the
Pentagon. 1966

From the era of McNamara - worship.

Salvage what you can.

a) Beware utopian dreams

b) U.S. DOD too large for anyone to control
Only a popular war can glue it together.

c) False info. was fed up

d) No measurable performance standard like i.

e) Uncertain objectives

~~lack~~ Popular disenchantment

Authoritarian atmosphere at top, manipulating
public rather than serving or informing it.

LBj's peculiar personality needs
Muir's desire to please LBj

So, ideas misplaced ... tho they may work better for Intl. Minerals & Chem.

No B/c and. of war itself, i.e. no objectives beyond winning.

Major lesson: "Tho I speak w. Tongue of men & angels. I have not charity, am nothing."

Alaska

A. Identify Problem.

To be tactful, was done while defining objectives

- 1) Front-money bias
- 2) Low bids
- 3) Premature \$ sales, when price low. Leaving on demand.

B. Clients.

Legisl.; DNR; & the profs.

Last most import. First 2 changed immensely.

Goals - p. 1.

alts. - In this case there were elements of lease, comig alts. ... & they cd. be combined in different ways.
Pros & cons presented.

Go over 2:

Bonus

Royalty

Some helpful math, re capt. theory.

1. If $y = f(x)$, then elasticity of y w.r.t. x is:

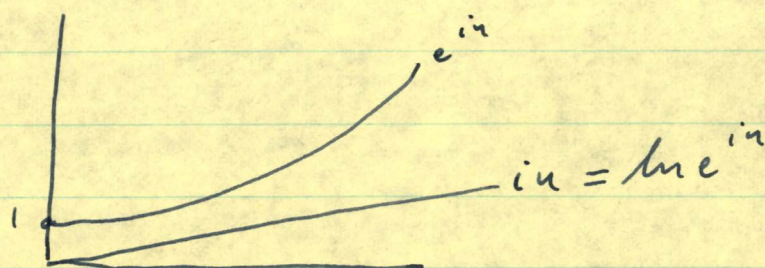
$$\frac{\frac{dy/dx}{y}}{\frac{dx/dx}{x}} = \frac{dy}{dx} \frac{x}{y}$$

or

$$\frac{\frac{d \ln y}{dx}}{\frac{d \ln x}{dx}}$$

2. $\ln(1+d) \approx d(1 - \frac{d}{2})$

3.



4. Let $f = F/p$.

~~Let~~ $r = \frac{\ln f}{n}$

$$\begin{aligned} \text{If } \bar{n}\bar{r} &= nr; \text{ and } \bar{n} = n(1+d) \\ \bar{r} &= \frac{nr}{\bar{n}} = \frac{nr}{n(1+d)} = \frac{r}{(1+d)} \\ \bar{r} - r &= \frac{r}{1+d} - r = \frac{r - r(1+d)}{1+d} = \frac{-d}{1+d} r \end{aligned}$$

For any given f , doubling n cuts r in half, etc.

But an $x\%$ increase of f , ~~for~~ for any given n , will ~~raise~~ raise r by ~~less~~ less than $x\%$.

How about an $x\%$ rise in $f - (, (=M))$?

Work out elasticities.

4 (cont.)

a.) ϵ of r w.r.t. n :

$$\epsilon = \frac{dr/dn}{r} \cdot n$$

$$\frac{dr}{dn} = \frac{n \frac{df/dn}{f} - \ln f}{n^2} = \frac{df/dn}{nf} - \frac{\ln f}{n^2}$$

$$\epsilon = \left[\frac{df/dn}{f} - \frac{\ln f}{n} \right] \frac{n}{\ln f} = \frac{df/dn}{f/n \ln f} - 1$$

If f is fixed at any given n , $df/dn = 0$, and $\epsilon = -1$

b) ϵ of r w.r.t. f ; n fixed

(Prediction: ϵ is high & +.)

$$\epsilon = \frac{dr/df}{r} \cdot f$$

$$\frac{dr}{df} = \frac{n \frac{1}{f} - \ln f \frac{dn}{df}}{n^2} = \frac{n/f}{n^2} - \frac{\ln f \frac{dn}{df}}{n^2} = \frac{1}{fn} - \frac{\ln f \frac{dn}{df}}{n^2}$$

$$\epsilon = \frac{1}{n} - \frac{f \ln f \frac{dn}{df}}{n^2} = \frac{1}{n}$$

c) ϵ of r w.r.t. M ($= f-1$) (n const.)

$$\epsilon = \frac{dr/dM}{r} M$$

$$dr/dM = \frac{dr}{dt} = \frac{1}{fn} - \frac{\ln f \frac{dn}{dt}}{n^2}$$

$$r = \frac{\ln f}{n}$$

$$\epsilon = (f-1) \frac{n}{\ln f} \left[\frac{1}{fn} - \frac{\ln f \frac{dn}{dt}}{n^2} \right] = \frac{(f-1)}{f \ln f}$$

$$= \frac{M}{(1+M) \ln(M+1)} = \frac{M}{(1+M)} \frac{1}{M(1 - \frac{M}{2})} = \frac{1}{1+M - \frac{M}{2} + \frac{M^2}{2}}$$

$$= \frac{1}{1 + \frac{M}{2} + \frac{M^2}{2}} < 1$$

So an x% Δ of M results in a less than x% Δ of r .

$$\epsilon = \frac{dr/dM}{r} \cdot \frac{M}{r}$$

$$dr = dM \frac{r}{M} \epsilon = \cancel{\frac{r}{M}} \frac{dM}{M} r \frac{1}{1 + \frac{M}{2} + \frac{M^2}{2}}$$

Here to
end of
p. 4 may
be omitted.

Let $\underline{x}$ be a coefficient common to $\underline{1}$ and $\underline{n}$, so:

$$r = \frac{\ln(xM + 1)}{xn} \quad (3)$$

Hypothesis: $\frac{dr}{dx} < 0$

(E.g. if $x=2$, it means n and M have each doubled;

and $\frac{dr}{dx} < 0$ means that r has fallen even though

$\frac{M}{n}$ remains the same, and $T \cdot M$ also remains the same.)

$$\frac{dr}{dx} = \frac{x^n \frac{M}{x^{M+1}} - \ln(x^{M+1})n}{x^2 n^2} \quad (4)$$

$$\frac{dr}{dx} < 0 \text{ if:}$$

$$\frac{Mx}{Mx+1} < \ln(Mx+1) \quad (5)$$

Non-rigorous proof.

It is known that $\ln(1+i) \cong i(1-\frac{i}{2})$

Let $Mx \equiv i$

(5) becomes

$$\cancel{i/x} \quad \cancel{i/(1+i)} \quad i(1-\frac{i}{2}) > \frac{i}{1+i}$$

~~$1+i > 1+i$~~

True (6)

$$(1+i)(1-\frac{i}{2}) > 1$$

$$1+i - \frac{i}{2} - \frac{i^2}{2} > 1$$

$$\frac{i}{2} - \frac{i^2}{2} > 0$$

$$\frac{1}{2} - \frac{i}{2} > 0$$

$$1 > i$$

Numerical example of proof

$\frac{i}{1+i}$	$\frac{i}{1+i}$	$\ln(1+i)$
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.01	.009901	.00995
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.02	.01961	.01980
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.03	.02913	.02956
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.04	.03846	.03922
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.05	.04762	.04879
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.08	.0741	.0769
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.10	.0909	.0953
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.15	.1304	.1398
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Admin. 203, Feb. 26, '78
Replacement Pol.

I. Max's approach

A. Apprais.

B. Deprec.

II. Mgmt. approach

A. Cap

B. Dep.

III. RIMS.

A. Geometry

B. Gain & costs of waiting

IV. Normalizing

A. Cap

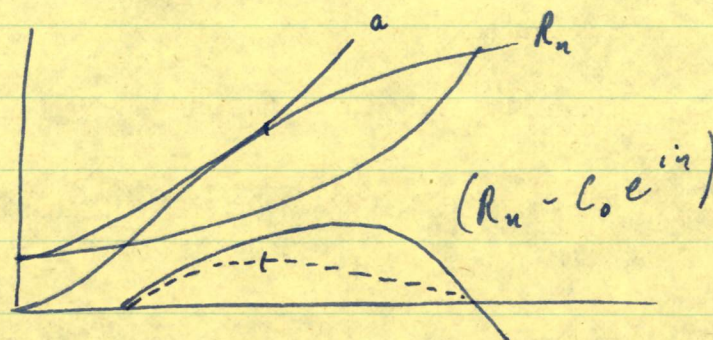
B. Dep.

I. Maxig approach.

A. Cupping.

Derive formula. $(C+S)e^{in} = R+S$

$$PV = \frac{R_n - C_0 e^{in}}{e^{in} - 1}$$



i. Max PV

ii. Max a. Same result.

B. Deprec.

~~$$PV = \frac{\sum [R_t e^{-it}]}{e^{in} - 1} (1 + e^{-in} + e^{-2in} + \dots + e^{-in}) = \frac{\sum R_t}{1 - e^{-in}}$$~~

$$PV = \frac{\sum [R_t e^{i(n-t)}]}{e^{in} - 1}$$

Choose n to max PV

II. Equal. approach

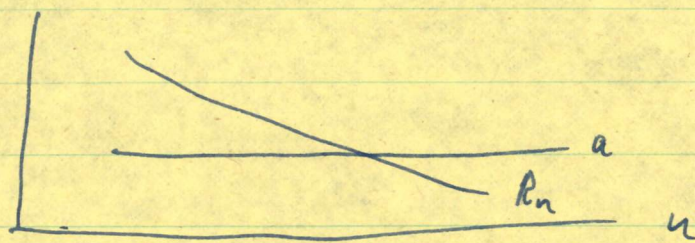
A. Copying

$$MC \text{ of time} = MR \text{ of time.}$$

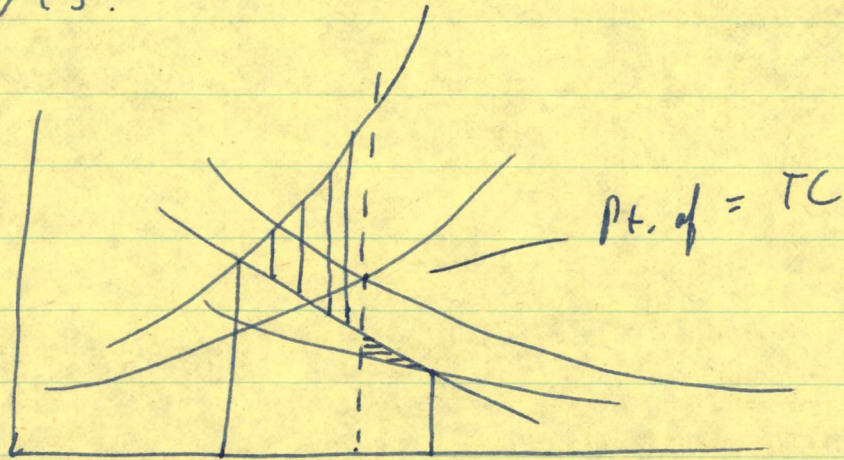
$$\Delta R = R_i + S_i = R_i + a$$

B. Deprec.

1. R_n never fall below a from next whole cycle
2. R_n never fall below S_i



III. R/M S.



Final, Cidmim 203

Topics.

1. Incentives & Info.
2. Mgr. N.F.
3. Replacement policy.
4. Normalizing, w. & w/o interest.
Backstop or pipeline, or counter w. closed wickets

$$K = \sum_i^n e^{ni} = \frac{e^{ni} - 1}{i}$$

$$K_i = e^{ni} - 1$$

$$Flow = e^{ni}$$

$$\frac{Flow}{Fund} = \frac{e^{ni}}{\frac{e^{ni} - 1}{i}} = \frac{i}{1 - e^{-in}}$$

W/o int.

$$K = n$$

$$Flow = 1$$

$$\frac{Fl}{K} = \frac{1}{n}$$

5. "Objectives of Govt. Pol. ... " surveys ^{eight} ~~several~~ conventional ^{error} ~~ideas~~ & modes of behavior, embedded deep in the cultural subconscious, that dominate ^{mineral} policy over public lands.

A. Devise three of these. Why are they "errors", from an economic viewpoint? What ostensible objectives or purpose have they?

B. The same ~~three~~ errors, in different clothing, are found in other industries & activities & institutions than mining. Give two examples (from your own background or from course work) of each of the three errors.

6. A forest ~~off~~ may yield periodic incomes in perpetuity.

A. How would you put a value on the forest site?

B. How would you use this info. (the value) to help set repl. pol? Or are they determined simultaneously?

7. Q. How would you modify 6 A & B if the site yielded annual incomes ~~that~~ cash flows that declined after each renewal, and the flows were periodically revived by renewing the capital on the site?

8 The central macro problem is unempl.
How can micro policy help?

9 How does - or does - the Cal. Worker Act meet the
concerns expressed by Robt Ecklund of NLR re
overcon. of land

10 A goal of ec. policy is ^{overall} efficiency.
In implementing the goal we run into resistance
from ~~tech~~ specialists, and interest groups, ~~and~~
~~including welfare~~ who march to a different drummer.
Give two examples of each. How would they
defend their position?

11 Suboptimization; partial analysis; 2d best;
constrained max

12

$$a = F \frac{i}{e^{iu} - 1}$$

$$\frac{a}{i} = \frac{F}{e^{iu} - 1}$$

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

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

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

$$\frac{dF}{du} = i(C + S)e^{iu} = i(F + S)$$

Adm. 203

Feb. 21, 1978.

Wed Apr. 5, '78

Comments on Outlines.

Inadequate. Why? How improve.

1. Have something to say.

You got to have a dream.

Some have been leading lives of quiet desperation.

Repressed? Natural, spontaneous creativity held down? Man is by nature creative, problem-solving — a thinker, until mind repressed.

Half these papers suggest fear of taking plunge, walking w/o crutches. Defuse mechanisms, highly evolved.

Techniques of saying nothing while going thru the motions:

a. Glittering generalities

- "develop a plan. & implementation approach..."
- establish procedures

b. "Promises, promises"

- I will be outlining
- The report will then explore various solutions & plans
- III, Generate alt. solutions."

c. Intro & background & history. Warmups, stalling.

d. Missing antecedents. Faulty ref. Undefined terms.

- tell our idea. (What idea?)
- part of solution to problem mentioned above, ...

e. Diagram.

- Flow charts, T.O.s. chains of command
 - empty boxes. Arrows all over.

f. Borrowing magic of ~~the~~ complex technology

- "Computerize".

g. Homilies, clichés, ^{slogans, exhortations,} empty of original & relevant thought.

Improve communications.

Organize

Be careful

Plan

Investigate

Provide for Nat. Defense

Self-improvement

Build morale

Planning requires effort

Drove me for consolation to St. Paul

"The letter killeth, ^{but} the spirit ^{gives} ~~life~~ life."

h. Endless ques. in lieu of answers

What is their root strategy?

i. Noun headings. Non-sentences.

No thrust, act, or direction. No verb.

j. Rediscover the wheel.

k. Empty abstractions, "...structure...function", in a

negative connotation."

l. Claimed by law & custom

Problem is to implement Cal. Code

Sec. 6750.1

2. Have a theme, thesis, or question.

Tie all together.

Some ramble, throw in kitchen sink.

Great activity, leading nowhere.

Huge data problems & requirements

Overwhelm cognitive limits of reader

"The I ^{read from} ~~speech~~ the printouts of ~~examined programs~~ the central computer

and have no thesis

I am, as ^{become} ~~the~~ ^{sounding} ~~tinkling~~ ^{gong} ~~the~~ ^{or a tinkling} ~~sounding~~ ^{cymbals.}

"My Report becomes - a tale told by an idiot, full of sound & fury, signifying nothing."

"If I come to you speaking in Tongues, (glossolalia) how shall I benefit you?" - Cor. I, 14-6

3. Begin w. a problem.

a) Is this trip necessary?

Why ~~the~~ this report?

Motivate, orient, & direct yr. reader.

b) Problem shd. be specific; then use systems approach.

Non-specific e.g. : - How provide for Nat. Defense (undefined)
- Show need for technological change in
communications.

3. Compare alt. solutions.

Give pros & cons of ea.

Ways of avoiding:

a. Offer no ~~is~~ problem, hence no solution

b. Offer just one plan; give only pros.
Snow job.

c. Offer good solutions, or implementing details, that do not bear directly on problem.

i.e. they are a good idea anyway, thus sticking cards for your solution.

d. Propose good new input. roles w/o asking what mgr. must now neglect. Where will the time come from? The money?

Add more equipment (w/o evaluating cost, timing, unit. or alt.) Esp. computer equipment, sounds good, dynamic, progressive, technical, forward-looking — all warning signs of fads & fashions.

Add staff; internalize profits, capture capital.

4. Who will adopt.

"Clientele" means who can act, or influence actions.

You are calling on some one or body to act.

Who are they?

What do they want? Believe?

What are their constraints?

E.g. preaching socialism to local govt.

Who will oppose your plan? Why?
How accommodate opponents?

5. Avoid the transitory

Things seen are transient: things unseen are eternal. 2d Cor 4-16

Wisdom & rules of this age are doomed to pass away
1 Cor 2-6

E.g.

3 prop. tax relief proposals now before leg.
(that was ~~the~~ last week)

6. Implementation.

E.g. alt. has imple. problems -- add to pros & cons of cc.

"Implement enforcement thru the appropriate agency."

7. Use tools learned in course, if possible.
And/or in GSA.

Don't recycle old papers or ideas.

E.g.

Don't say one product is best in product line bec. of its hi margin.

8. Org. Report, not an orgn.

Problem

Formulation & Alg.

Adoption & climate

Impl.

Evaluations

9. Evaluation.

Neglected by most.

Mechanism & measure for your plan's performance.

For learning from mistakes.

If my exhortations make any sense to you, then there is a germ of latent creativity waiting to bloom. If not, if all sounds like a great burden, your creative side has already been crushed, might as well reconcile yourself to working for someone else, pray you may find a kind master to reward you when you sit up & bark.

Admin. 203, Jan. 9, 1978

Readings for Jan. 18

1. McNichols, Chaps 1-3

Anscoff, Pgs 1 & 9

(Ec. Rpt. just in. 1977. Will of. w. '78)

2. Report required.

a. Define problem

b. Formulate alt. solutions

c. Define clientele - who will adopt, & how?

d. Implementations - practicality of solutions.

e. Evaluation, feedback, improvement. -- e.g. did you get as much as you might from lease sale?

3. Final, open book

4. Next few weeks.

a. Planning blunders

b. Case study model: Ask.

c. Survey elements of plan.

5. Grading.

.40 final

.40 report

.20 class