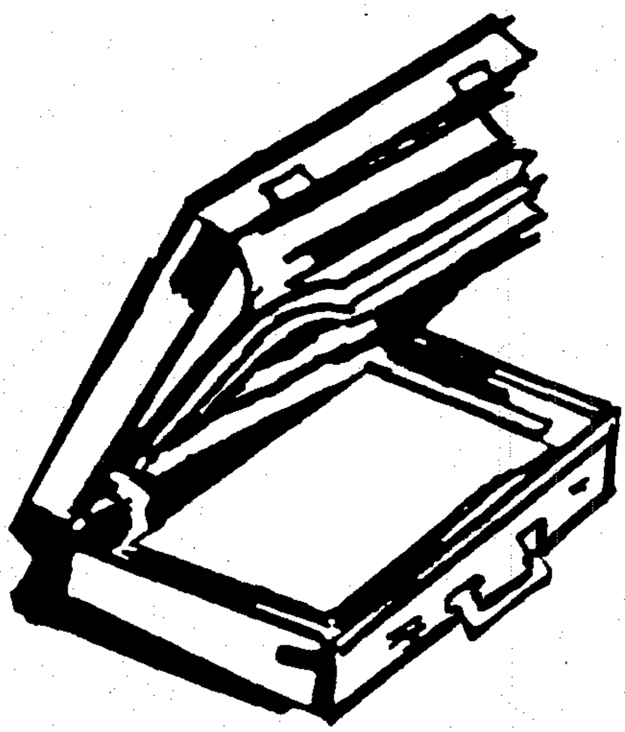
TRANSPARENCIES FOR UNIT 16

THE TECHNOLOGY PORTFOLIO CONCEPT

FUNDAMENTALS

PORTFOLIO - A COMBINATION OF ASSETS

BASIS OF PORTFOLIO THEORY - RISKINESS INHERENT IN ANY SINGLE ASSET HELD IN A PORTFOLIO IS DIFFERENT FROM THE RISKINESS OF THAT ASSET HELD IN ISOLATION



WHAT ARE WE TRYING TO ACCOMPLISH?

IN THEORY - THE OPTIMAL PORTFOLIO:

- THE HIGHEST POSSIBLE RETURN FOR ANY SPECIFIED DEGREE OF RISK

OR

- THE LOWEST POSSIBLE RISK FOR ANY SPECIFIED RATE OF RETURN

IN PRACTICE - PRESENCE OF MIND TO:

- EVALUATE AND MANAGE INVESTMENTS
- AS A COMBINATION
- TO ↑ RETURN OF TOTAL INVESTMENT
- TO ↓ RISK OF TOTAL INVESTMENT

DON'T EVALUATE IN A VACUUM

CHOICE

- REMEMBER, YOU ALWAYS HAVE A CHOICE BUT . . .
- CHOICE ALWAYS IMPLIES COSTS BECAUSE . . .
  - — A DECISION TO HAVE MORE OF ONE THING REQUIRES A DECISION TO HAVE LESS OF SOMETHING ELSE.

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OPPORTUNITY COST

- . . . LESS OF SOMETHING ELSE
- CHINESE PROVERB: "WHERE THERE IS NO GAIN THE LOSS IS OBVIOUS."
- GEORGE BERNARD SHAW ON REACHING 90--"IT'S FINE WHEN YOU CONSIDER THE ALTERNATIVE."

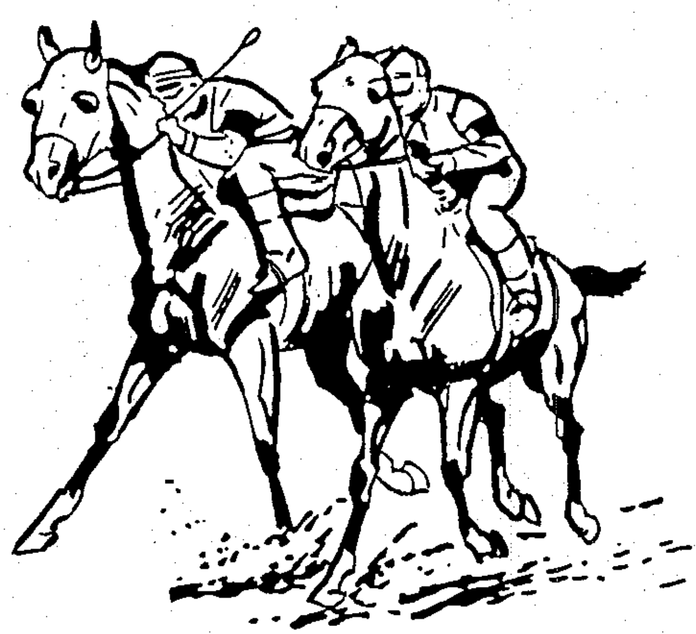
AN OPERATING DEFINITION: THE COST OF USING SOMTHING IN A PARTICULAR VENTURE IS THE BENEFIT FORGONE (OPPORTUNITY LOST) BY NOT USING IT IN ITS BEST ALTERNATIVE USE.

RISK AND RETURN

<u>RISK</u>: **THE PROBABILITY OF THE OCCURRENCE OF UNFAVORABLE OUTCOMES.**

<u>RATE OF RETURN</u>:

- **GENERALLY, BENEFIT YOU RECEIVE RELATIVE TO THE COST (MONEY, TIME, EFFORT, MENTAL ANGUISH, ETC.) YOU INCUR.**
- **COMMONLY EXPRESSED AS A PERCENT APPLIED TO A MONEY INVESTMENT. (My IRA is earning 12%.)**
- **AS A GENERAL RULE: THE GREATER THE RISK, THE GREATER THE RETURN.**



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PUTTING THE CONCEPTS TO WORK

SOME GUIDELINES

CORRELATION **IS THE RELATIONSHIP BETWEEN TWO VARIABLES**

USING RATE OF RETURN OF TWO PROJECTS AS THE VARIABLES.

NEGATIVE CORRELATION - **OVER TIME, WHEN THE RATE OF RETURN FOR PROJECT A IS HIGH, THE RATE OF RETURN FOR PROJECT B IS ALWAYS LOW AND VICE VERSA.**

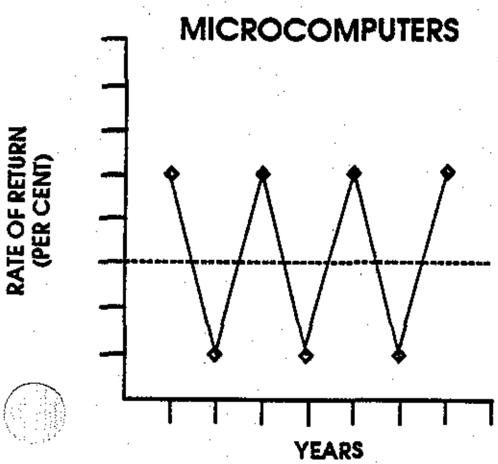
UNCORRELATED - **THERE APPEARS TO BE NO RELATIONSHIP BETWEEN THE RATE OF RETURN FOR PROJECT A AND THE RATE OF RETURN FOR PROJECT B--THEIR BEHAVIOR RELATIVE TO EACH OTHER IS UNPREDICTABLE.**

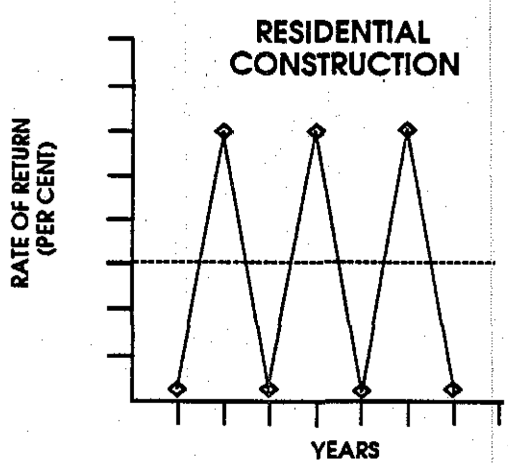
POSITIVE CORRELATION - **OVER TIME, WHEN THE RATE OF RETURN FOR PROJECT A IS HIGH, THE RATE OF RETURN FOR PROJECT B IS ALWAYS HIGH AND VICE VERSA.**

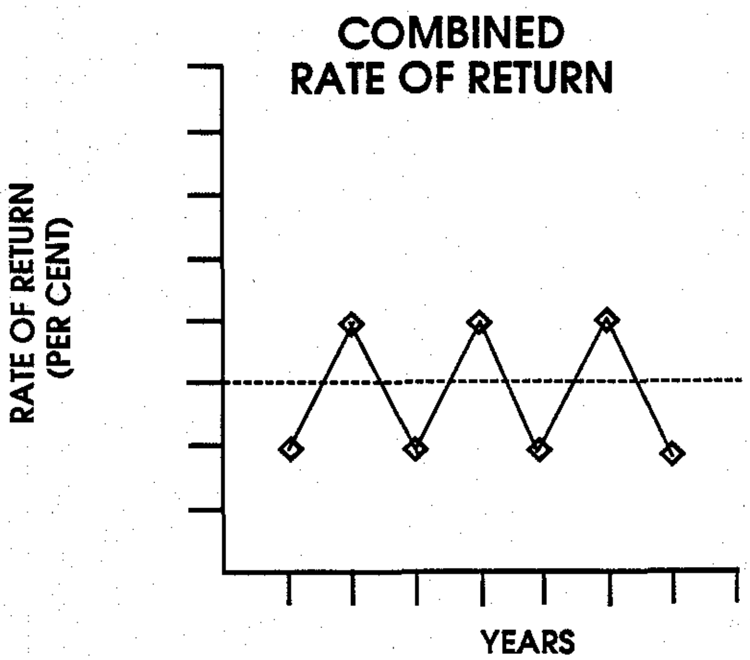
A TECHNOLOGY PORTFOLIO

Putting the Concept to Work

Risk Reduction through Diversification of Investments in Technology Transfer Opportunities







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COSTS AND RETURNS FROM THE LAB PERSPECTIVE

(P.S. Don't forget opportunity cost)

WHAT'S BEING INVESTED?

- TIME 
- MONEY 

WHAT ARE THE RETURNS?

- PUBLIC GOOD ASPECTS
- MARKET RETURNS (MONEY)
- GRATIFICATION, RECOGNITION, PROFESSIONAL ADVANCEMENT . . .

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SUMMING UP

TECHNOLOGY PORTFOLIOS

OBJECTIVE:

MANAGEMENT OF A SELECTED GROUP OF TECHNOLOGY TRANSFER OPPORTUNITIES IN COMBINATION IN ORDER TO INCREASE THE EXPECTED RETURN OR REDUCE THE RISK.

ALWAYS REMEMBER . . .

A SPECIFIED TECHNOLOGY TRANSFER OPPORTUNITY MAY BE QUITE RISKY WHEN HELD IN ISOLATION BUT NOT VERY RISKY WHEN HELD IN A PORTFOLIO.

FINALLY, TO COMPLICATE MATTERS . . .

TECHNOLOGY PORTFOLIOS WITH DIFFERING RISK CHARACTERISTICS CAN BE MANAGED IN COMBINATION TO REAP PORTFOLIO EFFECTS.

17