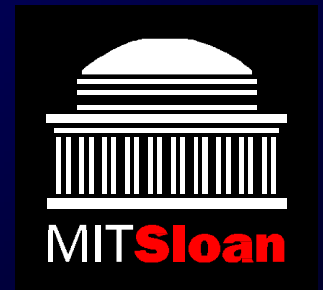


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**Trading and revealing
information**

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Agenda

1. Why people freely reveal their innovations to manufacturers – and other users
2. Informal information *trading*

Know-How Trading Patterns Among Steel Minimills

For more information on this study and its results, see:

von Hippel, Eric. *Cooperation Between Rivals: Informal Know-How Trading*. *Research Policy* 16, 1987, pp. 291-302.

Steel minimills are far from mini
in size and effect!

For more information, see:

Christensen, Clayton. *The Innovator's Dilemma*. HarperBusiness, 2000.

Firms can increase the amount of information they possess by trading:

	<u>Situation Pre-Trade</u>	<u>Situation Post-Trade</u>
Firm A	Unit A	Unit B + Unit A
Firm B	Unit B	Unit A + Unit B

Information trading can pay under **SOME** conditions

Consider the Total Profit (also sometimes called "rent") that a proprietary "unit" of know-how yields to a firm exclusively possessing it as made up of two parts:

$$\text{Total Profit} = \text{Profit} + \Delta \text{ Profit}$$

Profit = the portion of Total **Profit** which a firm expects after trading the unit of knowhow to another firm. (Both firms then possess the traded knowhow.)

Δ **Profit** is the extra **Profit** which a firm expects if it possesses the knowhow unit exclusively.

Example: ASSUME TWO FIRMS START WITH KNOW-HOW UNITS OF DIFFERENT CONTENT BUT EQUAL VALUE:

Before trade each firm has: **Total Profit = Profit + Δ Profit**

After trade each firm has: **Total Profit = 2 (Profit)**

Therefore trading pays only when **Profit > Δ Profit**

KNOW-HOW TRADING AS A “PRISONER'S DILEMMA”

Assume as before that two firms have one unit of unique proprietary know-how each. Assume also that each firm's unit, although different, has an identical **Profit** and Δ **Profit** associated with it.

Then, pre trade, each firm has: Total Profit = **Profit** + Δ **Profit**.

After a cooperative trade, **R**, each firm has: **R** = **2 Profit**

All four possible outcomes of a single play of this game are:

$$\begin{array}{ll} \mathbf{T} = \mathbf{2 Profit} + \Delta \mathbf{Profit} & \mathbf{R} = \mathbf{2 Profit} \\ \mathbf{P} = \mathbf{Profit} + \Delta \mathbf{Profit} & \mathbf{S} = \mathbf{Profit}. \end{array}$$

A Prisoner's Dilemma exists if $\mathbf{T} > \mathbf{R} > \mathbf{P} > \mathbf{S}$ and $\mathbf{2R} > \mathbf{T} + \mathbf{S}$ (A strategy of continuing cooperation has been shown empirically to pay best over many plays of a Prisoner's Dilemma game.)

Therefore, know-how trading pays

(conditions for a Prisoner's Dilemma are met)

if **Profit** $>$ Δ **Profit** but not if **Profit** $<$ Δ **Profit**

FIRMS THAT DO TRADE HAVE AN ADVANTAGE OVER NON-TRADERS

Assume firms A and B trade \$ research results with low competitive value but that Firm C does not trade

	Situation Pre-Trade	Situation Post-Trade
Firm A	low unit + high unit	low + low + high
Firm B	low unit + high unit	low + low + high
Firm C (non-trader)	low unit + high unit	low + high

Information trading examples

(1) Oil Geologists trade easily reproducible know-how;

Profit > Δ Profit

Unless it involves an upcoming oil leasing competition;

Profit < Δ Profit

(2) Aerospace engineers trade easily reproducible know-how;

Profit > Δ Profit

Unless it bears on a competition for an important contract;

Profit < Δ Profit

How Frequent is Know-how Trading?

Minimill Personnel Sample:

The results of this study can be found in:

Schrader, Stephan. *Informal technology transfer between firms: Cooperation through information trading*. *Research Policy* 20, 1991, pp. 153-170.

Oil Scouts Trade "Black Box" Information Only

<u>Firm A</u>	<u>Type of Information</u>	<u>Firm B</u>
Geologist	Data Analysis Know-how	Geologist
Scout	Oil Well Logs Oil Well Cores Seismic Data	Scout

When Scouts can be used, Oil Companies tend to force their use. Hypothesized advantages:

- Specialists have better networks, are better traders;
- Collects IOU's in one place, minimizing # outstanding, and time they are outstanding.

Some Rules of Oil Scout Behavior

(As per Scouting Association codes of ethics)

- "A scout must represent only one company..."

- "The information a scout obtains should be invariably first transmitted to the employer."

- "A member may not dispose of information without the consent of the employer."

- "Scouts should never knowingly dispense information of an untrue or doubtful character".

Source: 1988 Houston Oil Scouts Association Code of Ethics