CS207 #7, 11 11 11 (2^6-1 = $63_{decimal}$ = 77_{octal}) #7 77_8

I normally use a date convention that is unambiguous for international readers, but today it does not matter. ;-)

Gio Wiederhold

Gates B12

Homepage at
https://cs.stanford.edu/wiki/cs207/Main/HomePage

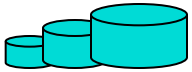
Syllabus:

1. Why should software be valued?
2. Principles of valuation. Cost versus value.
3. Open source software. Scope. Theory and reality
4. Market value of software companies.
5. Intellectual capital and property (IP).
6. Life and lag of software innovation.
7. Sales expectations and discounting.
8. Alternate business models.
9. Allocation and lag.
10. Patents, copyrights, and trade secrets. Licensing
11. Separation of use rights, Offshoring.
12. Risks when outsourcing and offshoring development.
13. Effects of using taxhavens to house IP.

Offshoring

Task transfer to Enterprises in Foreign countries

1. Work migration: jobs are moved to lower-cost countries 
2. Support software etc. is moved to enable similar productivity in those countries

For a fair **Transfer Price (TP)** 

Income is generated by people and *(intellectual)* capital

Selling IP Rights

The actual docs & SW stay where the workers are

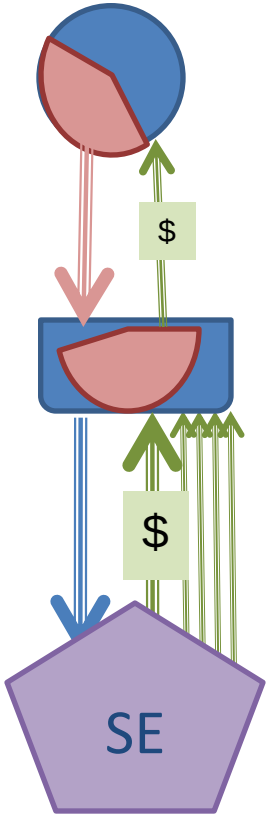
Set a transfer price for the box

a. IP tranche

b. Intellectual Services and maintenance

Represents a fraction of your company

1. Package the box
   - Create a subcorporation to hold the rights to the IP+
2. Sell the subcorporation *to European sales co.*: SE
   1) Receive a single payment matching the value
      - Requires a well-off buyer
   2) Receive payments over time NPV = Transfer Price
   3) Make a royalty (fraction of SE's sales) arrangement
      a. fraction of sales at SE commensurate with the amount of IP
      b. A period that is sufficiently long to recover the IPs NPvalue
      c. A premium to compensate the seller for the risk of SE defaulting



Rights are flexible

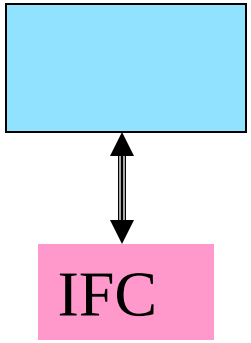
Even rights to tangibles are intangibles.
The rights can then be moved off-shore.
Income from these rights can avoid taxes.
Even easier to do with intellectual property
And invisible – not on corporate books

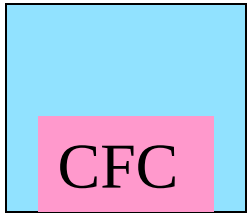
Hypothesis

- Offshoring of jobs is effective because of concurrent Intellectual Property (IP) transfer
- Much of that IP is corporate property
- Transfer of corporate IP is poorly understood
  - IP as property is not well defined, hard to measure
  - There are many components to IP, coming from
    - *open source*, **R&D, marketing, reputation** as
    - Patents, copyright, trade secret (covered by NDAs)
- Still, IP transfer is a valuable, significant export

Types of Foreign Entities

- **I**ndependent **F**oreign **C**ontractors
  - IFC may serve multiple customers
    - Share trade secrets with competitors
  - Owners need contracts to protect the IP
    - Hard to monitor and enforce
- Owned, **C**ontrolled **F**oreign **C**orporations
  - CFC provides much more control over IP
  - Ownership often in third-party countries
    - Avoids taxation of sales to other countries





Knowledge is the Link

To be effective a worker has to know what has to be done

- call center employees
- technicians
- engineers
- managers

- That knowledge consists of
  - The technology
    - Documentation, prior versions, quality control
  - The business methods
    - How technology in the product is marketed
    - The flow from buyers to improved products and methods
- Companies distinguish themselves by proprietary IP
  1. Patents, sometimes Copyrights
  2. Confidential Documents
  3. Knowledge within its people - protected by NDAs

Trade secrets

Transfer of tangibles vs Intangibles

Export by Happy Bytes is visible and quantified.
Low cost export incurs loss in the U.S. and more profit in Tahiti
Loss reduces taxes paid in the U.S. Low tax rate in Tahiti increases global profit of HB

Export by Happy Games is invisible and hard to value.
Low cost export incurs loss in the U.S. and more profit in Tahiti
Loss reduces taxes paid in the U.S. Low tax rate in Tahiti increases global profit of HG

To illustrate: a Sequence of Hx cases

- Moving from Sales to Transfer of property
  - Country-based vs. Global companies
- Moving from Tangible to Intangible
  - Visible & measurable, barely so, or not at all
- Intangible property with Intangible knowledge
  - Services versus Patents and Trade Secrets
- Outsourcing
  - Work and its enablers: human and intellectual capital

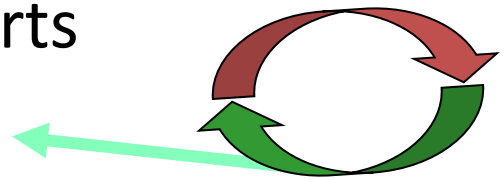
Definitions emerge as we proceed through 10 cases

Case 1: Tangible export only

U.S. Machine tools * producer **U**

* To simplify: tools are not innovative, could be be built anywhere

- **U** exports its products to foreign countries
  - Receives payments for those exports
    - prices are known and public
  - Pays taxes on resulting profit



IP Note: **U** supplies documents for use of the machines.
Those documents may be copyrighted.
But copyright does not protect intellectual contents,
only protects outright copying. Rarely valued.

Case 2: Tangible transfer

Global Machine tools producer **G**

- Exports machines to **G**'s CFC factory **F** , to be used in production of other products at **F**
  - **G** receives transfer payments **T** from **F** for those exports
  - Must show that the transfer price **T** is reasonable
    - Should match prices of external sales by **G**, or by other Co's
    - Unreasonably low transfer prices imply U.S. tax avoidance and hiding profits at a foreign base.
  - Pays taxes on resulting profit

But it's hard to be profitable without distinguishing abilities: IP

Case 3: Tangible + market value transfer

Renowned **r** Global Machine tools producer **R**

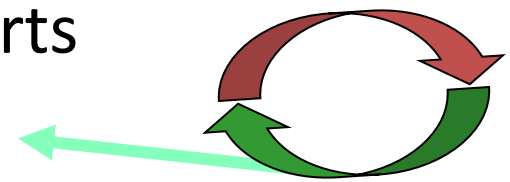
Reputation **r** is due to investment in quality and advertising

- Exports machines to its CSC factory **Q**
  - Gets higher prices **T+** for external sales because of **r**
  - **R** receives transfer payments for the internal exports
    - Transfer price includes **r** when based on its **T+** export prices
    - Harder to assess when there are no exports, and other companies in the business have different reputations
    - Reputation **r** is IP due to marketing & product quality
      fast effect - *long-term effect* .
  - Pays taxes on resulting profit

Case 4: Intangible export ≈ Case 1

U.S. Software tools creator and producer

- Exports software to foreign countries
  - Receives payments for those exports
  - Pays taxes on resulting profit



- *Problem: software is easily copied*
  - Protection desired, achieved by combination of

    Only issuing licenses -- *avoids property rights issues*

    Copyright laws and patents -- *requires govmnt cooperation*

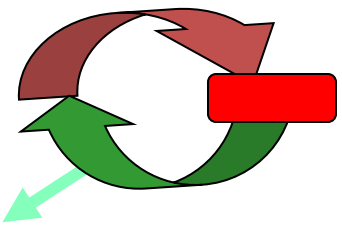
    Making copying hard -- *technology game*

    Restricting maintenance -- *works for critical packages*

Case 5: Intangible transfer ≈ Case 2

U.S. Software creator and producer

with foreign distribution

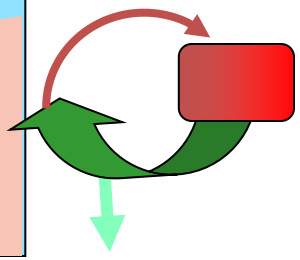


- Exports software products to foreign subsidiary, to be marketed and sold there
- Receives transfer payments for those exports
  - Must show that the transfer price is reasonable
    - By comparison with other sales by self, or by other co's
      - More difficult to assign value than tangibles.
  - Pays taxes on resulting profit

Case 6: Intangible manufacturing

U.S. Software producer with foreign distribution

- Exports software master to its subsidiary,
  to be copied*, marketed, and sold there



- Receives transfer payments for single export
  - Must show that the transfer price is reasonable
    - One instance allows thousands of sales,
      generates substantial ongoing income over its lifetime
    - Valuation requires projection of income over life
      - When is income realized? What is the life of the software?.
  - Pays taxes on resulting profit

** equivalent to manufacturing; writing software is considered R&D*

Case 7: Intangible transfer, joint creation

Software producer with foreign specialists

- Exports software master to its subsidiary, and **adapted, copied, marketed, and maintained** there
  - Source of foreign part of knowledge is remote
  - Assume cost of all R&D centrally accounted
- Receives transfer payments for those exports
  - Must show again that the transfer price is reasonable
  - Share R&D cost according to locale of revenue
  - Credit foreign R&D against foreign revenue
  - Pays taxes on U.S. assignable profit of foreign sales

Case 8: Shared intangible creation

Global Software producer

- Develops globally, perhaps 24/7
  - Shares all knowledge globally at initiation
  - Assume cost of all R&D centrally accounted

- Transfer payments should move both ways
  - Must show that the transfer prices are reasonable
    - Use of prior IP accounted for, or Buy-out
    - Allocation? cost, hours?
    - Compute balance
  - Pays taxes on U.S. share of profit.

Case 9: Extreme offshoring

Company offshores everything

R&D, Production, distribution, service, feedback

- All IP has been exported
  - Value of export is value of entire company, except for tangibles (HQ building, cash, option income)
  - All income is offshore
  - Only profits needed for dividends are repatriated
  - No U.S. taxable income on continuing operations
  - Initial export of IP should be (have been) taxed?

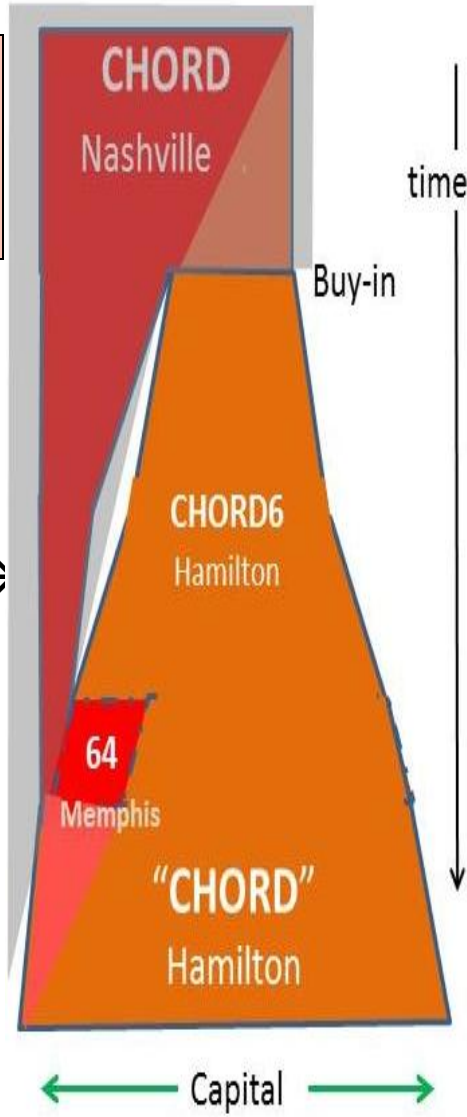
Case 10: Inversion

The foreign subsidiary (CHORD6) uses its profits to buy the U.S. Base (CHORD) company

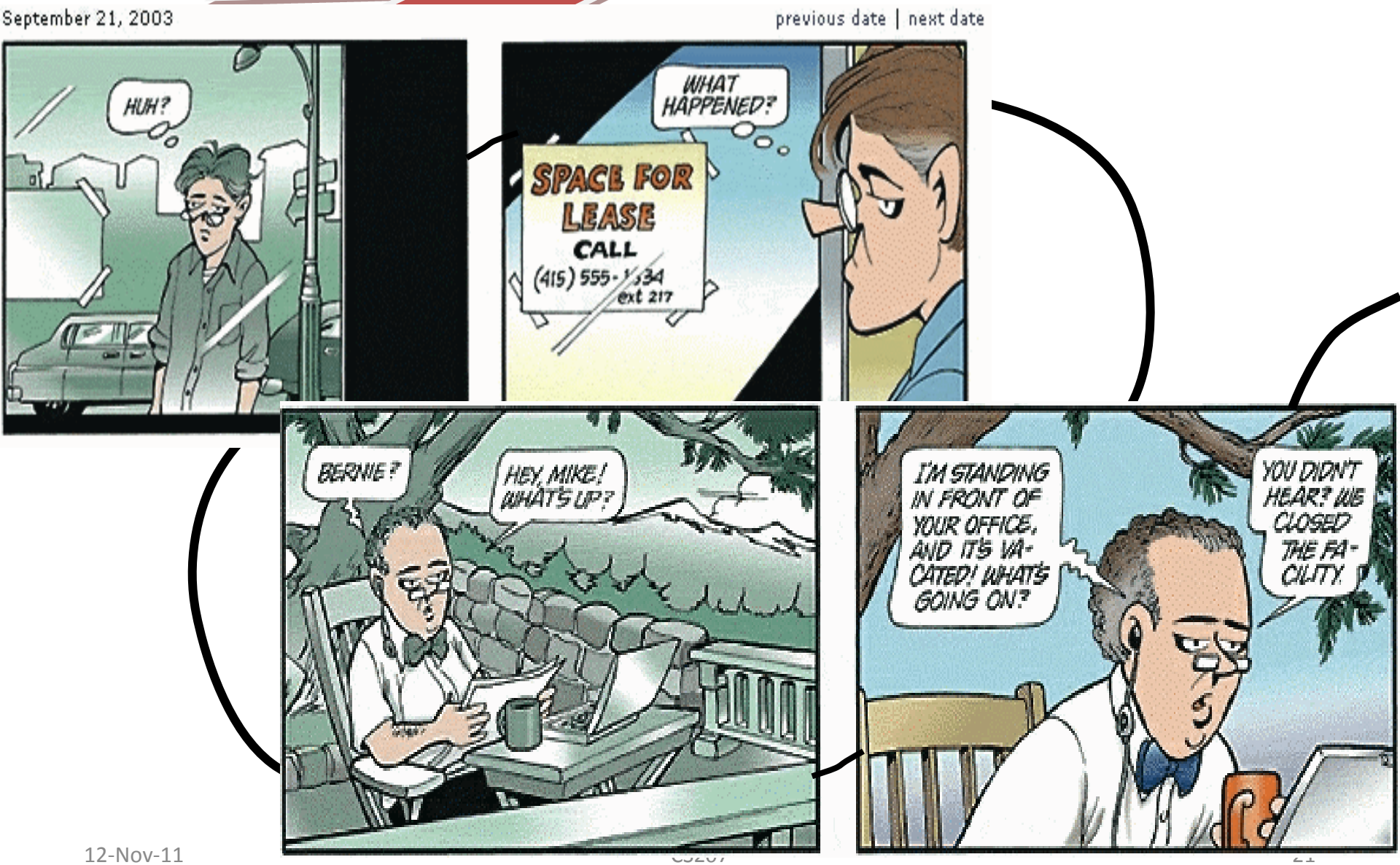
1. CHORD6 creates a second-level subsidiary (CHORD64) in the U.S.
2. CHORD64 merges with CHORD, considered a reorganization

- CHORD stockholders trade their shares for CHORD64 shares
- CHORD is disolved, no longer exists as U.S. entity: grey part is gone→
- CHORD64 is a subsidiary of CHORD6; and not subject to U.S. tax
- Stockholder value is unchanged, but their control is diminished
- US employees now work for CHORD6, but may not notice

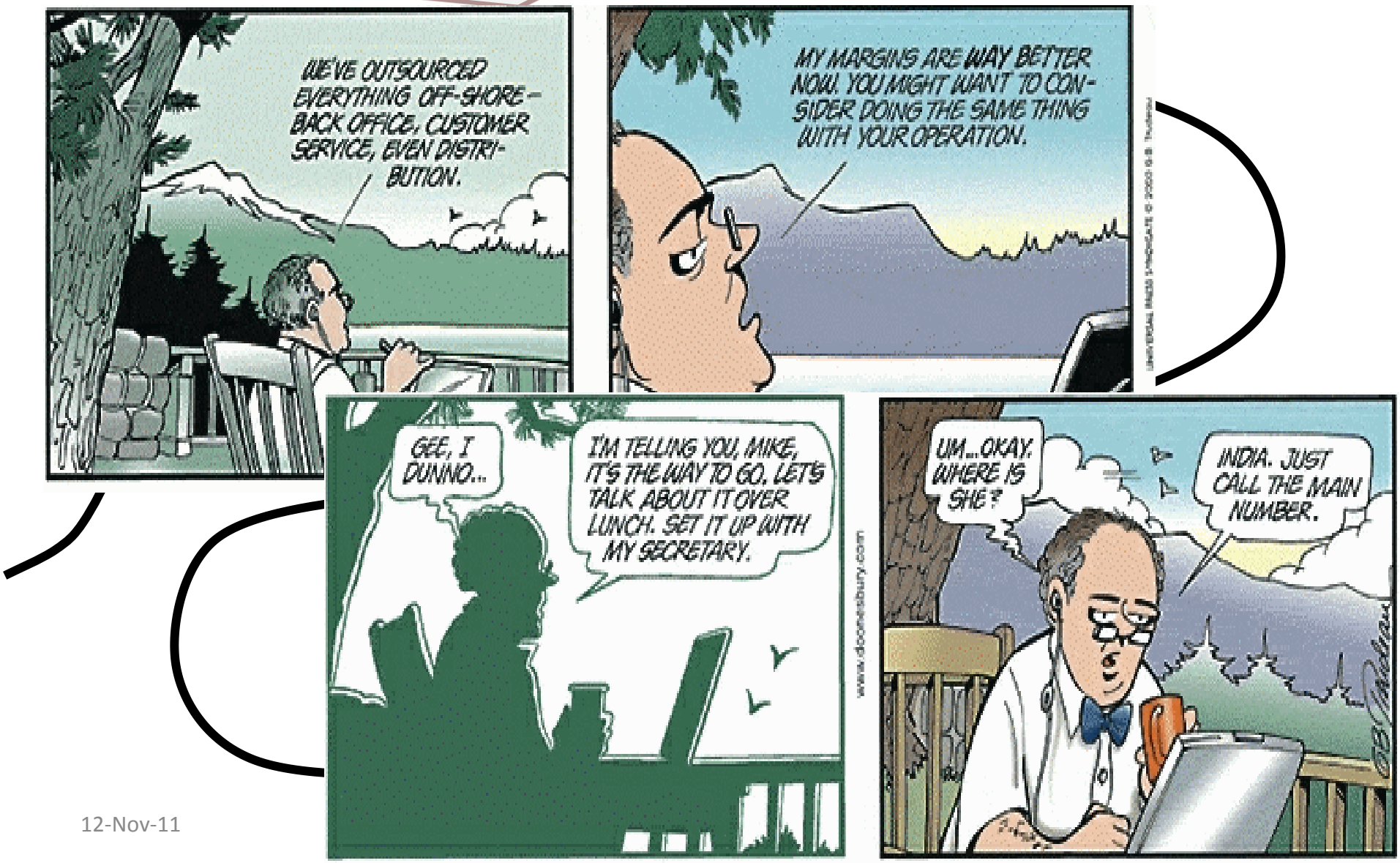
4. CHORD6 owns the name *CHORD*, renames itself, so it looks the same to employees and customers
5. For sales in the U.S., a royalty is now due to *CHORD* in Bermuda



Doonesbury 1/2



Doonsbury 2/2



Taxhavens

Problem for tax avoidance:

1. Want to sell products not only in low-tax countries
2. Still don't want to pay taxes on sales

Solution:

1. Separate the rights from the workers
   - IP rights are not visible
   - IP justifies the collection of non-routine incomes
2. Move the rights to a primary taxhaven
   - Typically involves three or more entities
     - A. Parent company, IP creator, or sponsor, sets up B. and C.
     - B. IP holding company, buys IP initially and pays for its maintenance.
     - C. Off-shore enterprise or seller, IP consumer: licenses the IP from B

More to come