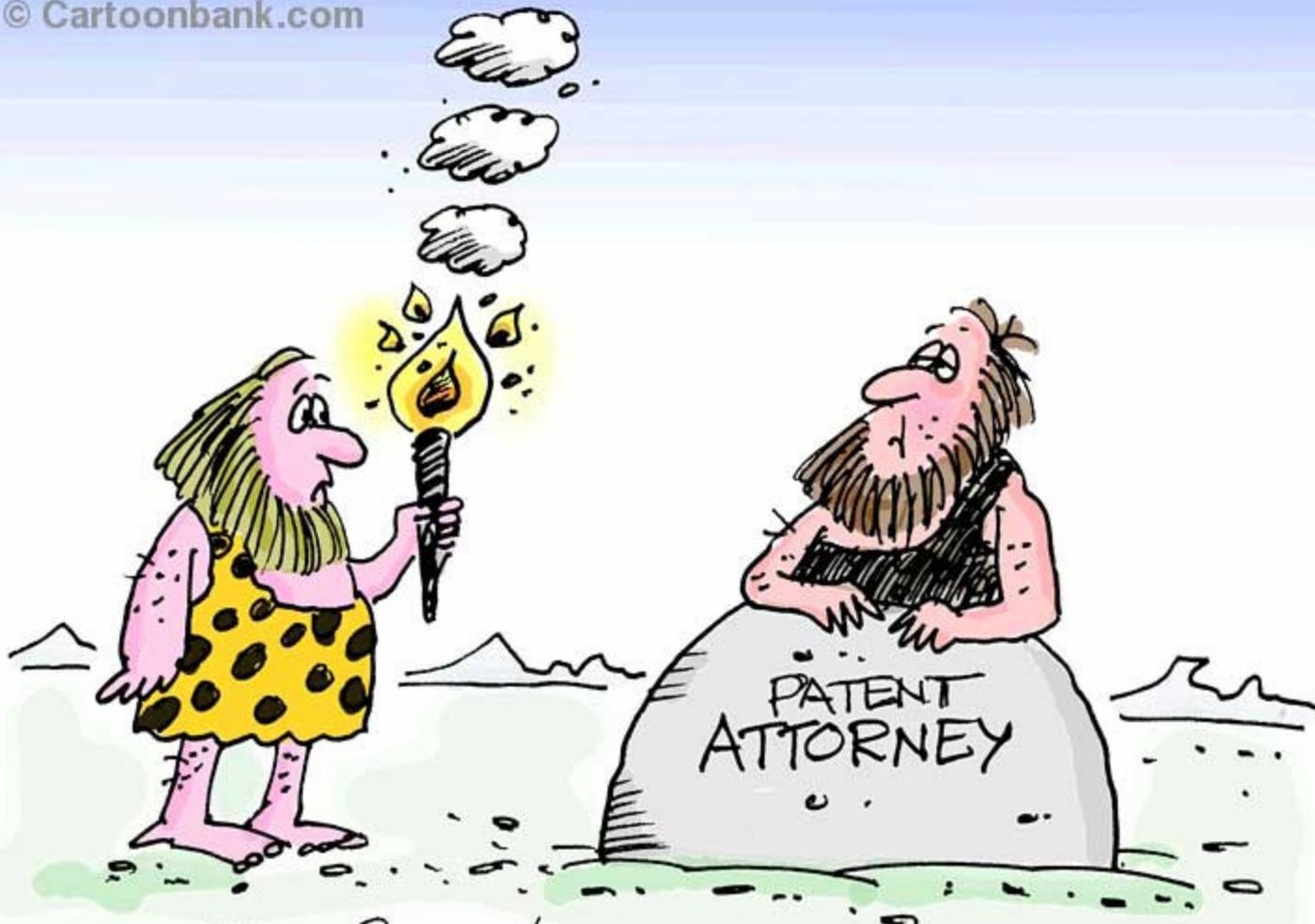


# Is the Light Bulb Broken? Issues in *Patent Failure*

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DAVE Coverly...

"Great little product, but liability could eat you up."

# Big Picture

- Primary purpose of patent system is to incentivize invention
- Patents are controversial because
  - ideas are intangible, “non-rival” and (sometimes) super valuable, and
  - lack of empirical data

# Claiming the Table

- 1. An article of furniture for holding objects for a sitting human, comprising:
  - (a) a flat rigid material of size sufficient to accommodate use by a human being;
  - (b) a plurality of elongated support members of equal length;
  - (c) the support members being joined perpendicularly to the undersurface of the flat rigid material at spaced locations so as to support the flat rigid material in a horizontal orientation.

# Claiming the Pencil

- 1. A writing instrument comprising:
  - a composition soft enough to leave marks on a writing surface, the composition including a substantial amount of graphite, and
  - a means for holding the composition in a position to mark the writing surface.

## Dependent Claims to the Pencil

2. The writing instrument of claim 1, wherein the composition further includes a substantial amount of clay.
3. The writing instrument of claim 1 or 2, wherein the means for holding the composition is comprised substantially of wood.
4. The writing instrument of claim 3, wherein the composition is comprised of about 30% to about 90% graphite and about 10% to about 70% clay.
5. The writing instrument of claim 4, wherein the composition is comprised of about 60% graphite and about 40% clay, and attached to an end of the writing instrument is a deformable eraser for substantially erasing marks made by the writing instrument.

# What is it?

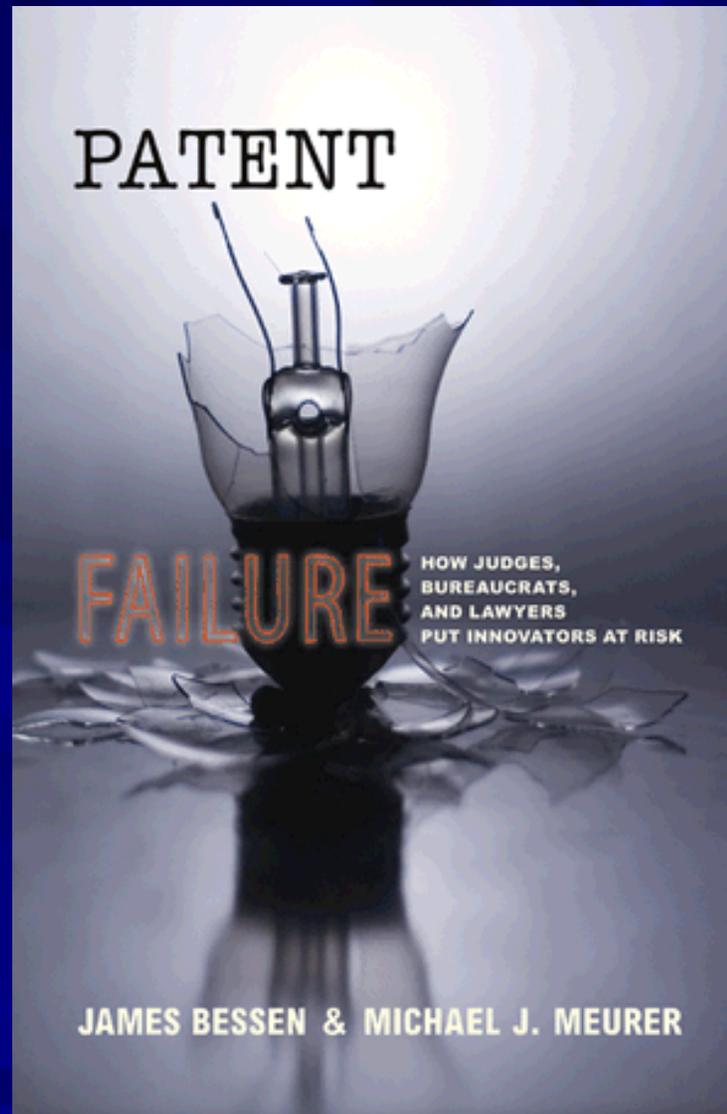
- 1. The combination with a road-locomotive, provided with suitable running gear including a propelling wheel and steering mechanism, of
  - a liquid hydrocarbon gas-engine of the compression type, comprising one or more power cylinders,
  - a suitable liquid-fuel receptacle,
  - a power shaft connected with and arranged to run faster than the propelling wheel,
  - an intermediate clutch or disconnecting device, and
  - a suitable carriage body adapted to the conveyance of persons or goods.



## Direct Legal Costs Per Side for Patent Litigation in District Court

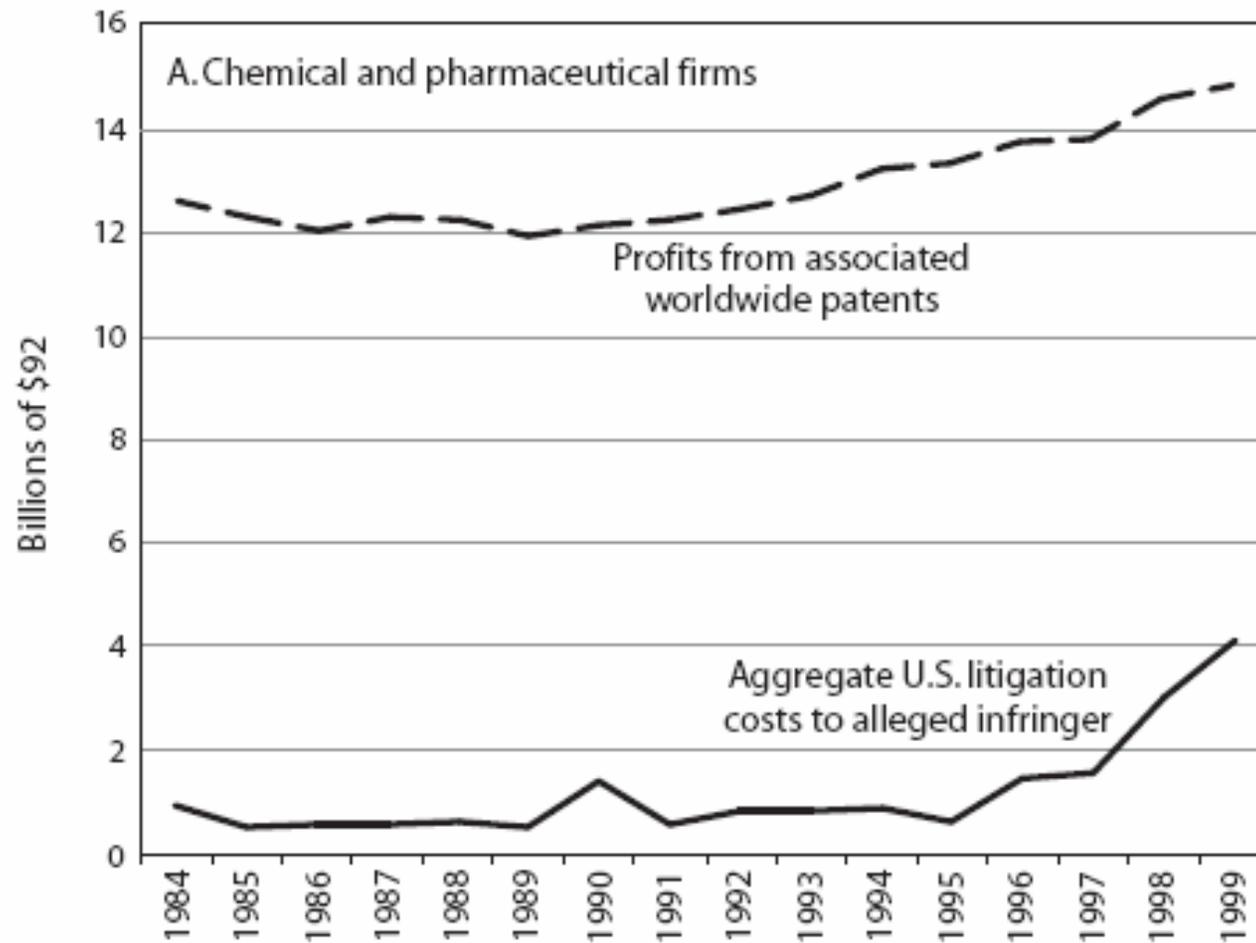
|                                            | <\$1<br>million at<br>risk | \$1-25<br>million at<br>risk | >\$25<br>million at<br>risk |
|--------------------------------------------|----------------------------|------------------------------|-----------------------------|
| Thru<br>discovery<br>(national<br>average) | \$461K                     | \$1.59M                      | \$3.34M                     |
| Thru trial<br>(national<br>average)        | \$767K                     | \$2.65M                      | \$5.50M                     |

\*Source: AIPLA Report of Economic Survey (2007)



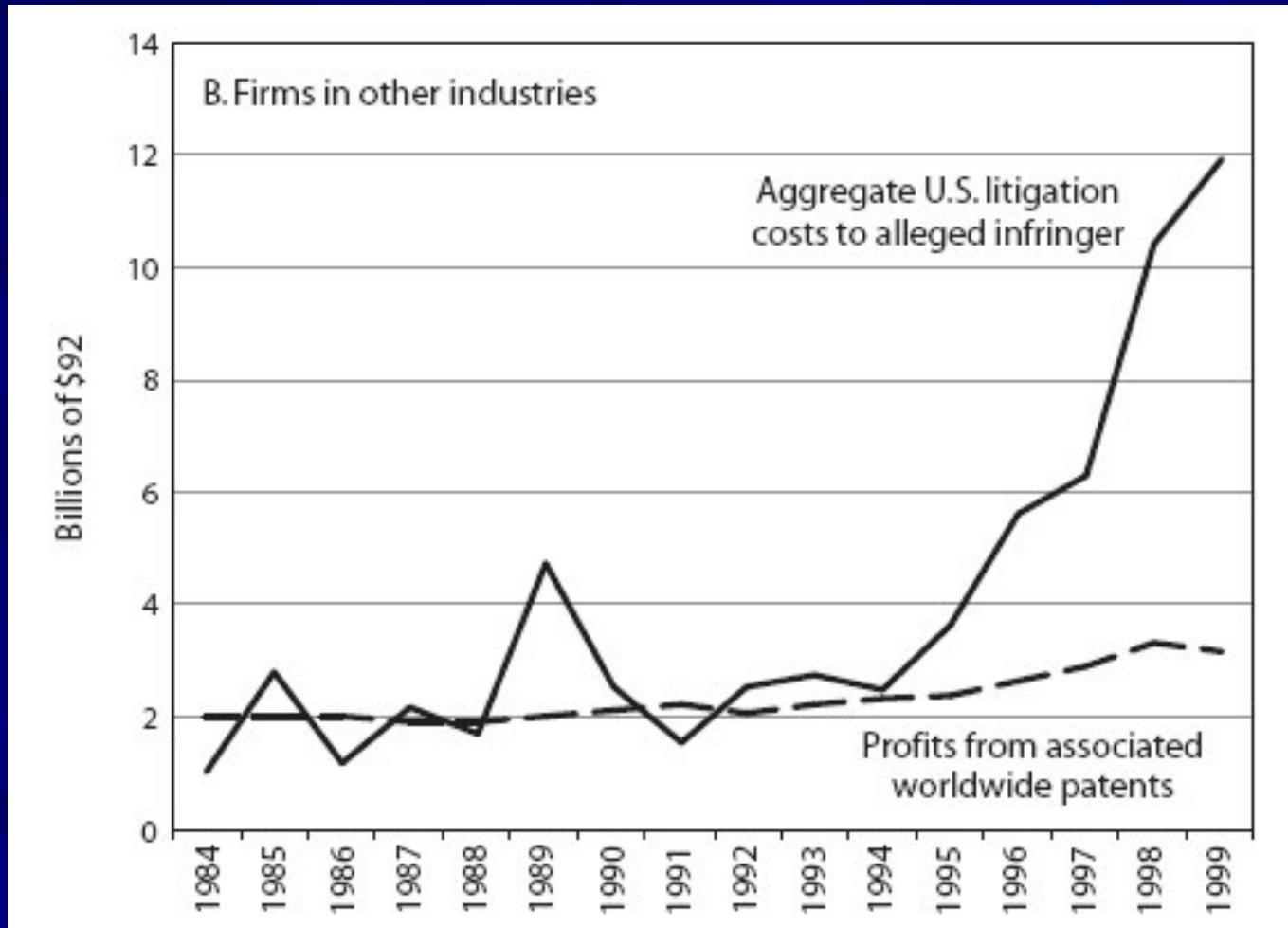
Introduction and two other chapters available at  
[www.researchoninnovation.org/dopatentswork](http://www.researchoninnovation.org/dopatentswork)

For chem-pharma, patent profits exceed patent costs by factor of almost 4



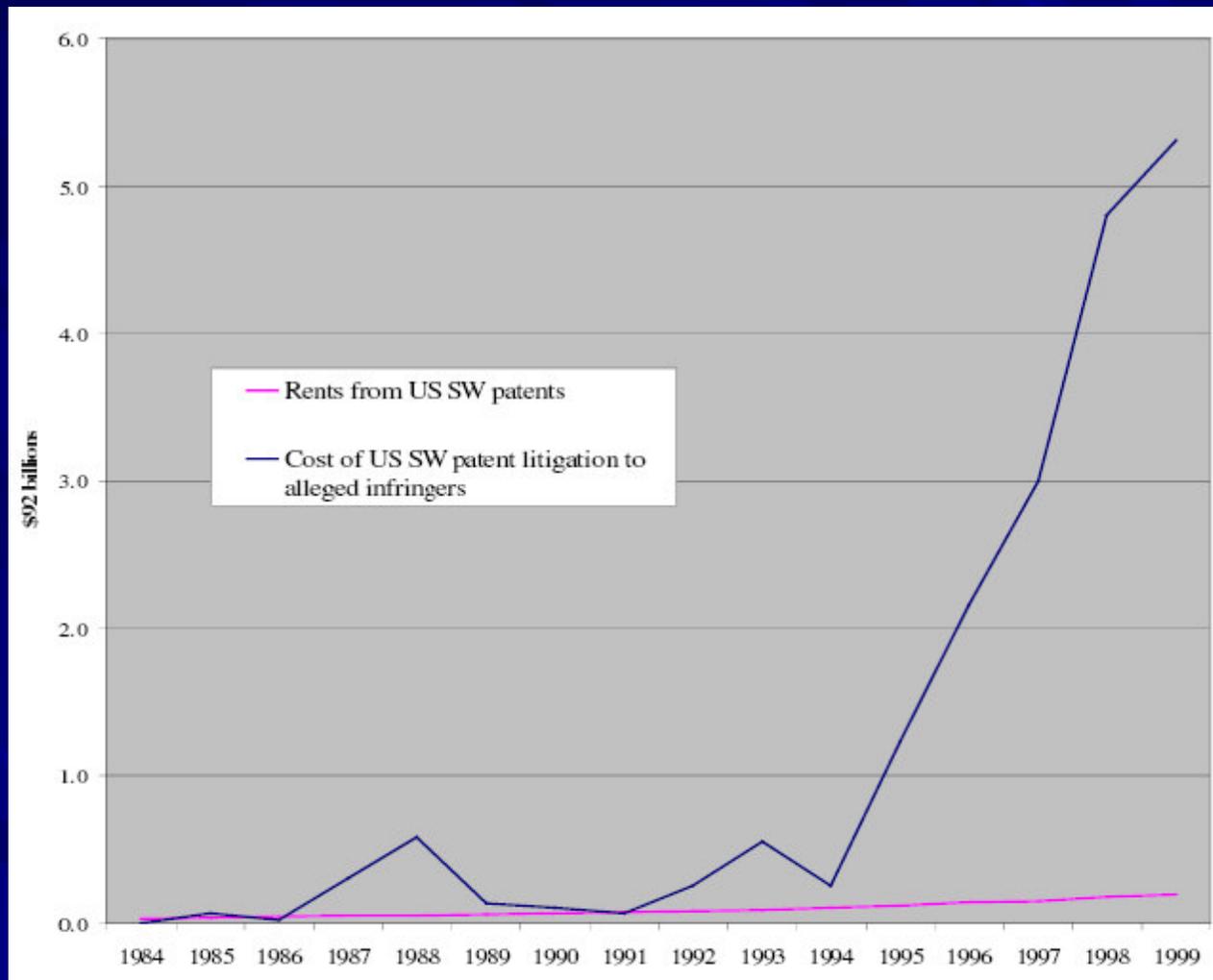
\*Figure from Bessen & Meurer, *Patent Failure* (March 2008)

Outside chem-pharma, patent costs exceed patent profits by factor of almost 4



\*Figure from Bessen & Meurer, *Patent Failure* (March 2008)

# For software, patent costs dramatically exceed patent profits



\*Figure from Bessen & Meurer, *Patent Failure* (March 2008)

# Patent Failure

- If Bessen & Meurer are correct, the current patent system (outside chem-pharma) imposes a net tax on innovation!
- When considering whether to pursue a new technology, an innovator considers not only the benefit of getting a patent, but also the cost of infringing someone else's patent
  - Where the cost usually exceeds the benefit, the patent system discourages innovation

## A Key Premise of *Patent Failure*

- The litigation costs represented in the figures are incurred primarily by innovators, not primarily by free-riding pirates
- Bessen & Meurer's evidence that litigation costs fall primarily on innovators:
  - Seldom does a court rule that an accused infringer actually copied the invention
  - Your chance of being sued for patent infringement rises with your spending on R&D (holding other things equal)

## Q: So why do companies pursue patents outside chem-pharma?

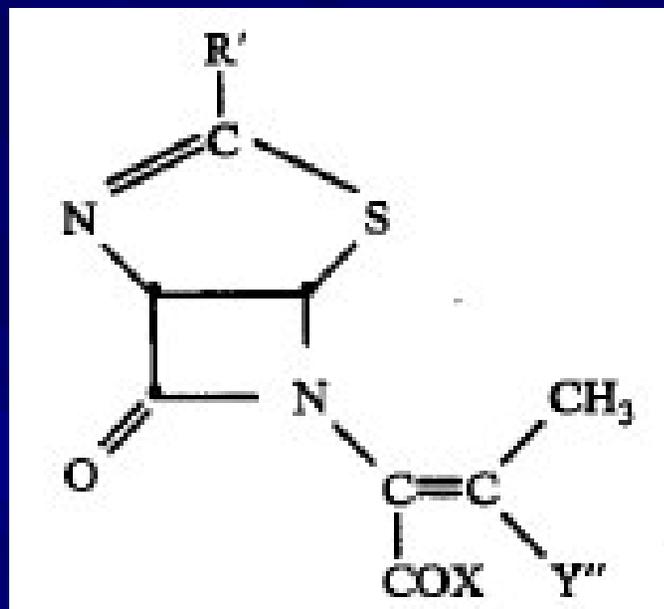
- First, the fact that patents are collectively unprofitable does not mean that inventions are collectively unprofitable
  - Inventions are collectively profitable
    - Currently, patents (at least patents outside chem-pharma) just make inventions somewhat less collectively profitable
- Second, once something has been invented, it very often makes sense to patent it
  - Analogy to arms race, or steroid use among athletes
    - In game theory, “prisoners’ dilemma” or “stag hunt”

Q: Why is the ratio of patent benefits to patent costs high in chem-pharma?

- Chem-pharma has standardized and precise nomenclature
- A chemist can easily translate chemical names into chemical formulas and structures, and vice versa
  - trans-6-[2-(4-carboxamido-substituted pyrrol-1-yl)alkyl]-4-hydroxypyran-2-one

# Typical Pharma Claim

1. A compound of the formula



wherein

- R' is benzyl or phenoxyethyl,
- Y'' is an amino group containing 2 to 20 carbon atoms selected from the group of morpholino, piperidino, and, dialkylamino of 2 to 6 carbon atoms, and
- X is hydroxy, alkoxy of 1 to 8 carbon atoms, 2,2,2-trichloroethoxy, benzyloxy, nitrobenzyloxy, methoxybenzyloxy, diphenylmethoxy, trityloxy, phenoxy...

## Chemical Claim

A zinc electroplating solution, comprising:

- an aqueous solution of zinc acetate, from 30 to 90 grams per liter;
- citric acid, from 1.5 to 3 times the zinc acetate concentration; and
- an alkaline pH-modifying substance in an amount sufficient to adjust the pH to a value of from 4 to 5.5.

# Contrast: Information Technology

- “interface”
- “control means”
- “point of sale location”
- Functional language tends to be less precise
- Meaning of terms varies by sub-industry and technological context

# Storage Medium with a Digital Watermark

- 15. A storage medium having stored thereon a signal with embedded supplemental data,
  - the signal being encoded in accordance with a given encoding process and selected samples of the signal representing the supplemental data, and
  - at least one of the samples preceding the selected samples is different from the sample corresponding to the given encoding process.

## A claim infringed by ebay

1. A system for presenting a data record of a good for sale to a market for goods, said market for goods having
  - an interface to a wide area communication network for presenting and offering goods for sale to a purchaser,
  - a payment clearing means for processing a purchase request from said purchaser,
  - a database means for storing and tracking said data record of said good for sale,
  - a communications means for communicating with said system to accept said data record of said good and
  - a payment means for transferring funds to a user of said system,said system comprising:
  - a digital image means for creating a digital image of a good for sale;
  - a user interface for receiving textual information from a user;
  - a bar code scanner;
  - a bar code printer;
  - a storage device;
  - a communications means for communicating with the market; and
  - a computer locally connected to said digital image means, said user interface, said bar code scanner, said bar code printer, said storage device and said communications means, said computer adapted to receive said digital image of said good for sale from said digital image means, generate a data record of said good for sale....

## Other Ways Chem-Pharma Differs

- High barrier to entry sharply limits the number of competitors and patents
- Limited number of competitors, and need for FDA approval prior to drug commercialization, reduces odds that someone unexpected will claim to be the first inventor

## Probability that a Patent will be Litigated

|                  | Probability<br>patent in<br>suit | Mean<br>patent value<br>(\$92) |
|------------------|----------------------------------|--------------------------------|
| ALL              | 2.0%                             | \$78,168                       |
| Chemical         | 1.1%                             | \$332,790                      |
| Complex          | 2.0%                             | \$52,024                       |
| Other            | 2.2%                             | \$79,570                       |
| Software         | 4.6%                             | \$55,421                       |
| business methods | 13.7%                            |                                |

\*Figure from Bessen & Meurer, *Patent Failure* (March 2008)

## Percent of all pending patent suits – broken down by technology

|                  | Percent of<br>lawsuits<br>(2002) |
|------------------|----------------------------------|
| Chemical         | 13%                              |
| Complex          | 34%                              |
| Other            |                                  |
| Software         | 26%                              |
| business methods | 4%                               |
| Biotechnology    | 3%                               |

\*Figure from Bessen & Meurer, *Patent Failure* (March 2008)

# Clarity of boundaries falling, Quantity of boundaries rising

- Fuzzy legal boundaries
  - Unpredictable claim interpretation
  - “Doctrine of equivalents”
  - Low penalty for vague claim language
  - Patent rights only loosely tethered to what inventor actually made
- More legal boundaries
  - Successive record #s of patent applications
  - Quantity of patents rising faster than quantity of technology
  - Increased density of boundaries - finer slices of technology pie
- Hidden legal boundaries
  - Delayed publication of applications
  - Continuation applications
  - First-to-invent can pop up out of the blue
- Some incentive to remain ignorant of legal boundaries
  - Willfulness damages
  - High cost of legal opinions of patent validity and infringement

Clarity of boundaries falling,  
Quantity of boundaries rising

■ Fuzzy technological boundaries

- Info-based technology tends to be more abstract
- Abstract → can arise in innumerable embodiments

■ More and more complex technological boundaries

- More, and more diverse, technology per end-product

# Can't buy insurance for patent invalidity or infringement

- Compare to title insurance on real estate
- What % of real estate developments result in inadvertent trespass?

## Poor notice → Inadvertent infringement

- A good system of property rights clearly delineates who owns what
- Notice problems much smaller in copyright
  - What's right about copyright?
    - Tangible expression and independent invention extremely rare
- Poor notice deserves the most attention from patent reformers

## Outside Industry, Much Consensus about Reform

- Much agreement among scholars, FTC Report, NAS Report, and even AIPLA Report!
- But, reports, commentary and latest reform bill precede publication of *Patent Failure*
  - Overall, the reform bill is better than status quo, but it doesn't do enough to improve notice
  - From the standpoint of *Patent Failure*, the most harmful uncertainty is uncertainty about what is owned and who owns it
- PS. Don't expect patent bar to approve

## Reform in Light of *Patent Failure*

- Clarify legal boundaries
- Reduce sheer number of legal boundaries
- Publish legal boundaries
- Mitigate harm of vague boundaries

## Clarify Legal Boundaries – Literal Claim Scope

- Stricter enforcement of requirement that claims be definite – a “no brainer”
  - Eliminate Federal Circuit’s “insolubly ambiguous” standard
  - Eliminate rule that applicants can use words to mean whatever they want (the “own lexicographer rule”)
- Return to “central claiming”(?) - radical
  - For example, limit claim scope to what the applicant actually reduced to practice prior to filing application
    - And/or limit claim scope to application drawings and applicant’s most preferred embodiment of the invention

## Alternative or additional reforms re literal claim scope

- Brighter line rules of construction
- Interpret functional language narrowly
- Curtail role of juries
  - Some of Judge Moore's data implies that juries perform poorly

# Circumscribe Doctrine of Equivalents (DOE)

- Map invention to words = map one abstraction onto another abstraction
  - DOE adds a third level of abstraction
- DOE should be based more on the invention and less on words
- DOE should only connect the dots set forth in the application, not expand well beyond them

# Circumscribe Doctrine of Equivalents (DOE)

- Robust DOE saves on costs of claim drafting
  - But Bessen & Meurer's data suggest that the social costs of poor notice are higher than we thought
- Only 1/5<sup>th</sup> of findings of infringement are findings of infringement under DOE
  - Implies that DOE supplies only a minority of inventor reward
  - Since DOE generates disproportionate uncertainty, cost of DOE may exceed its benefit
- How can potential infringers predict claim scope given cases such as *Warner-Jenkinson* (5.0 ≈ 6.0), *Graver Tank* (manganese ≈ magnesium), *Corning Glass*, *Festo*?

Reduce # of vague boundaries –  
Restrict eligibility for patentability

- No business method claims(?)
  - Business method = method of making money
  - Off the charts cost-wise
  - Some business methods merely transfer wealth, rather than create wealth
- No software claims(?)
- No “system” claims(?)
- But, this reform could violate TRIPS agreement

## Reduce # of boundaries that surround low-value inventions

- Reduce the sheer number of claims that potential infringers must sift through by discouraging throw-away claims
- Filing fees
  - Drop or modify flat fee arrangement.
  - Increase filing fees faster as number of claims increases.

# Reduce # of boundaries that surround low-value inventions

## ■ Maintenance fees

- Often it's cheaper for patentee to pay maintenance fee than to figure out whether patent is worth anything
- Proposal: higher or more frequent payment of maintenance fees (especially towards end of patent term)

## Reduce # of Boundaries that surround low-value inventions

- Second Maintenance Fee Proposal: customize maintenance fees
  - Base maintenance fees on number or diversity of technology and industry classes into which the claimed invention falls
  - Goals:
    - Some match between private fees and social costs of vague claims
    - Reduce number of non-expired patents worth little to their owners but that generate high social costs
  - Caveat: this reform would probably necessitate overhaul of Patent Office's classification system

Publish Boundaries → Notify potential infringers of the existence of boundaries

- Earlier publication → Earlier notice
- Publish all applications, and promptly
  - Don't wait 18 months
- Eliminate, modify or at least publish continuation applications

## Publish Boundaries

- First-to-file system → Earlier filing → Earlier publication → Earlier notice
- First-to-file system → Greater certainty about ownership
  - Whoever filed first owns the patent rights, end of story pretty much

# Mitigate harm of vague boundaries

- Soften remedies in some cases
- Prior user rights or independent invention defense
- Reduce expense of patent litigation for both infringers and patentees
- Reduce arbitrary variance in damage awards

# Soften Remedies in Some Cases

- Soften remedies by delaying injunction or by not enhancing damages
- Soften remedies when:
  - outside chem-pharma(?),
  - software or business method (?),
  - infringement under DOE (?),
  - good-faith inadvertent infringement (?),
  - prior use/independent invention(?), and/or
  - patentee could've easily notified infringer prior to infringer making a big investment in commercializing a product that uses the invention(?)

# Prior Use/Independent Invention

- Prior user rights or independent invention as a full-blown defense against infringement
- Prior user rights: if a user commercialized (or substantially prepared to commercialize) the invention prior to patentee's filing date, the user can continue to commercialize the invention to same extent
- Independent invention defense: when second inventor independently invented before receiving actual or constructive notice of first inventor's invention

# Reduce Expense of Patent Litigation

- Eliminate or modify legal issues that depend on state of mind
  - Best mode
  - Inequitable conduct
- More limits on discovery
  - Patent litigation is much cheaper in Europe
- Curtail role of jury

## Reduce Arbitrary Variance in Damages Awards

- Make law of damages more conceptually coherent and economically rigorous
- See Roger Blair and Thomas Cotter, Rethinking Patent Damages, 10 Texas Intellectual Property Law Journal 1 (2001-02)