

# Staking Claims in Nanotech

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NATIONAL  
NANOTECHNOLOGY  
INITIATIVE



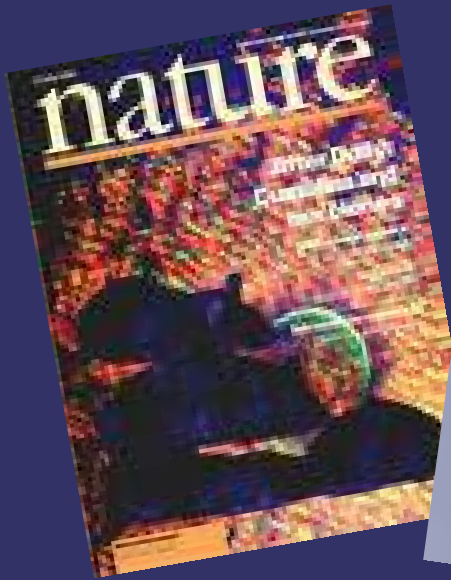
# Our Society is build on the open exchange of information

My research group examined:

- Who owns the ideas that create nanotechnology
- How did the inventors meet
- How is that technology transferred to industry

# Publish or Perish

Scientists present the research to the World.



So they can stake their claim to a patent that utilizes their innovation and benefits society.

# Who owns Nanotech?

By ancient convention innovators can  
stake a claim **Patent then Publish**

Publish

Patent

Produce

In 1980 with the passage of the Bayh-Dole Act  
Universities in the USA gained a stake in the patents  
from the research they helped conduct and became a  
player in its commercialization

# What are Patents?

Patents are government grants of property made to inventors of novel and useful items or processes.

Someone first stakes a claim

What if someone else comes along and claims another patent?

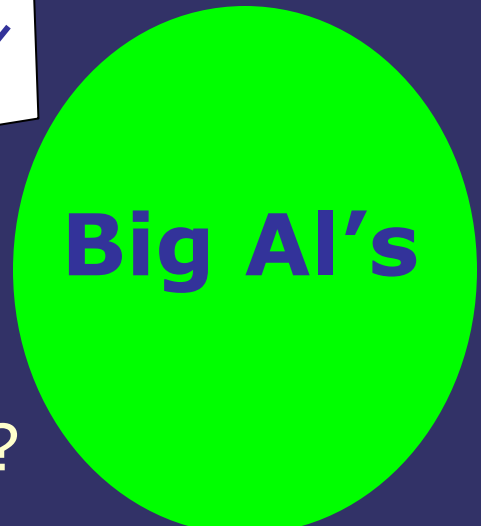
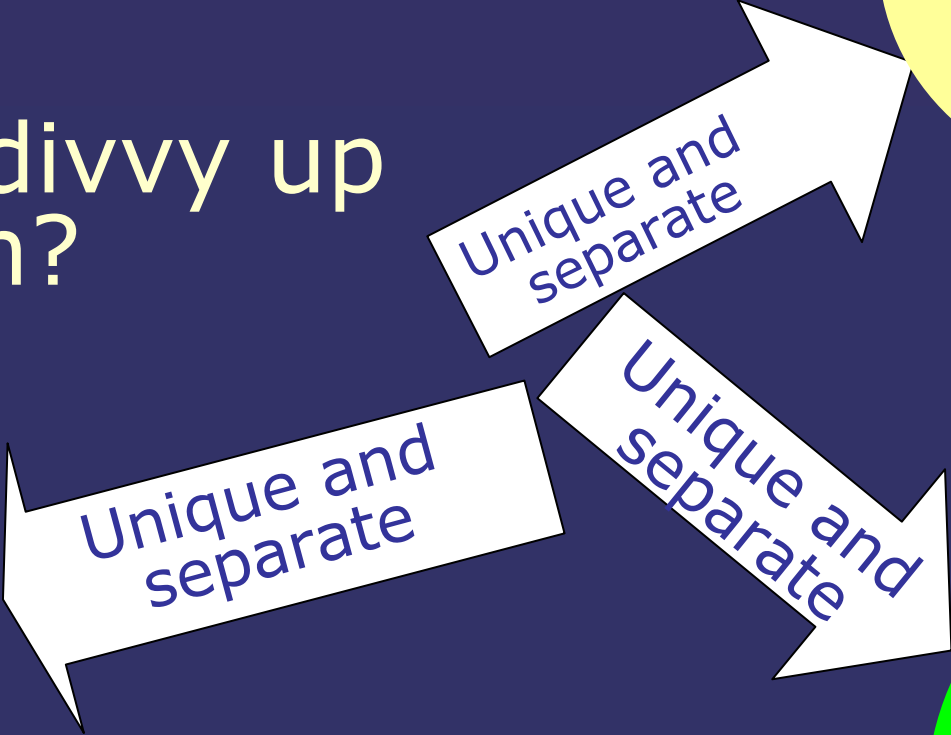
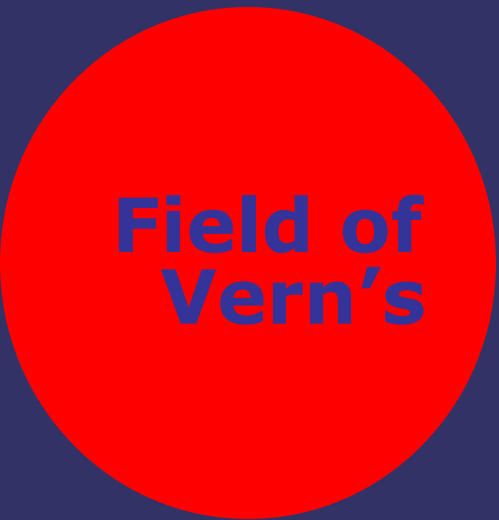
And then a third one moves into the territory.

Move over boys this is now all ruled by BIG AL.

# Patents must not overlap



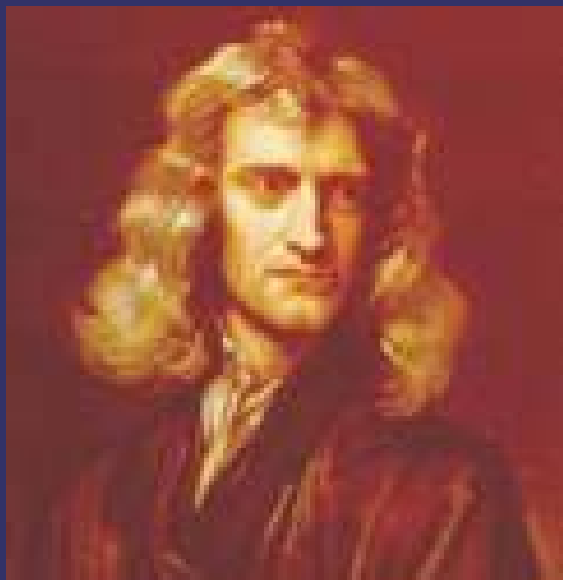
How do divvy up an atom?



Electrons are such slippery things:  
Are the particles or are they waves?

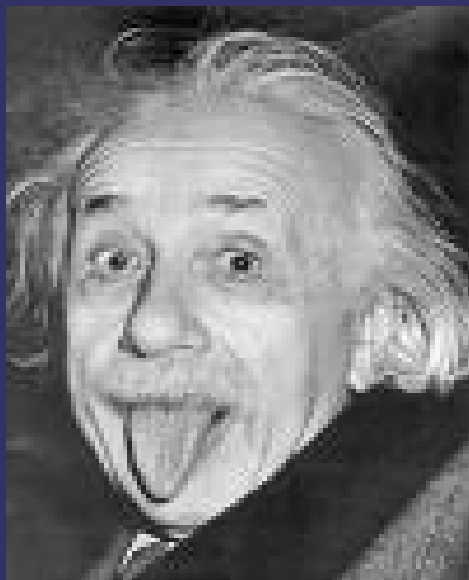
# At nanopatents property lines are...

Blurred by uncertainty!



Isaac Newton

$$\mathbf{F} = m\mathbf{a}$$



BIG AL

$$E = mc^2$$



Werner Heisenberg

$$\Delta x \Delta p > h / 4\pi$$

# My part in tracking Intellectual Property

*I read*

- *Patents*
- *Scientific Papers*
- *Technology Transfer agreements*

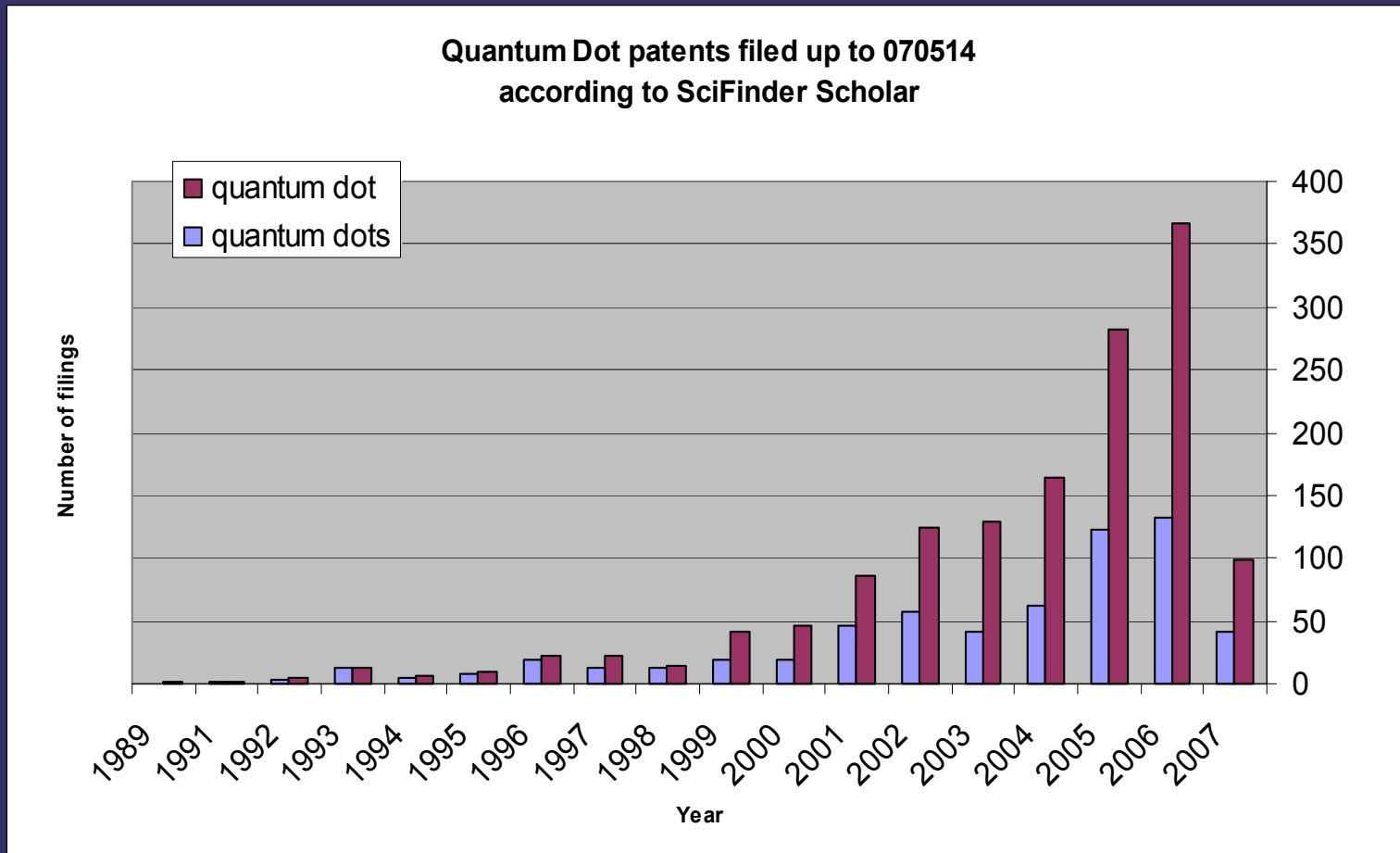
*and created abstracts and prepared data to be used in graphing and visualizations.*

*These were designed to reveal*

- *Whom was publishing with who*
- *Whom was patenting with who*
- *Whom was selling processes to who*



# Quantum Dots Patent Filings



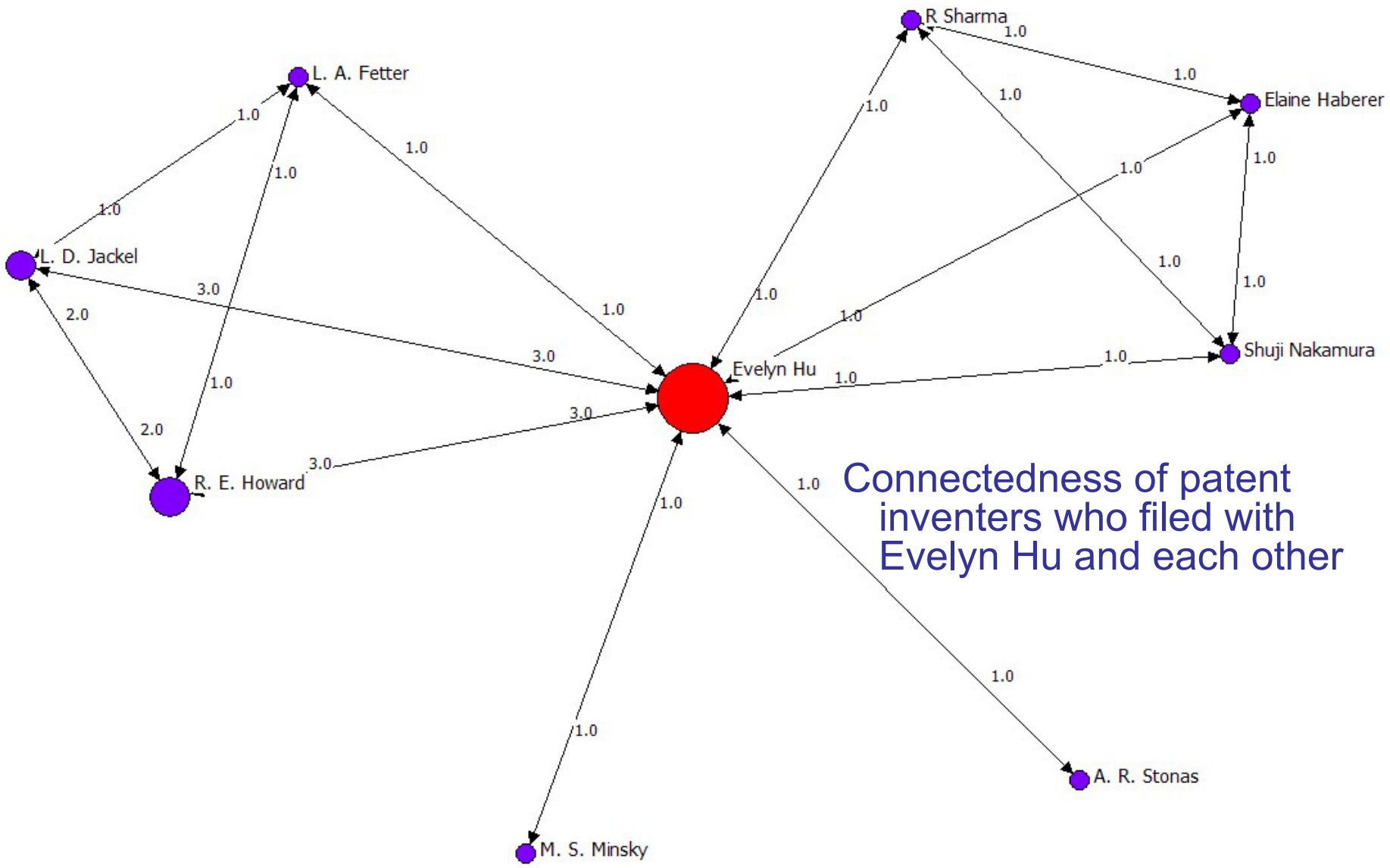
# Various Patent categories with Entangled Intellectual Property

	Fullerenes	Carbon Nanotubes	Dendrimers	Quantum Dots	Nanowires
General	50%	50%	75%	95%	25%
Structural	50%	75%	50%	5%	0
Energy	50%	25%	50%	50%	5%
Optics	50%	25%	50%	50%	50%
Electronics	50%	75%	25%	50%	50%
Healthcare	50%	25%	75%	75%	5%

Source: Luxresearch used with permission- values are approximate

# CNS-UCSB

Center for Nanotechnology in Society



Connectedness of patent inventors who filed with Evelyn Hu and each other

## Water-soluble Semiconductor Nanocrystals Conflict

- Two companies Nanosys and Quantum Dot Corporation claim to hold all licenses on all Patents on Quantum Dots.
- QDC claims all biological applications and Nanosys claims everything else.
- Yet, Evident Technologies markets proprietary water-soluble semiconductor nanocrystals for biomolecule detection and maintains that they are not infringing on QDC's patents.

As of July 2007 this situation has not been resolved.

# Further Research

- Will a Patent Thicket logjam the river of commerce?
- Can Government remain Neutral?
- Will scientists stop sharing their research?
- Will the Patent offices around the World stop issuing contradictory patents?

# Observations

Our 500 years old system of Patenting is stressed:

- Legally
- The Laws of Physics burr
- Inventors are holding by their discoveries

Governments, once neutral referees, are now indirect players in industry through:

Universities & Industrial Research Tax Breaks

# Speculation

To keep the system going innovators:

- Must be able to get credit and recognition for their discoveries
- Must be satisfied that they are being fairly compensated for their work
- Likewise authority must be fair to the consumers, the workers and manufacturers as well as the innovators

# Acknowledgements

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And the staffs of INSET, CNS and CNSI



# Questions



# JPEG Patent law suit

- In 1997 a company named Forgent acquired another called Compression Labs. In 2002 when Forgent was reorganizing and laying off people consultants were hired to evaluate its assets. They discovered US patent number 4,698,672 that was owned by Compression. This patent was applied for in 1986 and dealt image compression. Forgent then sued Microsoft, IBM, Sony etc. claiming damages on up to one Billions Dollars.
- JPEG (Joint Photographic Experts Group) was a standard convention agreed to for common use.
- In 2006 the lawsuit was finally settled for \$8 million after Sony and others paid had paid \$2 million previously. The US PTO had agreed to review the patent in Feb. 2007. Forgent's legal bills were cited in their agreement to settle.

## Points

- **Only 2% of Patent pay for themselves.**
- **The cost of worldwide Patents rights can run to \$250,000 per patent.**
- **Patent Troll-an individual or group that acquire intellectually property rights solely to cause trouble for those that want to commercialize intellectual property.**
- **Patent Thicket-A legal morass the prevents patents from being viable.**