

Intellectual Property

Theory and Practice

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Who Am I?

- **Dr Foster, Head of Government Services:**
 - Management Information Systems to Local Government,
 - 2 yrs

- **UCL Business, Senior Technology Transfer Manager:**
 - Commercialising IP developed by academics
 - 2 yrs

- **eAttorney, Chief Information Officer:**
 - Entrepreneur developing new web products for attorneys
 - 6 yrs

- **Bestselling Sudoku Author, 2006-ongoing**



Agenda

- Overview of key theory
- Practical examples
- Roundup: things to take away with you



Intellectual Property in a nutshell

- Ideas have value but can be copied easily
 - Photocopy a book
 - Pirate software
 - Reverse engineer software
- Legal basis for defending your ideas
 - Prevent others from exploiting
 - Protect commercial value for yourself
- Different methods for different types of property
 - Each has its own procedures that must be followed
- Not an absolute right, only a right to challenge
 - Gives you a right to sue but the courts will decide validity



Overview

- IP is a grey area
- There are particular rules laid down
- These must be followed to gain protection
- Protection is not certain
- There is always scope for argument
- Arguing is expensive
- You need access to cash to defend yourself
- That's why the lawyers make so much money!



Types of Intellectual Property

- Designs
- Trademarks
- Copyright
- Confidential Information (Know-how)
- Patents



Designs

- The look and feel / appearance of an object
- Generally applies to physical design
 - e.g. sculpture, furniture, clothing, wallpaper patterns
- Unregistered designs
 - Occurs automatically
 - Must prove unique design
 - Up to 10 years
- Registered designs
 - Filing process
 - 25 years



Examples of Design Rights

- Can you name some?




Relevance of Designs to CS

- Can be extended to database & network designs
 - Logical layout
 - Doesn't protect function, only form
 - Must prove non-obvious though
- Can extend to hardware designs
 - Applies mostly to aesthetics
 - iPod
- In general, remember that for sales, aesthetic presentation can be as important as function



Trademarks

- Generally pictures, sometimes words
- 
- Can be shapes or sounds
 - Nike Tick, Microsoft Windows boot-up sound
 - Domain names
 - Exist forever
 - Or as long as you own (e.g. domain name)
 - First person to use gains the protection
 - Can be registered (evidential)
 - Restricted to specific type of goods / service
 - E.g. ACME Builders different from ACME Meals
 - Covers highly similar "passing off"



Trademarks and CS

- Doesn't protect the ideas
- Does protect the product 'brand'
- Does protect the commercial entity
- If you plan to convert an idea into a product for sale, you will want to protect your image
- Protect the value of your marketing spend
- Be careful not to infringe others
 - e.g. University Trademarks
 - You can't put UCL logo on commercial product just because you are a student



Copyright Overview

- Defined for artistic works
 - Literature, music, etc.
- Covers software code and academic papers
 - As a literary work
- Occurs automatically, no need to register
 - Authors often post registered copy as proof
- Copying Required
 - Materially similar test
- Valid for life of author +70 years



Copyright Questions

- Split into pairs
- One person write a paragraph (approx 50 words)
 - Theme: Why I love computers
- The other write a short piece of code (10 lines)
 - To generate a paragraph approx 50 words
- Hand to the other



Copyright Review

- Protecting the expression of the idea, not the idea
 - The actual words, not the storyline
 - The source code, not the function
- Must be original work
 - Can't copyright common phrases / language
 - Can't copyright PRINT 'Hello World'
- Longer works are more defensible
 - Easy to prove unique and uncommon
 - BUT taglines have been defended e.g. "Just Do It"
- Where any of your works copyright?



Copyright and Software

- Not very helpful for software code
- Each code snippet just written may be copyright
- All are different and written independently
 - BUT each achieved the same job
- Can force rewrite
 - Each subsection of code is protected so must rewrite all
- People will only steal if cheaper to rewrite than buy
 - Protects some value
- Forces some companies to “white room”
 - Independent derivation may show not sufficiently unique to warrant copyright



Confidential Information / Know-how

- Your Best Friend
- If your idea is truly inventive and complex
- If you are the only person who knows how to do it
- Hard for others to copy
- Your advantage:
 - Only you can make and sell until someone else works it out
 - Whoever copies, must spend a lot to copy
- Your disadvantage:
 - Stifles collaboration
 - You can't grow a company on your own



Confidential Information – Example 1

- Person with confidential envelope 1
- Please stand up
- Open envelope and read out



Confidential Information – Example 2

- Person with confidential envelope 2
- Please stand up
- Open envelope and show person next to you



Confidential Information – Examples 3

- Person with confidential envelope 3
- Please stand up
- Open the envelope
- Complete form “Confidential Information 3”
- Have person next to you sign confidentiality agreement
- Show the Confidential Information 3 form to the person next to you



Some Essential Components of a Confidentiality Agreement / Non-disclosure Agreement

- Vague outline of proposition
 - Not actual description = disclosure before signature
- Timeline
 - Generally 3 years
- Parties
 - Who is it between
- Date
 - Valid from
- Warranty
 - Not to disclose
 - Not to use themselves
 - Not to reverse engineer



Some Essential Limitations in a Confidentiality Agreement / Non-disclosure Agreement

- Should carve out (not include) information that:
 - Was already or subsequently enters the public domain
 - Is disclosed to the receiving party by another legal means
 - Was already known to the receiving party
 - May need evidence
- Should allow the receiving party to disclose if:
 - Police require
 - Freedom of Information Act demands
 - Be careful here, disclosing to public body (university) can make your confidential information subject to FOIA



Confidential Information in Practice

- Academics share ideas
- It is important that we share ideas
- If you think they may be important and you might want to exploit commercially, be mindful
- Ask collaborators to sign confidentiality agreements, but only if appropriate
- You can ask people to keep details confidential after the fact – but this is more complicated legally
- If they have told other people, it will be too late



Confidential Information in Practice

- Most employment agreements will contain confidentiality clauses – be aware
- If you breach confidentiality, you may be liable for more than you are worth
- If someone breaches your confidentiality agreement, they may not have sufficient wealth to compensate you
- Trust is important, try to work firstly through relationships, supported by the law, not just the law



Patents

- Provide an exclusive right
- Only for industrial applicability
- Must be novel
- Must be inventive
- Duration 20 years
- Complex filing process
- Requires separate filing in many countries
- Different rules in different countries
 - Notably different in America




Why Patent?


- Can provide a great deal of value
- Provide a monopoly to commercially exploit idea
- Encourage R&D investment – particularly drugs
- Can exploit as company or license to company
 - In 2001, licensing represented 11% of the combined revenues of the world's quoted companies
- Funding: Investors may require barrier to entry
 - Make sure their money is protected
 - Stops them just copying your idea






Successful Patent


Dyson Vacuum Cleaner



 Europäisches Patentamt
 European Patent Office
 Office européen des brevets

 Publication number: **0 042 723 B1**


 EUROPEAN PATENT SPECIFICATION





 Date of publication of patent specification: 21.06.85
  Int. Cl.⁴: A 47 L 9/16

 Application number: 81302726.5

 Date of filing: 17.06.81

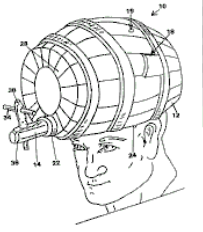
Successful £6,000,000 law suit

 Vacuum cleaning appliance.

<p>  Priority: 19.06.80 GB 8020941 06.08.80 GB 8025980 25.02.80 GB 8030964 26.09.80 GB 8031121 </p> <p>  Date of publication of application: 30.12.81 Bulletin 81/52 </p>	<p>  Proprietor: ROTORK APPLIANCES LIMITED Rotork House Brassmill Lane Bath BA1 3JQ (GB) </p> <p>  Inventor: Dyson, James Sycamore House Bathford, BA1 7RS Bath Avon (GB) </p>
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Unsuccessful Patent

PCT		WORLD INTELLECTUAL PROPERTY PROTECTION TREATY (WIPO)	
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)			
(21) International Patent Classification: A61B 1/02	A1	(11) International Publication Number: WO 99/09096	
(22) International application Number: PCT/US99/0270		(30) Designated States: CA, JP, BR, AU, CN, DE, DK, ES, FI, FR, GB, GR, IL, IN, IT, MC, NZ, PT, SE	
(23) International Filing Date: 9 February 1999 (09/02/99)		(41) International Publication Date: 12 August 1999 (99/08/12)	
(32) Priority Date: 09/02/98	US	Published: with international search report	
(33) Priority Application and Inventor: FLANN, Russell D. (US 5,512,816) Russell D. Flann, West Milwaukee Street, Milwaukee, WI 53204-1741 (US)			
(47) Agent: RYAN, Donald D. et al., 433 West Wisconsin Avenue, Milwaukee, WI 53203 (US)			
CLASSIFICATION CLASS. NO.: SUBSTANCE DISPENSING HEADGEAR			
ABSTRACT A headgear (10) for dispensing a substance has a chamber (24) to carry the substance. A ring (12) is mounted on the chamber (24). The ring (12) can be opened to dispense the substance by gravity, rotation, pressure or any flow from the chamber (24). The ring (12) can be closed to secure the substance in the chamber (24). A head-fit means (26) is formed within the headgear (10) of the chamber (24) to permit the headgear (10) to be mounted on a head, and/or maintaining the headgear (10) in a predetermined position during hands-free operation of the headgear.			
			

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Industrial Applicability

- You can only patent products, processes, technological inventions that have industrial (engineering) applications
- You can't patent concepts,
 - e.g. socialism
- You can't patent ideas,
 - e.g. "A machine that flies"
- You can't patent software
 - BUT you can patent a "method and apparatus for ... as embodied in a particular piece of software code"

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Novelty

- Can only patent concepts not in the public domain
- cursory investigation when first file patent
 - Patent search, literature review
- If not confidential, not patentable
- If you disclose, you can't then protect
- Some exceptions
 - Academic has grace period for discussion in small groups
 - Only for a few months
 - Only if not spread widely as result
 - Burden of proof shifts – making it much harder



Inventive

- Open to challenge
- What is obvious?
 - Many things seem obvious after the fact
 - Many patents are granted that seem obvious
- At time of filing have to show not obvious
 - Literature and patent search
- Burden of proof is much higher if you have to defend in court
 - When relying on patent infringer will always try to prove it was not a real invention but just an obvious next step
 - Jury decides



Ideas Factory

- Remember Disclosure: If you might really do this, don't tell us
- Don't be constrained by practical ability to make
- Come up with an idea that is:
 - Industrially applicable
 - Novel
 - Inventive
- Share with the class
 - If you can't do this, state which area you fall down on
 - We will all challenge assumptions
 - 2 minutes thinking time



Ideas Factory: My example

- A stand for coats, shoes, hats and scarves
 - Industrial Applicability: It is physical and people will buy it
- That is freestanding and expands to the size needed for the number of items you have
 - Novel: I'm not aware of a coat stand that expands and contracts
- And which automatically retracts to the minimum necessary size
 - Inventive: I don't think it is obvious to coat stand makers to have them retract to take up the smallest amount of space



What can't you patent

- Different rules in Europe and US
- UK largely follows Europe but idiosyncrasies

- Europe
 - Nothing if disclosed
 - First to File
- US
 - Have 1 year grace period after disclosure
 - First to Invent



European Exclusions

- The following, in particular, shall not be regarded as inventions:
 - discoveries, scientific theories, mathematical methods
 - aesthetic creations
 - schemes, rules and methods for performing mental acts, playing games or doing business
 - programs for computers
 - presentations of information
 - only to the extent to which a European patent application relates to such subject matter or activities as such.



It's All in the Description

- Language is important
- You can avoid the exclusions by talking at the higher level – what does the application do
- But the higher your description, the less defence for the detail and the less likely it is to pass the novel and inventive tests



Avoiding Patent Exclusions Example

- Seek protection for the technical process in which the method is used, not the method itself
- “A method for digitally filtering a two-dimensional array” – FAILS = MATHS
- “A method for digitally processing images in the form of a two dimensional array” – PASSES
- As computer scientists, we know they are they same. It doesn't matter if they are pictures, numbers or words.
- Allows patent test to pass though. Still debatable in court.



Google Patent Filing

- Founded 1998
- 2000 - 7 applications
- 2001 – 4 applications
- 2002 – 3 applications, 3 published
- 2003 – 64 applications, 4 published
- 2004 – 76 applications, 52 published
- 2005 – 33 applications, 127 published



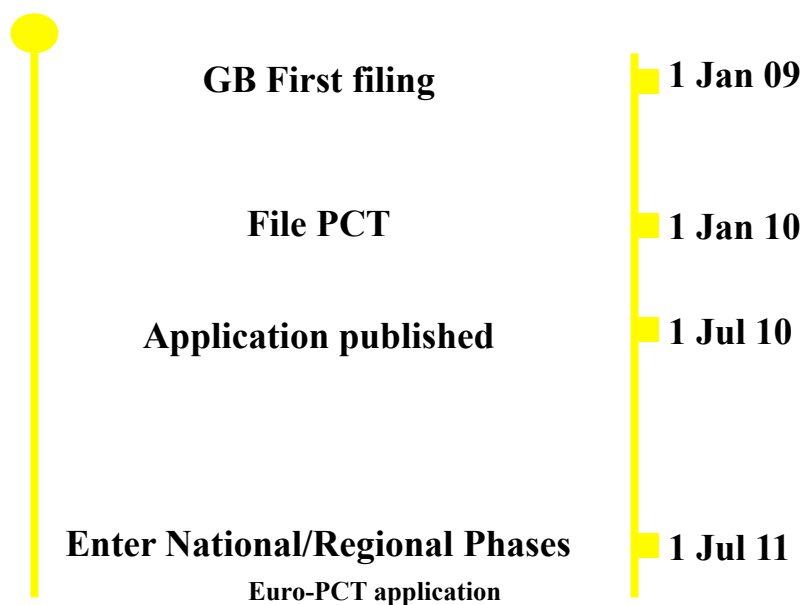
Arms Race

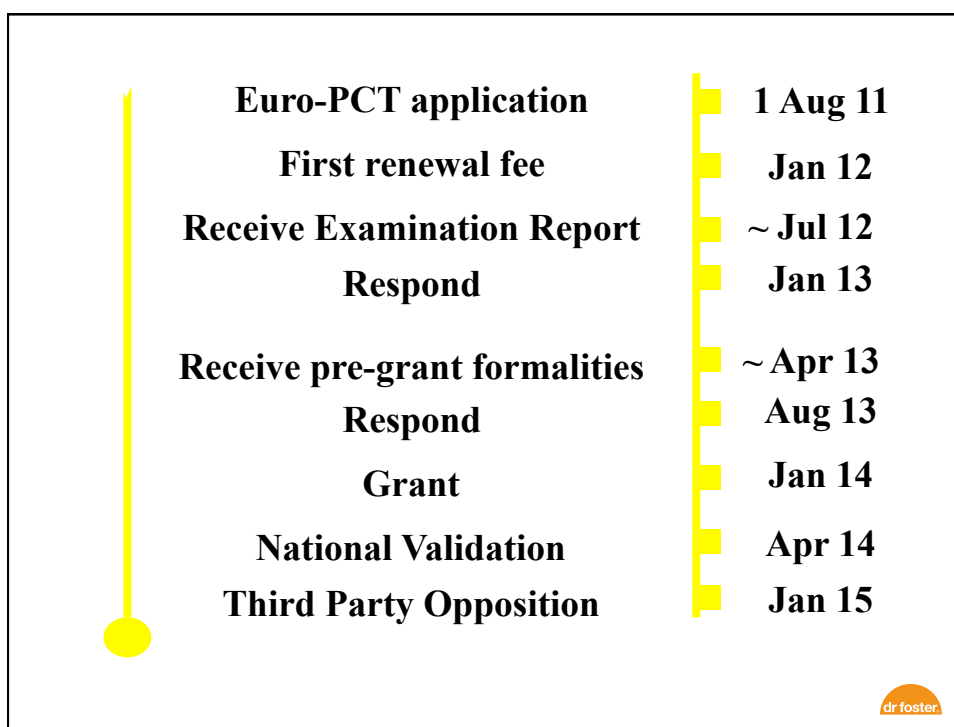
- IBM – 3000 US patents a year
- Intel – have 10,000 patents
- Many may not stand up in court but smothering an area allows the larger companies to block new entrants through stalling tactics, keeping them in court.



Patent Process

- Takes many years to secure a patent
 - Can speed this up but also speeds up cost
- “Patent Pending” – means filed but not approved
 - Gives some comfort and scares off competition but may fail
- Can get started for relatively small money
 - £100 UK filing
 - BUT generally £3,000 to £5,000 first filing if use lawyer
 - Language is important
 - Filing = disclosure so important to get it right
- Over 3-5 years, cost grows to ~£100,000
- Need to understand commercial viability before then





Can you Patent

- Have you disclosed?
- Do you own?
 - Are you employed
 - Did you invent in the normal course of your employment
 - Generally wide definition in favour of employer
 - Are you a student
 - Undergraduates will generally own ideas
 - But if funded, funder may own ideas
 - Researchers will be employees, university will own
- Are there any co-owners?

Do you want to Patent

- What are your motivating factors
 - Make money
 - Secure funding (e.g. VC money)
 - Maximise use and appeal
 - Publications, academic career
 - Provide free alternative to other products
 - Define a public standard
 - Self-promotion



Practical Considerations

- Cost / Benefit
 - Initial market analysis shows potential
 - Need to discuss with insiders to understand
 - Initial cost around £4,000
 - Will rise to around £100,000 in 5 years, worldwide
- Can you defend (assert) the patent
 - What if Microsoft or other giant copies you
 - Netscape spent years in court defending rights
- When should you drop a patent
 - Costs escalate if you continue
 - Opportunity gone if you drop



Background vs. Foreground IP

- Does your work rely on anyone else's
 - Is your work based on patented ideas
 - Is it part of a bigger project
- If it is on the internet it is not free to use
 - Hacked and Cracked -> often illegal
 - Copyright applies to images, music etc.
- Open Source foundation and license
 - If you build on open source people can use without a fee
 - Open source can still provide valid business models



I'm still not sure why I need a patent

- Case 1: Xtreme Sports Camera
 - Featured on Dragon's Den
 - Not Software but real example
 - Inventor had developed a helmet with a camera built in to record your stunts
 - Do you think there is commercial potential?
 - Would you invest?
 - Where is IP relevant to these discussions?



Business Models 1: Patent + License

- Patent the software as part of a system
- License the patent to a large organization
- Revenues may include:
 - Up-front fee, percentage of net revenues, milestone payments, balloon payments
- Restrictions may include:
 - Territory, field of use, period of time



Business Model 2: Patent + Start-up

- Patent the software
- Create a company to build and distribute a product around the patent
- Perform other functions needed to start a business, e.g. marketing, operations
- Secure funding based on your ability to defend a monopoly (from VC or Angels)



Business Model 3: Know-how + Start-up

- Can't license Know-how
- Uncover a commercial opportunity
- Create new software to meet need
 - Bundle together old ideas: not patentable
 - Create new idea that could be copied if revealed, even in a patent
- Build business around the new software
- Put in place other components of business
- Secure funding (much harder)
- But very common



Business Model 4: Open Source

- Include standards based models
- Develop new software
- Distribute under GNU, BSD or other
- Encourage non-commercial use
- Encourage user-community to extend software
- Add requirement for fees if used commercially
- Add revenue streams from support
- Build "super-products" (V 2.0) and charge



Business Model 5: Patent Everything

- Large Organisations
 - IBM, Microsoft, Canon
- Have large “war chest”
- Spend to defend
- 90%+ will never be developed
- Stopping others from encroaching
- IBM now looking to sell off unused ideas



Business Model 6: First Mover

- Sometimes you can make a lot by being first
- Many may follow and make money
- You decide you don't care
- The initial hit is where the real money is
- Speed is of the essence
- Not a long-term opportunity
- 1M pixel web-page
 - Nottingham student, sold 1M pixels for \$1 each, since August, each is an advert with click through, publicity works as it is the first. Last 1000 pixels on e-bay



Conclusions

- Intellectual Property may or may not be important to business
- Sometimes it is essential
- Often it is only considered too late
- Understand your objectives
- Understand your options
- Make an informed decision



Conclusions

- Intellectual Property is often a grey area
- It only gives you an ability to challenge someone
- You may still lose, especially if they have more cash
- But without it you have no leg to stand on
- It is important that you understand the rules
- It is important that you understand them early
- Disclosure is the number one reason why IP fails
- Be mindful when discussing ideas
- But still keep an open dialogue where possible

