

Technology Transfer - The Oxford Experience



Dr Tim Cook Managing Director Isis Innovation
Oxford University Technology Transfer Company

Oxford University

- UK's oldest university
 - 1100 (about!)
 - 1190 first overseas student (Emo of Friesland)
- 3700 researchers
- Y43b annual research spend
- UK's most innovative university
 - Cross Atlantic Capital
- Biggest chemistry department in (western) world
 - 80 D. Phil (PhD)
 - US top six: UC Berkley 62, Purdue 39, Illinois 36, Wisconsin 36, UC Irvine 35, Harvard 35
 - 180 M. Chem (4-year bachelors degree)
 - US top five: Austin 115, San Diego 71, Michigan 70, Chapel Hill 58, Utah 44

What is a University?

- A great University is defined by great academics
 - Great researchers
 - Great thinkers
 - Great teachers
- Not
 - Great administrators
 - Great technology transferors
 - Or even great leaders
- Although all of list two help with list one

Oxford University Innovation Model

- Permeates the University
 - Council
 - Administration
 - Researchers (3700)
 - Students (graduates & undergraduates)
- The resources are distributed throughout the structure
 - In the most appropriate locations

Resources to Support Research & Innovation

■ Research Services

- Located in University central offices and departments
- Administers Y32b grants & contracts out of Y46b total research

■ Isis Innovation Limited

- A company, wholly owned by the University
- Commercialisation by patents, licences, spinouts & consultancy

■ Begbroke Science Park

- Wholly owned by the University
- Premises for research, business incubation & spinout companies

■ Oxford Science Enterprise Centre

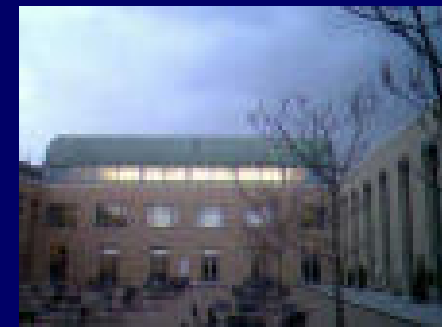
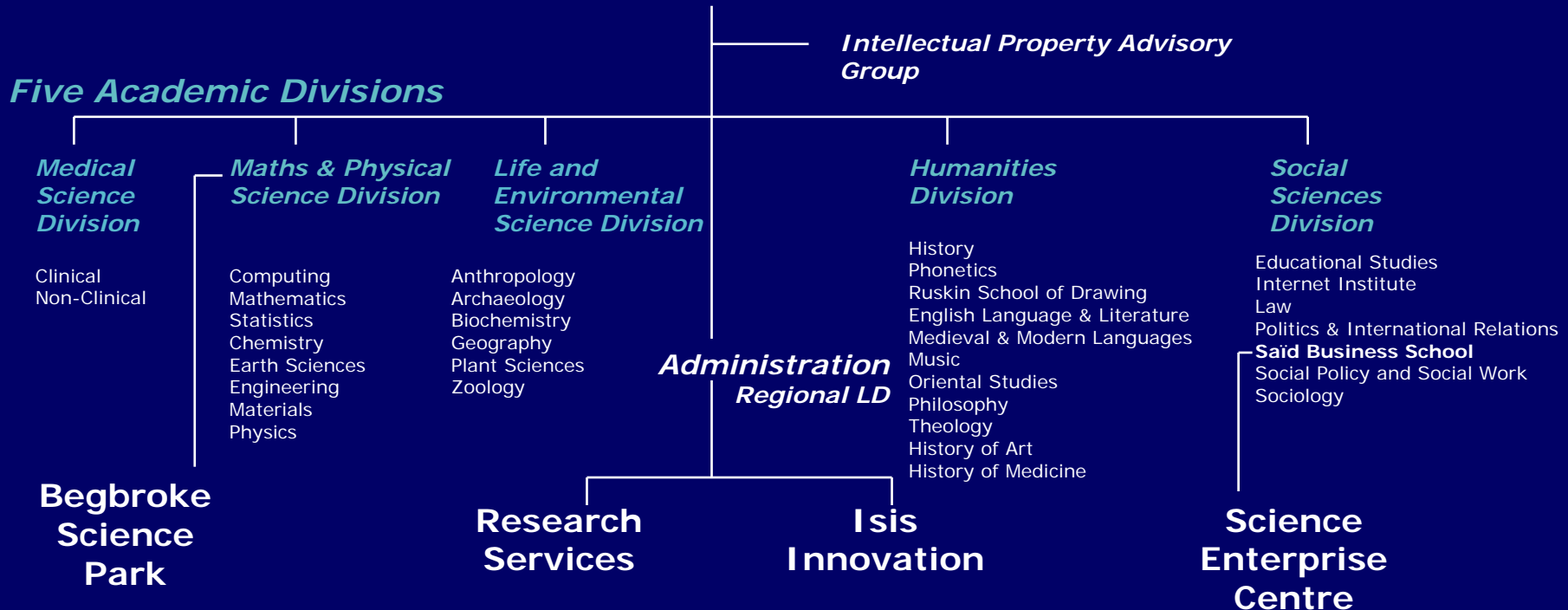
- Located in the Said Business School
- Commercial training for scientists (average attendance 200+)

■ Oxford Entrepreneurs Club

- Student Innovation Society (600+ members)

Reporting Structure (partial)

UNIVERSITY COUNCIL



Oxford Model - Key Ingredients

- Rich portfolio of wholly-owned IPR
 - Strong, world-class research base
 - Diverse research sponsorship (700)
- Clear intellectual property (IP) policy
 - Led from the top and widely supported
- Investment in research support & tech transfer
 - 68 staff in Research Services and Isis Innovation
- Clear internal demarcation of responsibility
- Effective internal & external communications

Intellectual Property Policy

October 2000

- University claims ownership of all employees' and students' IP rights resulting from University research activities
- The university assists those researchers *who wish to* commercialise their research
 - by patenting, licences, spinout companies & consultancy
- Researchers share the benefits
 - Royalty shares from licences
 - Equity in spinout companies
 - Income from personal consultancy

Royalty Sharing

- Isis Innovation pays all patent costs
 - Y240 million in the year to March 2004
- Isis recovers patent costs from royalties
- Isis retains 30% of royalties
- The net revenue is transferred to the University & distributed:

Total net revenue	Researchers Personally	University General Fund	Department Funds
to Y10m	87.5%	12.5%	0
to Y100m	45%	30%	25%
over Y100m	22.5%	40%	37.5%

Equity Split Sharing

- The total equity must not exceed 100%!
- Equity shared between:
 - Academic(s) - Not only names on the patent
 - University
 - Investors
 - Managers
- Academic and University get similar amounts
- Investors get what they negotiate for
- Manager(s) share 5-15% depending

Note: Everyone on the list has an effective veto

Transfer of Intellectual Property

Inside the University

Assignment of intellectual property rights

Outside the University

Research funding source

Government

Charities

Industry

Research Services

32 Staff

85% Graduates

33% Post grad degrees

Isis Innovation

36 staff

75% Graduates

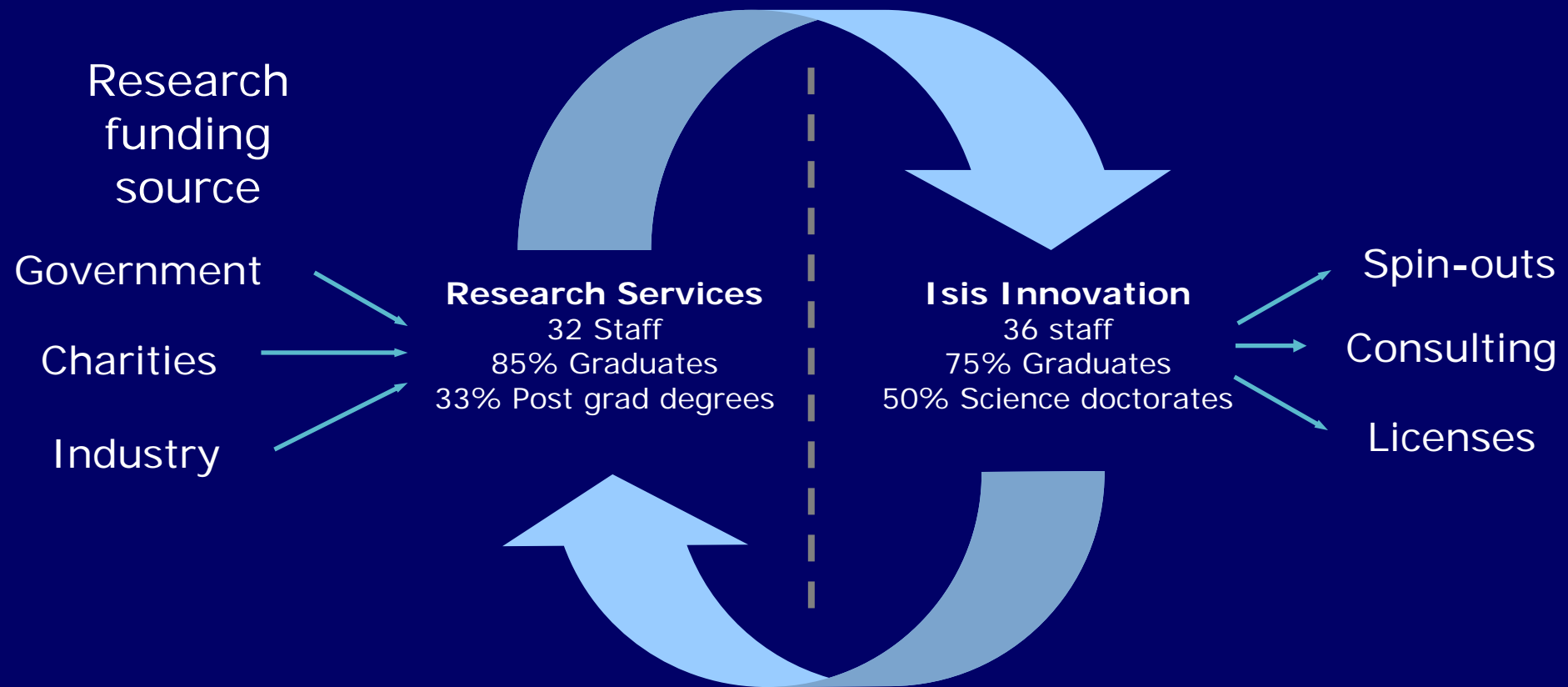
50% Science doctorates

Spin-outs

Consulting

Licenses

New sponsored research



Isis Innovation 1997 - 2004

Year ended March	1997	1998	1999	2000	2001	2002	2003	2004
University annual investment Y million	8	60	100	200	200	200	200	200
Staff	3	9	9	17	21	23	34	36
Projects		168	243	319	415	476	629	725
Patents filed		31	51	55	63	82	65	52
Deals	4	8	18	21	36	42	71	81
New companies	1	2	3	6	8	8	7	3
Companies started with Isis' support	OGT	Opsys Synaptica	Prolysis Celoxica Avidex	Oxxon Dash Oxonica Abington OMIA ThirdPhase	Mindweavers BioSensors Biosignals TolerRx OXIVA PharmaDM OxLoc Ox Bee Co	Ox Ancestors Novarc Ox ArchDigital NaturalMotion Inhibox Pharminox Minervation Spinox	Zyentia Oxitec Ox Immunote ORRA Glycoform BioAnalab VASTox	ReOx Riotech OCSI 2004 OMD G-Nostics Surface T

Isis Innovation Staff

Administration (9)	Physical Science Group (11)	Life Science Group (9)	Business Innovation & Consulting (6)
<p>Managing Director Dr Tim Cook</p> <p>Executive Director Tom Hockaday</p> <p>Portfolio Manager James Mallinson</p> <p>Lawyer Stephen Brett</p> <p>Office Manager Jenny Bailey</p> <p>Marketing Cynthia Warmington</p> <p>Accounts Gadit Sass</p> <p>Facilities Jane Tarry</p> <p>Receptionist Emma Phillips</p>	<p>Head of Group Dr David Baghurst</p> <p>Project Managers Dr David Churchman Dr David Eastham Dr Mairi Gibbs Terry Pollard Dr Roger Welch Dr Tony Lewis</p> <p>Business Development Fellow Andrea Mica</p> <p>Int'l Development Manager Dr Tony Klepping</p> <p>Marketing tba</p> <p>Administrator Karina Mortensen</p>	<p>Head of Group Linda Naylor</p> <p>Project Managers Dr James Hamilton Dr Taj Mattu Dr Richard Middleton Dr Goslik Schepers Dr Colin Story Dr Adam Stoten</p> <p>Business Development Fellow Giles Dudley</p> <p>Patent Administrator Catherine Lloyd</p> <p>Administrator Madelaine Jones</p>	<p>Head of Group Dr Mark Taylor</p> <p>Project Managers Andrew Goff Dr Rick Inwood Gill Rowe tba</p> <p>Marketing Etelka Clark</p>

Oxford Spin-outs Pre 1998

		Capital	Equity	Main Business
1959	Oxford Instruments	Y18b	-	Scientific Instruments
1977	Oxford Lasers		-	Lasers
1988	Oxford GlycoSciences	Y20*	Yes	Glycobiology
1989	Oxford Molecular	Y11b*	Yes	Drug design
1992	Oxford Asymmetry	Y63b*	Yes	Chemistry
1994	PowderJect	Y108b*	Yes	Drug delivery
1996	Oxford BioMedica	Y14b	Yes	Gene Therapy
1997	Oxagen		Yes	Genetics
1997	Oxford Gene Technology		Yes	Gene chips
Total		Y235b		
(Quoted valuations at 20/10/2003 or at sale of company*)				

Oxford Spin-outs Post 1998

1998

Feb	Opsys	Displays
Mar	Synaptica	Neurodegenerative diseases
Jun	Prolysis	Antibiotics
No	Celoxica	IT
Nov	Sense Therapeutic	Pharmaceuticals

1999

Mar	Avidex Pharmaceuticals	Pharmaceuticals
Jun	Oxxon Pharmaccines	Pharmaceuticals
Jun	Dash Technologies	IT
Aug	Oxonica	Nanotechnology
Aug	Abington Sensors	Sensors
Dec	Oxford Medical Imaging	Image analysis

2000

Jan	Third Phase	Clinical trials management
Apr	Mindweavers	Sensory development
May	Oxford BioSignals	Vigilance monitoring
Aug	Oxford BioSensors	Biosensors
Dec	TolerRX	Immunology
Dec	OXIVA	Medical software
Dec	PharmaDM	Drug design

2001

Mar	OxLoc	GPS/GSM tracking
Mar	Oxford Bee Company	Pollination
Apr	Oxford Ancestors	Genealogy
Apr	Novarc	Press tooling
May	Oxford ArchDigital	Digital archaeology
Nov	NaturalMotion	Neural networks
Dec	Inhibox	Drug searching

2002

Jan	Pharminox	Cancer Drugs
Feb	Minervation	Health Information
Mar	Spinox	Artificial silk
May	Zyentia	Protein Structures
Aug	Oxitec	Insect pest control
Oct	Oxford Immunotec	TB Diagnostics
Nov	ORRA	Risk Analysis
Nov	Glycoform	Cancer drug dev't
Nov	BioAnalab	Pharma Testing

2003

Feb	VASTOx	Pharma screening
Jun	ReOx	Drug discovery
Jul	Riotech	Hepatitis drug dev.
Aug	OCSI	Social inclusion

2004

Jun	Oxford Medical Diagnostics	Breath Analysis
Jun	G-Nostics	Anti-smoking test
Nov	Surface Therapeutics	Drug development
Dec	EKB	Bioprocess Eng

Total external investment to date
Y37b
 Y5b Business Angels &
 Y32b Venture Capital

Finance act April 2003

■ Before April 2003

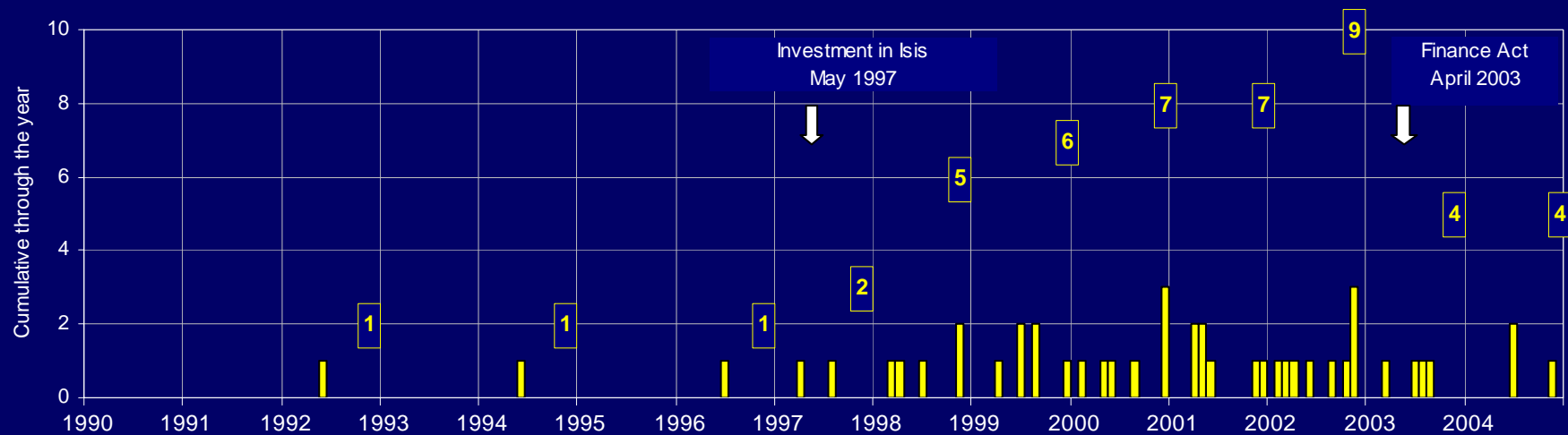
- Researchers shares were treated as Capital so they did not need to pay tax until they sold them
 - and the tax rate was better

■ After 2003

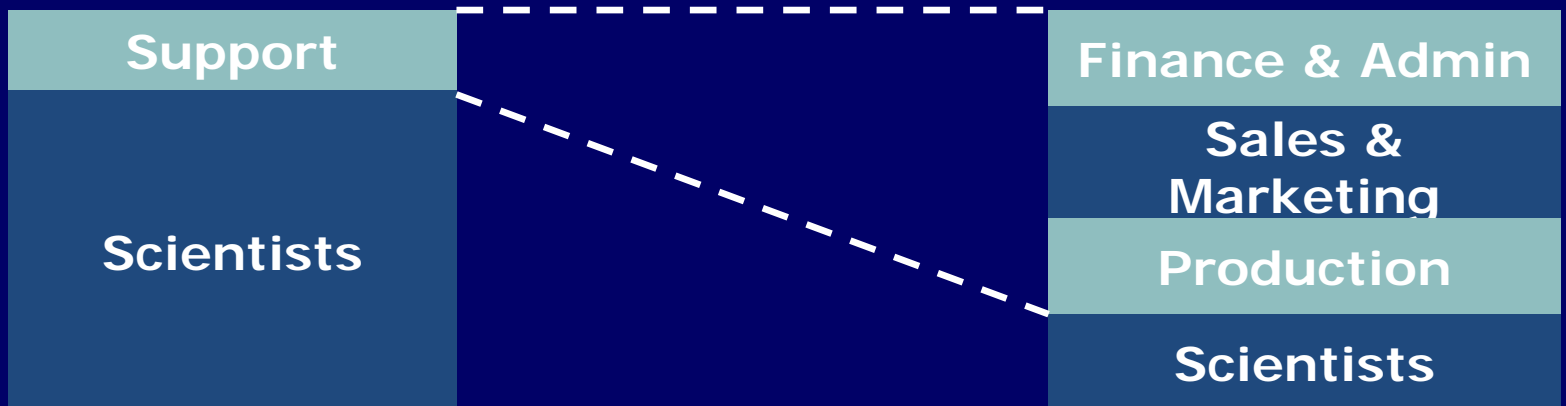
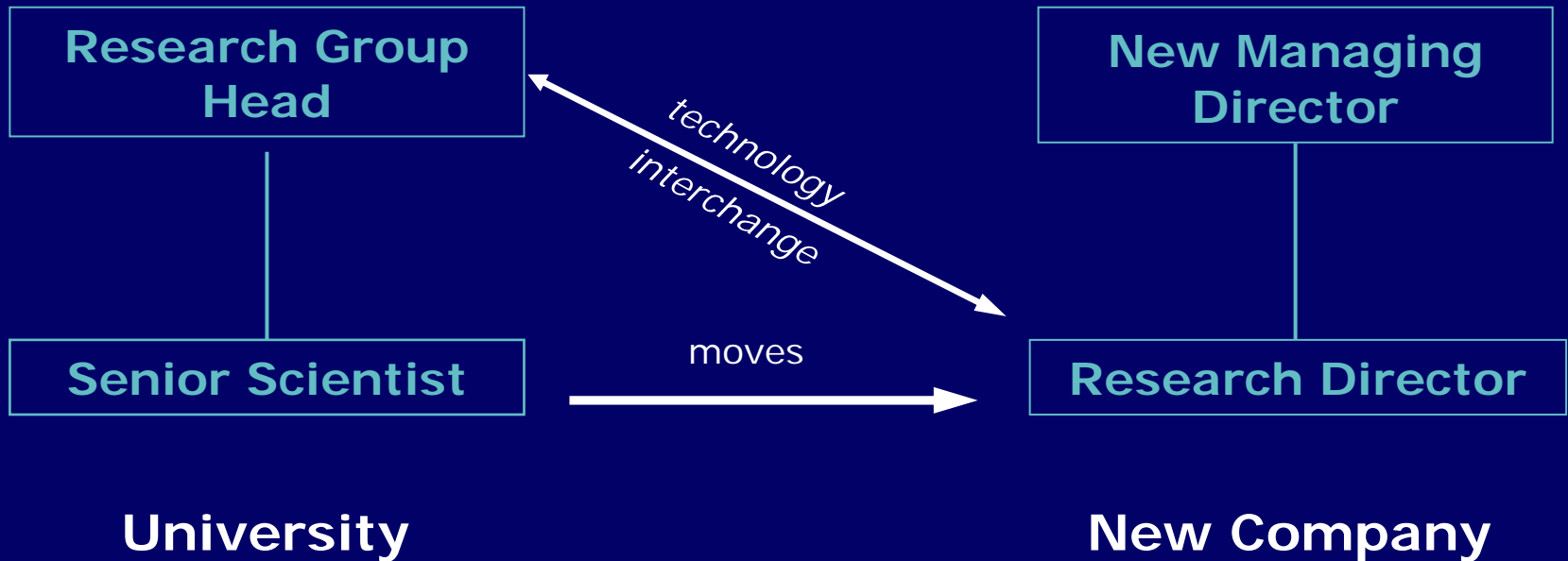
- Researchers shares were treated as income and tax was due in that year
 - when the researchers did not have cash to pay

■ Payment terms were later modified but it seriously damaged the rate of spinouts

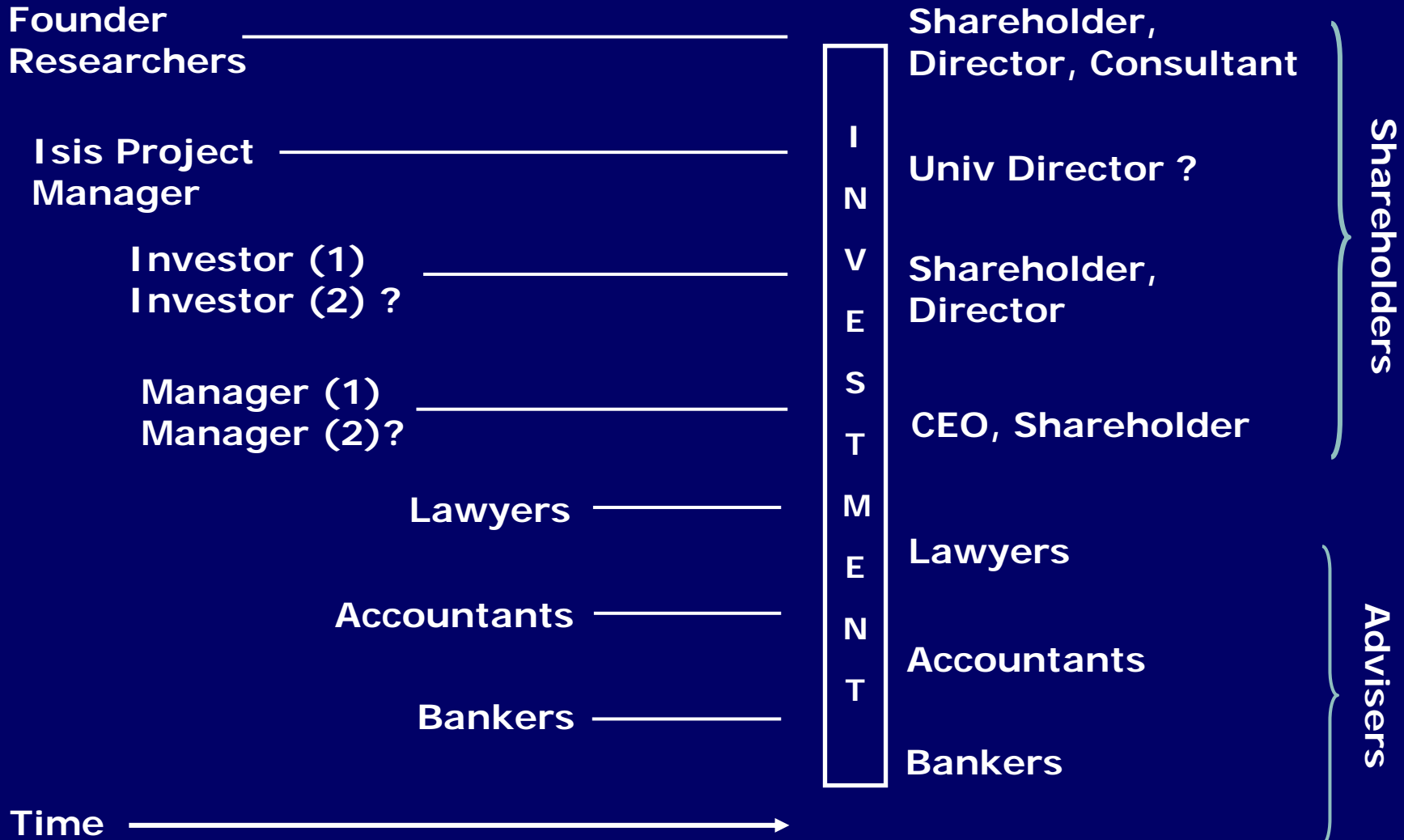
Impact of Finance Act 2003 on Number of Spinouts



Spin-out Strategy



Spin-outs – The Players



Why the Oxford Model Works

- World class research and strong IP Policy
- Commercially aware University administration
 - University Council, Senior officers & Academics
 - Ongoing investment in Research Services staff
 - Investing Y240m p.a.in Isis Innovation (for next 5 years)
- Integrated University Systems
 - Oxford Science Enterprise Centre
 - Isis Innovation Limited
 - Begbroke Science Park
- Local Cluster
 - Oxford Science Park, Oxford Trust, Venturefest
 - Accountants, lawyers, patent agents, banks, commercial property

Culture Change



University
entrepreneur culture



University
technology transfer
resource



Local professional
environment

- All three must proceed together but the University must lead the change because..
- The ideas are in the University
 - If University provides TT resource, change will happen faster
 - Oxford pre-Isis 1 spin-out every 4 years, post Isis 8 per year
- If the University doesn't lead, the University may not receive its share of the benefits

ISIS Enterprise Offers

- Consulting expertise and advice in technology transfer
 - Technology transfer includes the management of intellectual property and its transfer from research to commercialisation
- Long term working partnerships
- Short term consultancies in technology transfer
- One or a series of meetings in Oxford
- One or more site visits
 - Review of a university TTO or
 - Attendance at company meetings
- A short contract to set up an office for technology transfer and/or knowledge transfer
- Residence in Isis for client's staff

Conclusion

- By investing at the interface between research and industry Oxford University has developed a successful model to generate both economic and social benefit from world-class research
- Isis Enterprise offers other institutions the opportunity to benefit from Isis experience

Tech Transfer Tactics

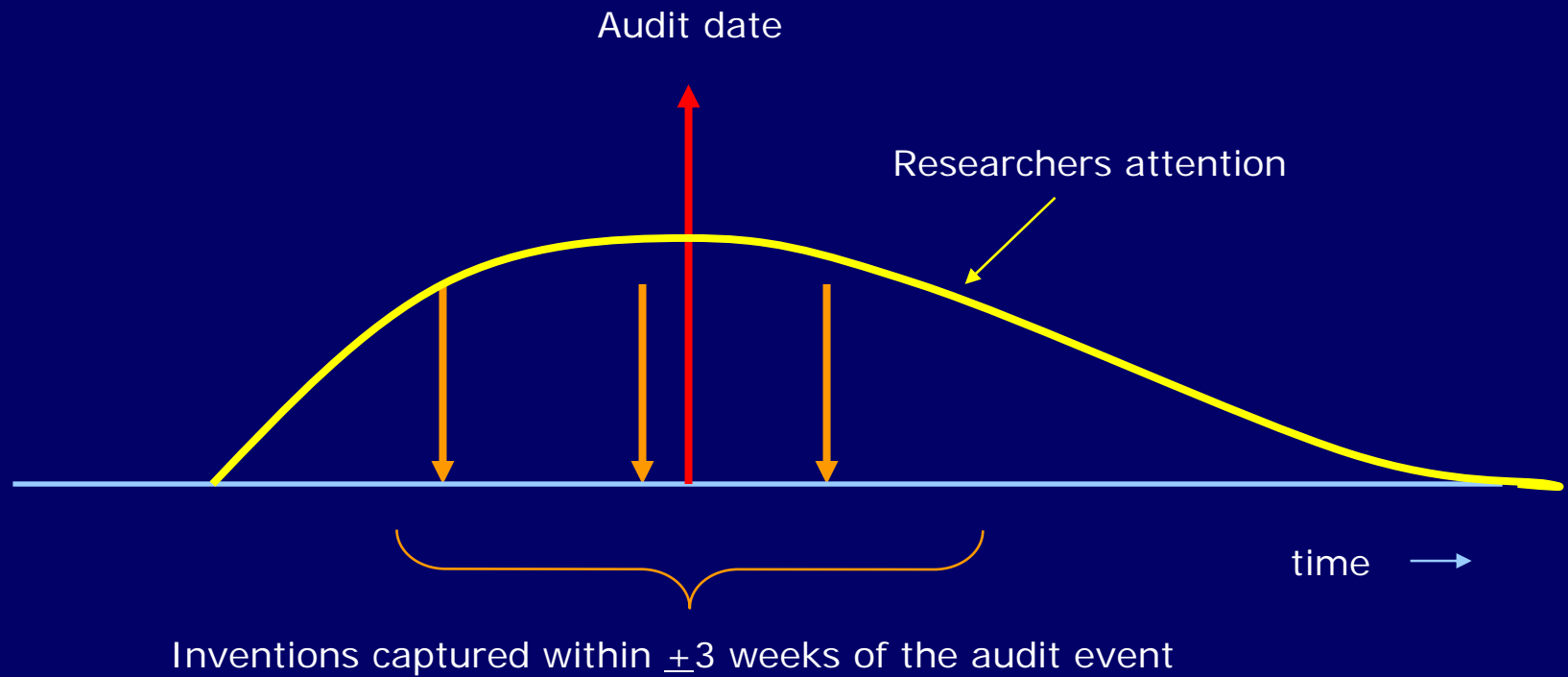
Some tricks that might help

	No of slides
■ Philosophy	1
■ Technology audits	3
■ Attracting & handling inventions	5
■ Finding spinout managers	2
■ Spinout cash flows	1
■ The barter economy	2
■ “Managing” a University	2

ISIS Philosophy

- We support researchers who wish to transfer technology
- The researcher's interests are key
- Our most critical asset is researcher confidence
- We generate researcher enthusiasm by
 - Internal marketing
 - University IP policy
 - Employing high quality staff experienced in both research & industry

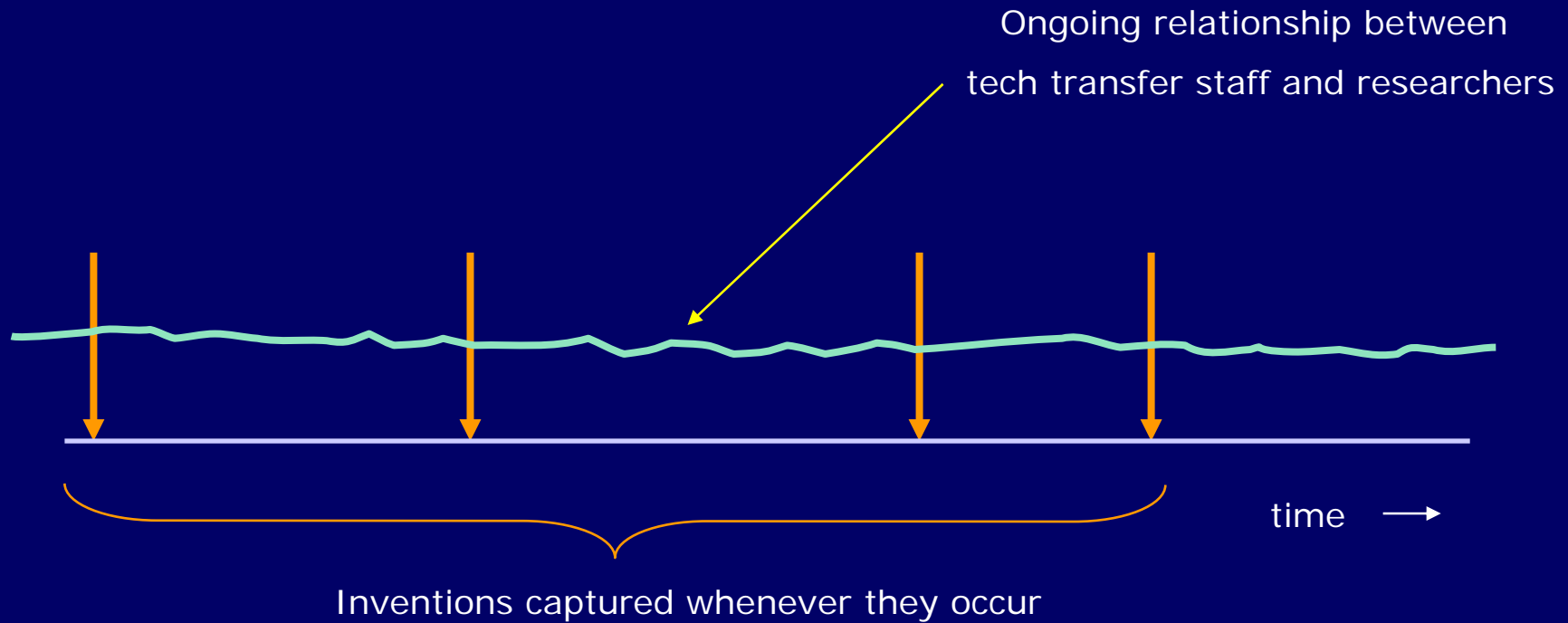
Event based technology audit



Technology audits

- “Lets look what we have”
- Usual practice: go and talk to the researchers
- Result is either:
 - 1 take their time and find they have nothing
 - 2 take their time and disagree whether they have anything
 - 3 find some gold
- Outcomes 1 & 2 are very counterproductive for a University tech transfer office trying to establish a relationship with researchers
- There is a better way of achieving outcome 3

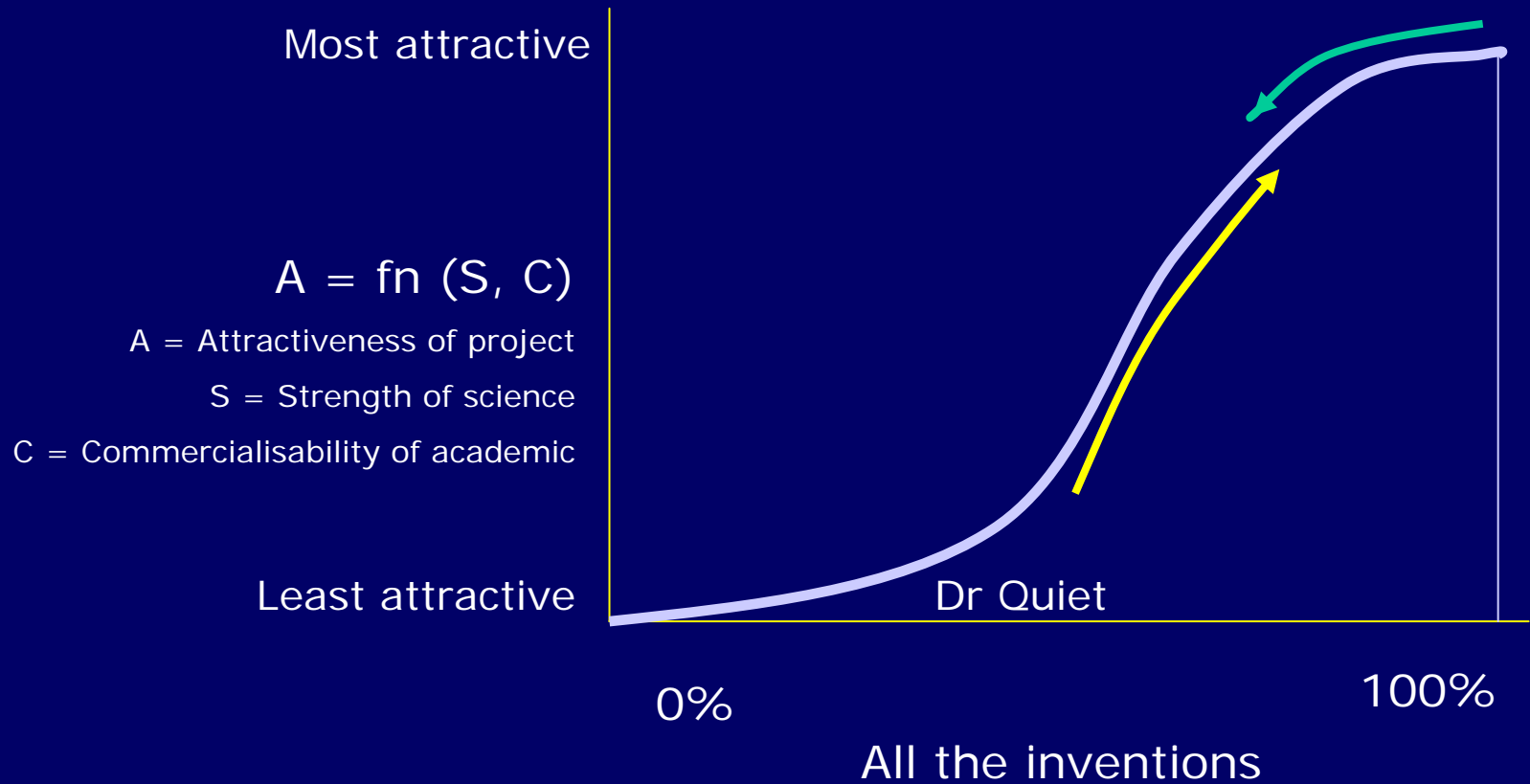
Relationship based technology audit



Lighthouse

- Set up a lighthouse to attract researchers
- Tech transfer office spends a lot of time and effort on p.r. directed inside the university
 - Mailshots, newsletters, magazine articles, www, lectures, handouts, IP training, local radio, local TV, local newspapers, national media etc.
- Tech transfer staff attend department seminars, college lunches, etc.
 - In other words they live in the same world as researchers
- We believe the sociology of this is the most critical factor

Attracting Inventions



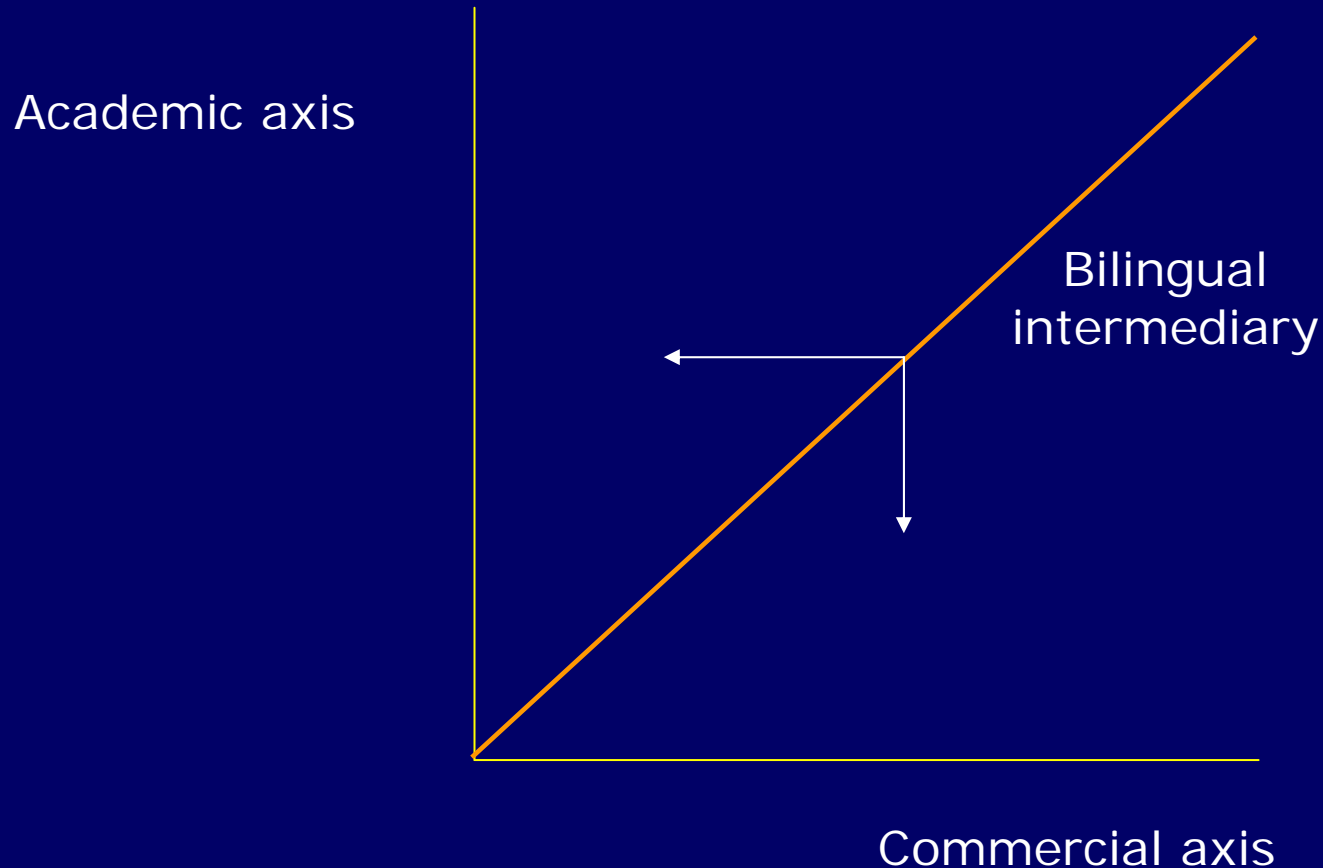
The Beeson Gregory Project

- Oxford needed a new Chemistry building costing Y12b
- The University had saved up Y2b
- If the University matched it government offered Y6b
- So the University needed Y4b

- Beeson-Gregory offered Y4b for 50% of the University's interest in Chemistry spinouts and licences for 15 years

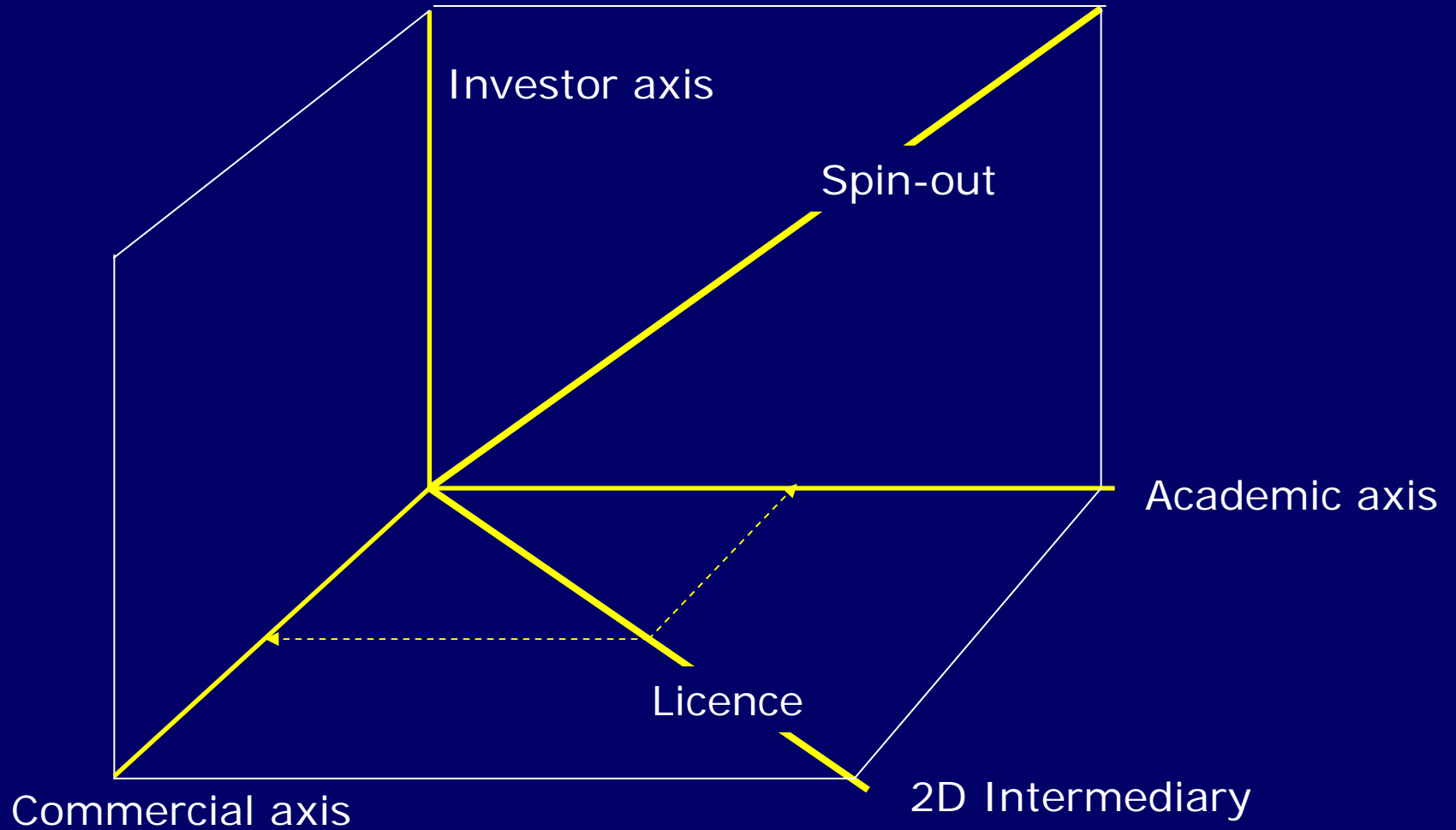
- Was this a good deal for Oxford?

Cross-Cultural Communication

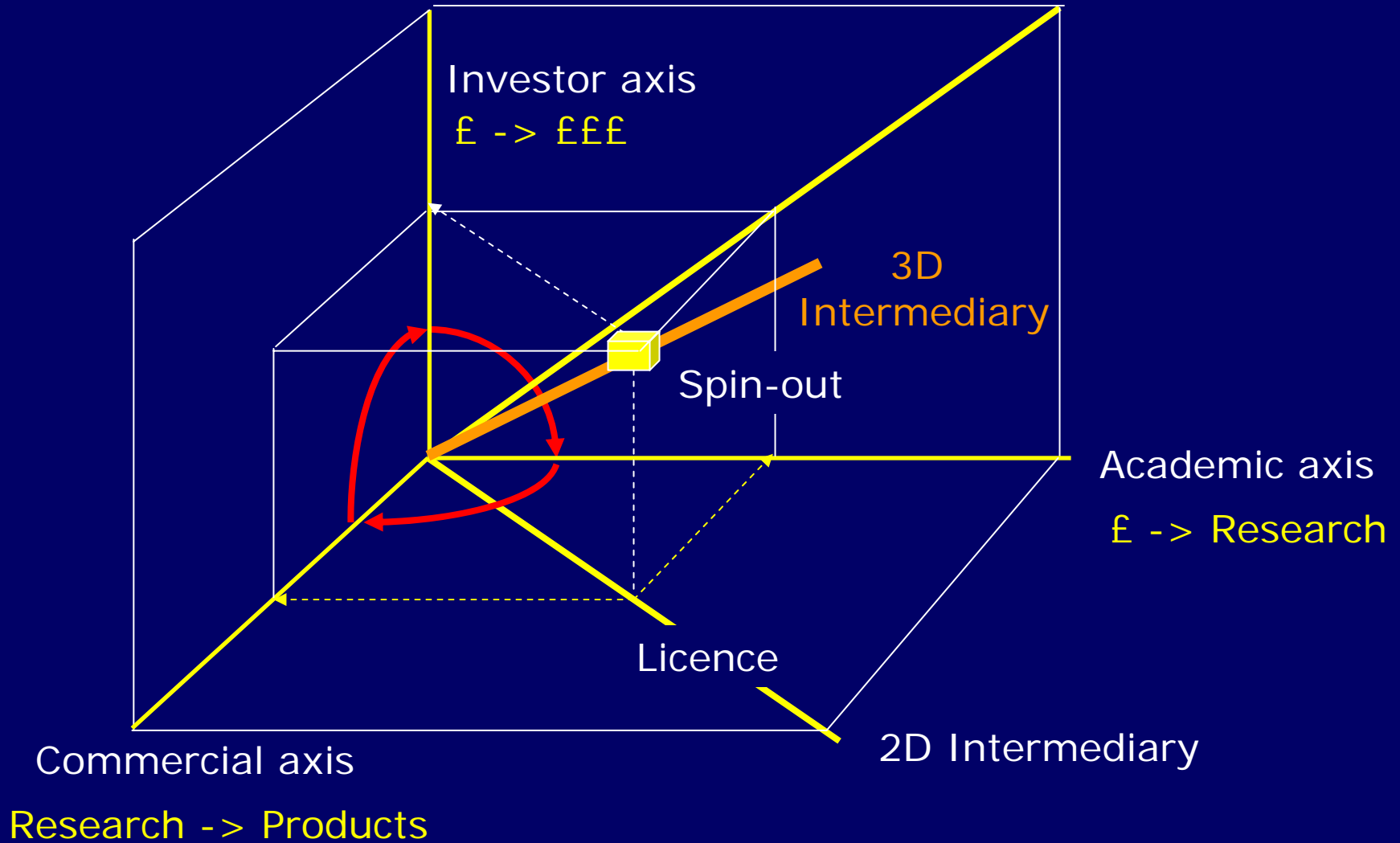


The job of the intermediary is to hold them together long enough to realise that their preconceptions are misconceptions

The third axis

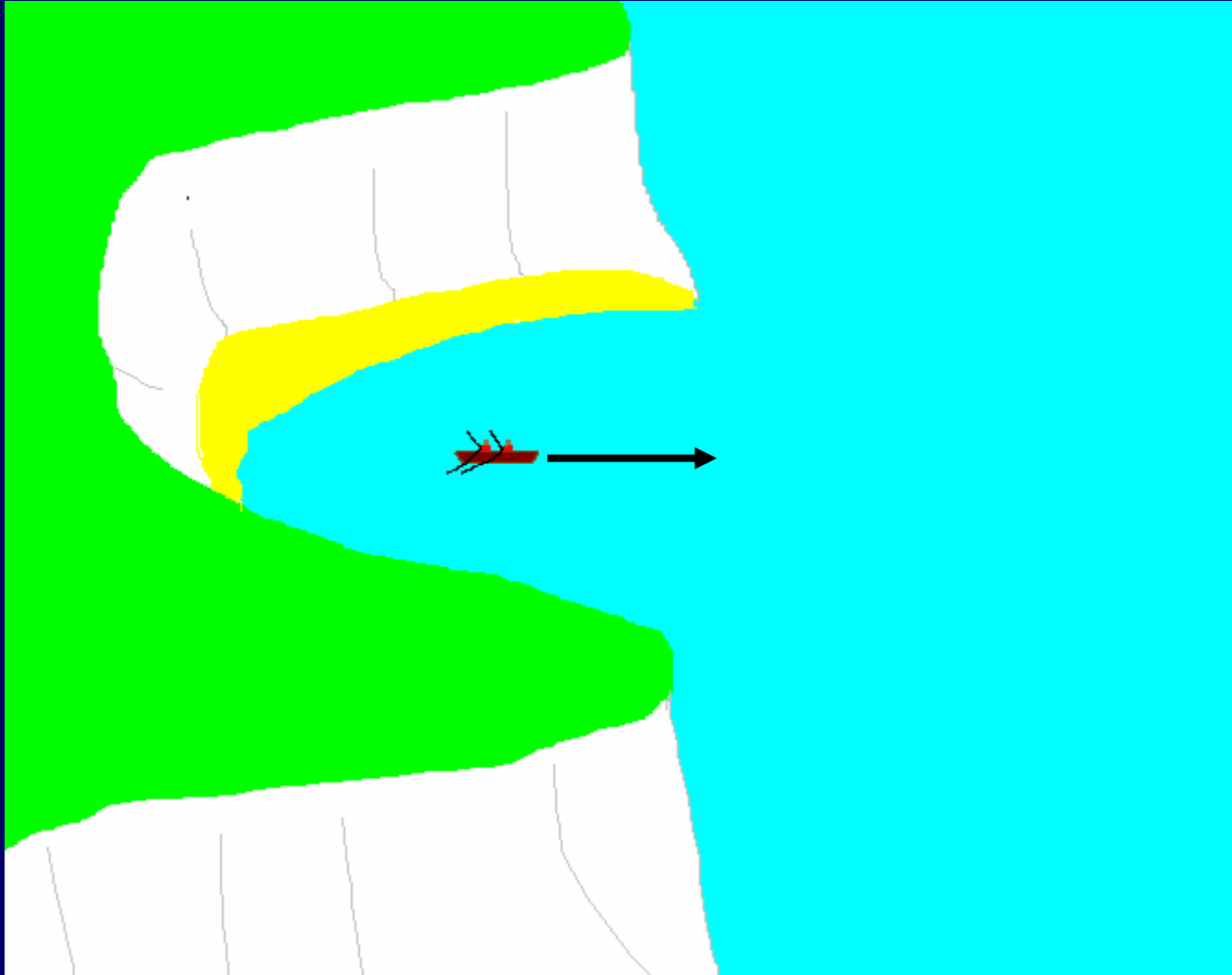


The third axis (2)



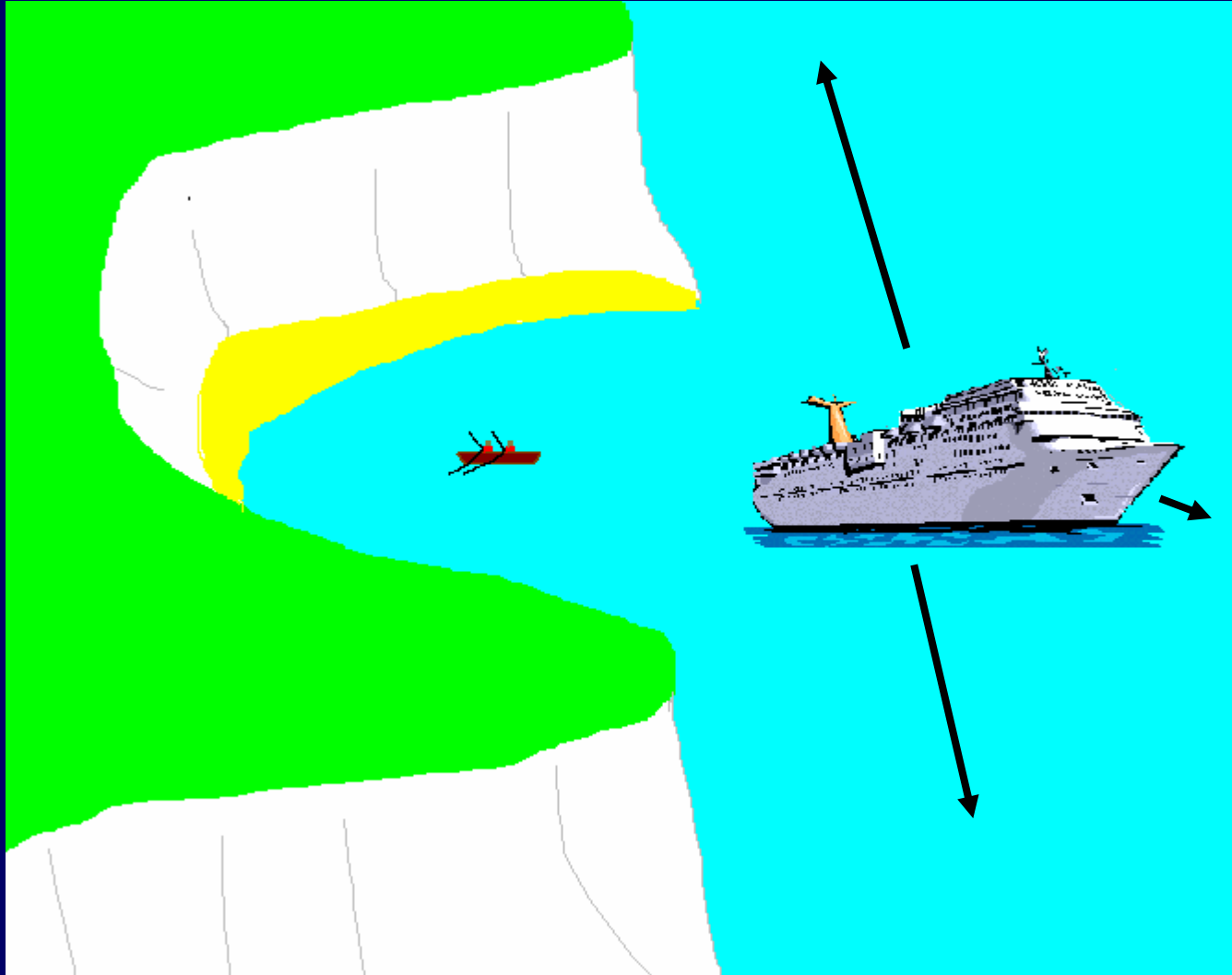
Finding Spinout Managers

The rowing boat

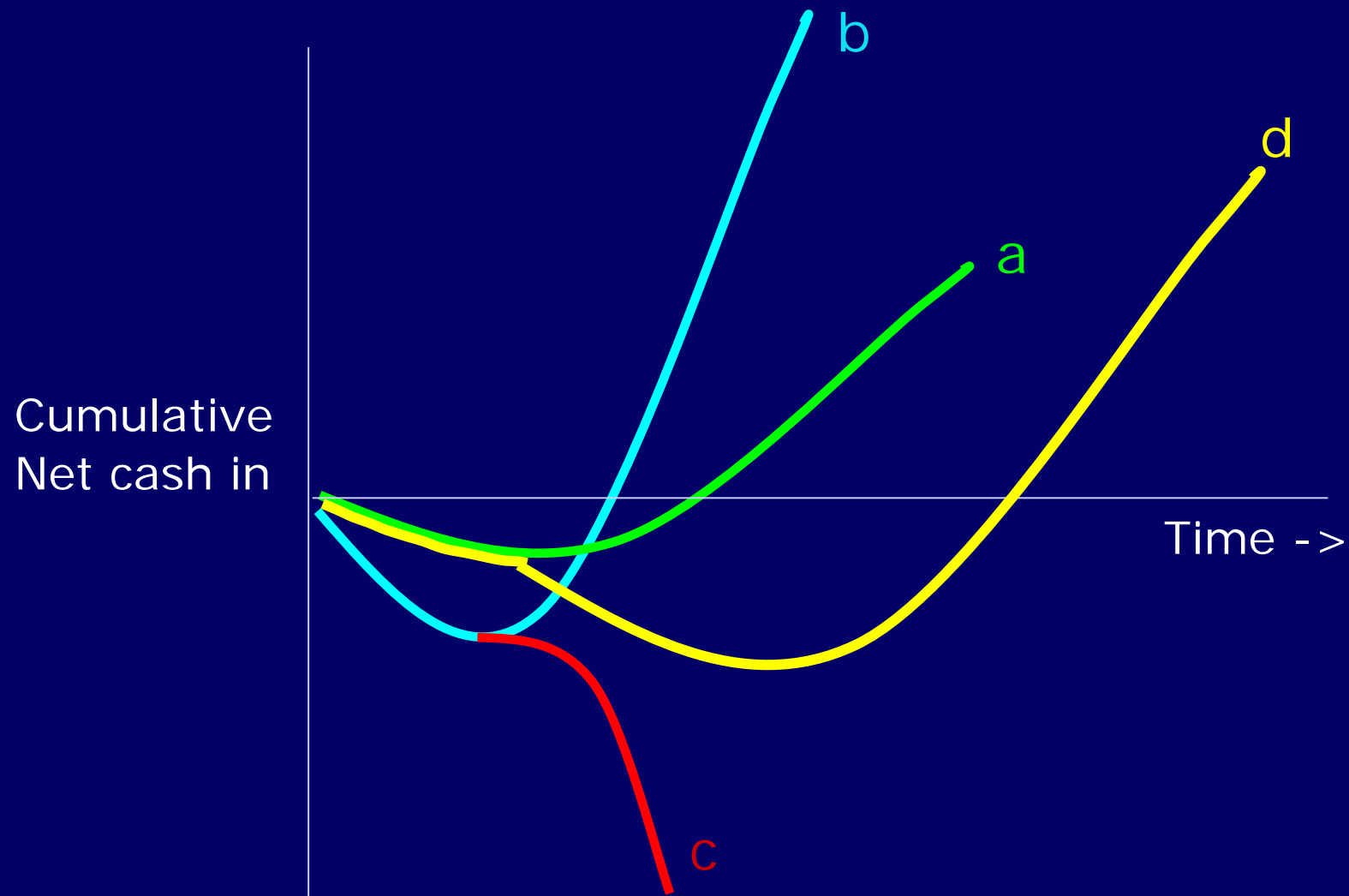


Finding Spinout Managers

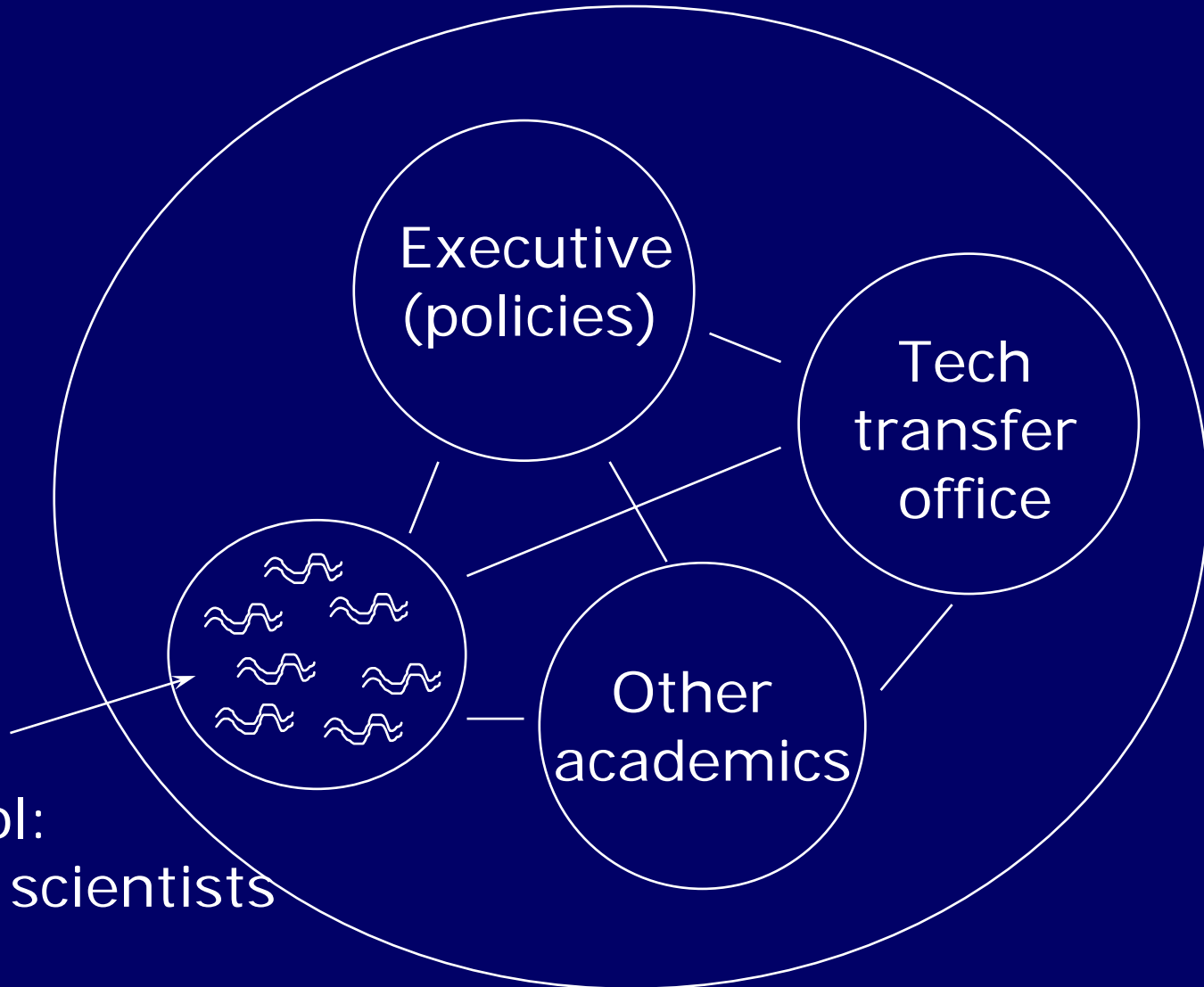
The cruise ship



Cash flow profiles

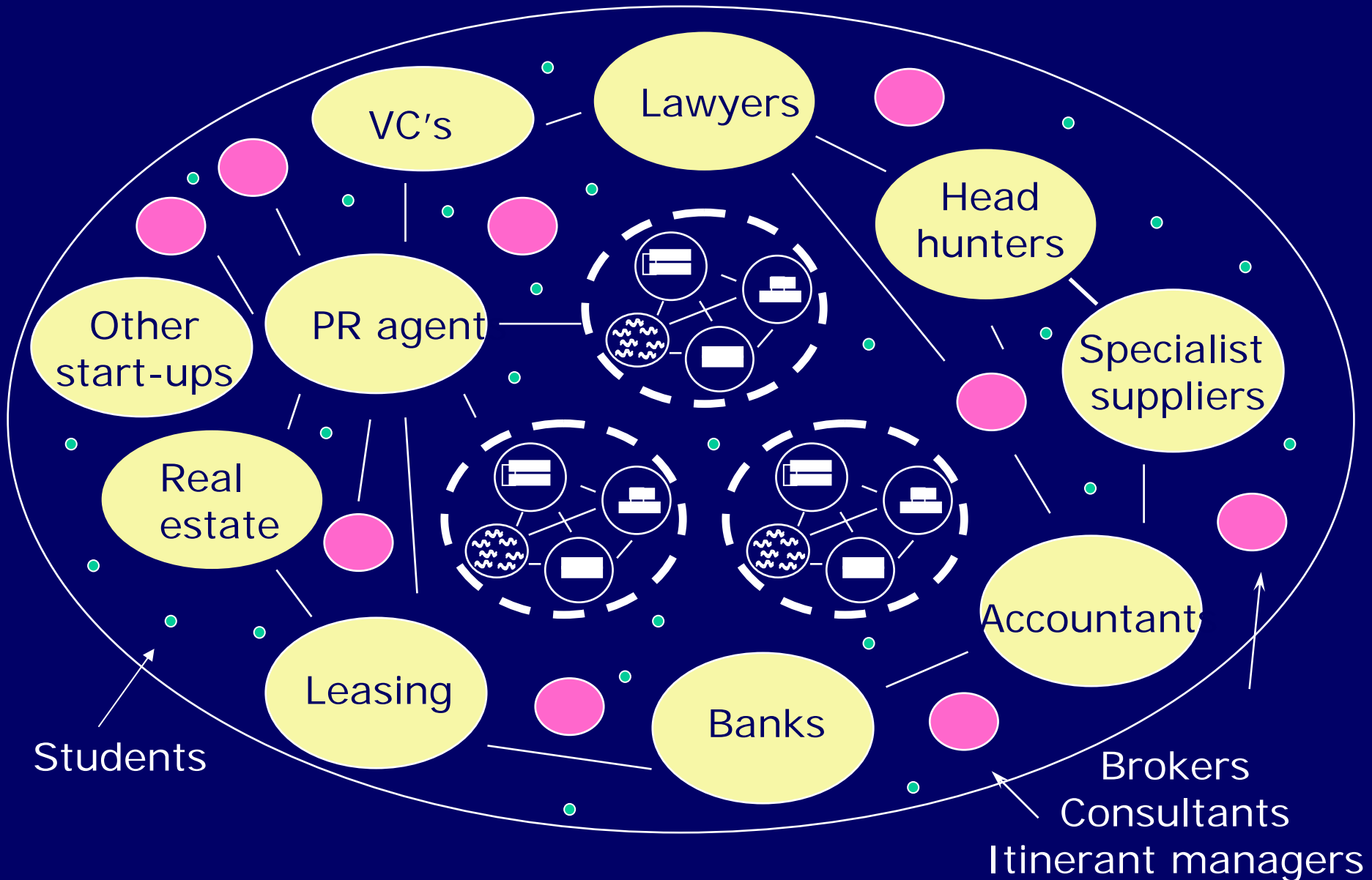


The University

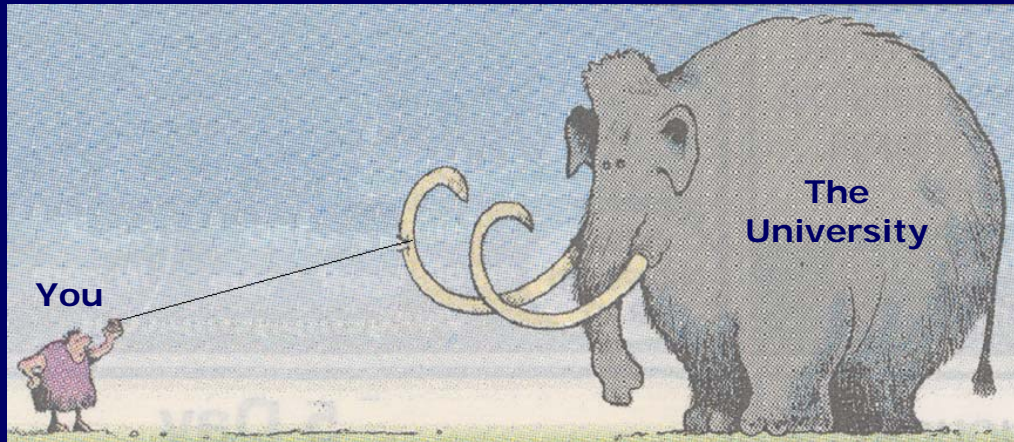


Gene pool:
founding scientists

Sub-culture in a barter economy



"Managing" a university



Like leading an elephant with a thin rubber band

1. Walk along with the elephant
 - In whichever direction it chooses to go
 - Until it gets used to you
2. Start to pull gently on your rubber band
3. If you pull too hard or too suddenly
 - You will break your rubber band and
 - Have no further influence over the elephant

But

- Don't think you will ever have complete control



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Contact Numbers

Tim Cook

Isis Innovation Ltd

Ewert House

Ewert Place

Summertown

Oxford OX2 7SG

T 01865 280830

F 01865 280831

E innovation@isis.ox.ac.uk

www.isis-innovation.com