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Universities, Technology Transfer & Economic Development

Paris

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Dr Kevin Cullen
Director
Research & Enterprise
University of Glasgow

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Technology/Knowledge Transfer

- There is an increasing expectation on Universities to contribute to the national economy through Technology/Knowledge Transfer.
- This is a worldwide phenomenon.
- It has been described as the 3rd Mission
- We need to be clear on what we want the Universities to do if we are to get the best from them.

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Technology/Knowledge Transfer

Why the emphasis on TT/KT by politicians/funders/policy-makers?

- Technology Transfer to companies viewed as important source of competitive advantage
- Intellectual component of products/services increasingly important element of product value
- Technology and Knowledge are seen as the basis for economic growth

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A Knowledge Economy requires…

- Knowledge creation
- Knowledge development and innovation
- Highly-skilled workforce

… The Universities are key

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So what is the role of the University?

- We need to be clear on whether and how this development affects University's and their core mission.
- If the Universities are a source of economic growth, does it change what they do or how they should do it?
- With the increasing financial value of knowledge, Universities can be asked to exploit the knowledge in order to realise the financial value.

Is this right?

Is this proper?

Is this dangerous?

To answer these questions we must look at the University Mission

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University Mission

- Create Knowledge

  AND

- Disseminate Knowledge, by

  - Publication to Science base
  - Teaching to Students
  - Knowledge Transfer

    to Society, Community, Business & the Economy

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Knowledge Transfer

- Disseminating University Knowledge to Society & the Economic Base
  - sometimes for profit
  - sometimes for Public Good

NOT at the same time on the same project -

It depends on THE OBJECTIVES of the project or activity.

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Objectives for Knowledge Transfer

	Public Good	Revenue/Profit
Student placements	yes	no
Economic Development	yes	no
SME networks	yes	no
Contract research	no	yes
Licences	no	yes
Spin-outs	no	yes

Define by Objectives of the Activity…..NOT by the activity itself

The objectives for the University lie across a spectrum:

- At the Centre – the University creates knowledge. Once created, the University can choose:

- outreach. The University engages in the activity in order to deliver public good. The University is not a direct financial beneficiary, OR

- outcome. The University engages in the activity in with a view to making an economic return. The University is a financial beneficiary of success.

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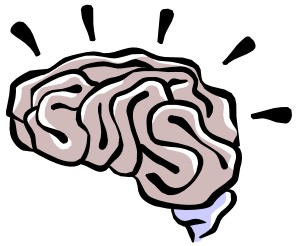
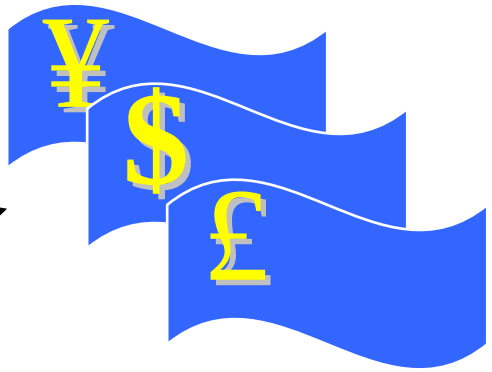
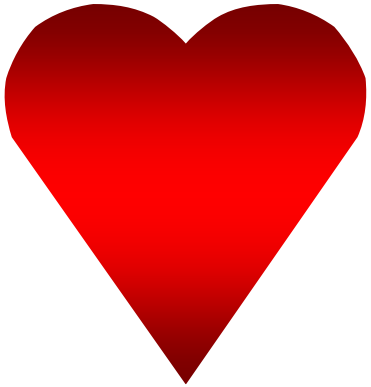
Outcome

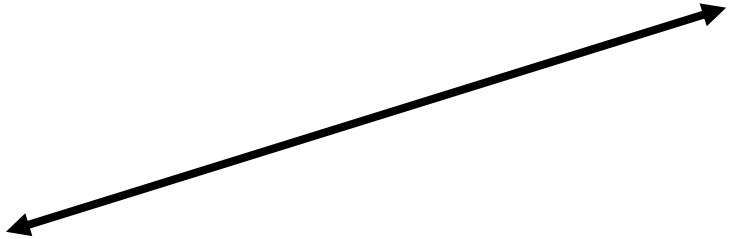
Research

Outreach









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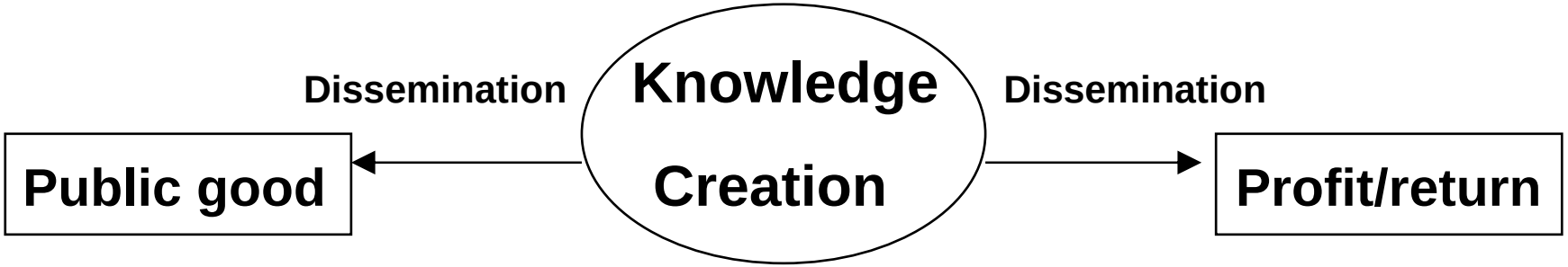
In my view, it's a coherent spectrum:
We create knowledge in the middle of the spectrum
We then decide whether to swing to the left or swing to the right (*any similarity to any political ideology is purely coincidental*)



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The role of the University changes across this spectrum

	Outreach-oriented	⟷	Outcome-oriented
Objectives	**Socio-Economic**		**Economic - making money**
Nature	**University as agent of Economic Development**		**University as 'venturer'**
Costs	**People, events, travel**		**IP protection, legal, business-planning**
Funding	**EcDev Agencies**		**Risk capital**
Financial returns	**None - seek to cover costs**		**Can be significant**
Interactions with industry	**Slow, iterative, open**		**Fast, targeted, confidential**
Examples	**SME Support Student Enterprise**		**Spin-out companies, major licences**

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	Outreach Activities	Research & Technology Dev. Contract Research	Licensing	Venturing
Reasons for doing & costs	•Public good, economic development, profile. •People, events, Travel	•Knowledge creation, IP creation •Research, tech dev, IP costs	•Financial returns •IP protection, marketing & legal costs	•Financial returns •IP protection, marketing & legal costs
Financial Returns	None – covers costs at most	Funding for research & tech dev, overhead recovery (cost-plus)	Licence income, up front payments - can be significant	Equity gains, dividends, royalties - should be signif.
Financial Risks	Negligible	Low/Modest	Modest/Signif.	Significant
Examples	Student placements, SME networks etc.	Charity or company funded research	Licences with companies	Spin-out companies, Start-up companies

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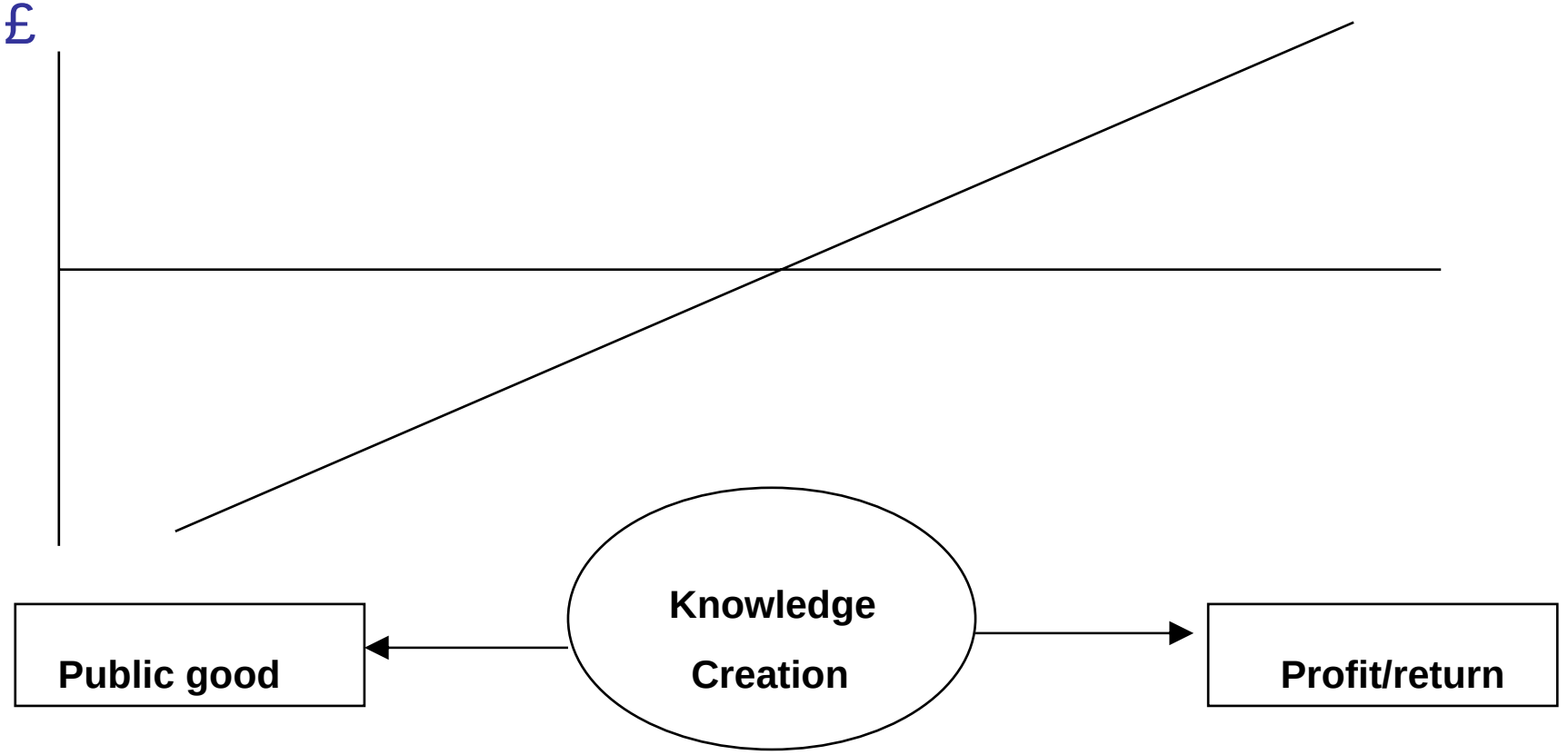
The cost profile changes across this spectrum too

Return to University of Glasgow



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Knowledge Transfer Mechanisms

- Economic Development
- networking
- student placements/enterprise
- research with industry
- consultancy
- licensing
- spin-outs

… but focussing on IP management

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IP Policy and Management

- All IP belongs to the University
- Academics are encouraged to protect and ‘exploit’ their IP
- University covers the costs of IP protection (£100k budget, £300k spend)
- All income from IP is shared with the researcher

  - Licensing: 1/3rd Researcher(s)/2/3rds Dept
  - Spin-out: 50% Researcher(s)/50% University
  - Consultancy: 100% - 80% to Researcher
- We do special deals designed for Local SMEs
- We help students but don’t take stock or licence

The objective is always to get the Knowledge/IP out there…..

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We subscribe to ‘the 9 Points’

- The AUTM Board of Trustees has endorsed the Nine Points to Consider in Licensing University Technology and invites all institutions to do the same.
- These Nine Points were carefully crafted by leadership at 12 institutions from across the U.S. They illustrate suggested practices to be utilized across university technology transfer activities.

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The 9 Points to Consider

1. Universities should reserve the right to practice licensed inventions, and to allow other nonprofit and governmental organizations to do so.
2. Exclusive licenses should be structured in a manner that encourages technology development and use.
3. Strive to minimize the licensing of “future improvements.“
4. Universities should anticipate and help to manage technology transfer related conflicts of interest.
5. Ensure broad access to research tools.
6. Enforcement action should be carefully considered.
7. Be mindful of export regulations.
8. Be mindful of the implications of working with patent aggregators.
9. Consider including provisions that address unmet needs, such as those of neglected patient populations or geographic areas, giving particular attention to improved therapeutics, diagnostics and agricultural technologies for the developing world.

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So, we are always considering….

- The ‘value’ of the knowledge (market need evaluation)
- The best way to get the knowledge out there to be used (University Mission)
- The best channel for the knowledge (public good/profit)
- The best ways of incentivising academics to engage (revenue sharing)
- The 9 Points, to ensure we avoid conflict/criticism

..a hugely complex set of consideration, most important first step is...

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… be clear on the role the University is playing

- Agent of Economic Development
- Knowledge creator
- Venturer

- The University Must Manage a Portfolio Across this Spectrum.

- Expect us to behave differently dependent on the role we are playing

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- In supporting the regional economy, we act like an Economic Development Agency- we help others to make money.
- In making money out of our IP, we act like an entrepreneur – we try to make money.

Our problem arises when we try to do both at the same time!

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Think about it …

Do Economic development Agencies try to make money?
– no, they try to improve the regional economy.

Do entrepreneurs try to improve the regional economy?
– no, they try to make money.

We try to do both – which is fine – but when we try to do both at the same time, we're stuffed!

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….so what does success look like?

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Example 1

Opto-electronic device manufacture

- £8m VC investment for £14m valuation
- University retains 25% equity
- 3% Royalty stream
- Company setting up in Singapore
- Acquiring two Scottish consultancies to build Singapore research base

Is this success?

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Example 2

Interactive web-design consultancy

- Two RAs working from incubator
- Applying for SMART Award (£45k)
- Help with marketing/networks/workspace
- University has no equity or licence position
- Winner of young design entrepreneur award
- Invited to speak at schools enterprise workshop

Is this success?

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Example 3

University develops new technology which accelerates tree growth (and therefore carbon capture) whilst enhancing timber strength.

- **Interest from environmental lobby – reverse deforestation**
- **Interest from timber industry – product source**

Who should we speak to and what about?

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In Conclusion

To get the best from Universities:

- **Understand what they are trying to do and why they are doing it**
- **Ensure the policy environment supports and enables the spectrum of activities**

- You DO NOT WANT Universities that do Knowledge Transfer with a purely financial motive – you lose the Public Good Driver

- YOU DO NOT WANT Universities that have no interest in the financial value of Knowledge Transfer – you lose the Economic Driver

- YOU DO WANT <u>a balance of the two</u>

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I hope this has been useful

Dr Kevin Cullen

Director of Research & Enterprise

University of Glasgow, Scotland

UNICO

VP- Membership, AUTM

x.xxxxxx@xxxxxxxxxx.xxx.xx.xx