The Knowledge Question:
Disciplines, Interdisciplinarity and Institutional Change

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ARC Discovery Project 2011-2013
'Knowledge Building in Schooling and Higher Education'

CSHE Seminar University of Melbourne
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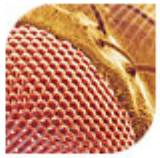

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Knowledge Building in Schooling and Higher Education: policy strategies and effects

This project aims to shed new light on Australian strategies of knowledge-building and on agendas for future policies and practice. Taking physics, history and graduate competencies across the learning cycle, across institutional/equity differences and across 3 states, it investigates experiences, strategies and conceptions of knowledge-building today. Two fundamental internationally-debated issues for the 21st century are taken up: disciplinarity versus attribute-centred approaches to knowledge; and knowledge development from school to undergraduate to research training. The project will produce new evidence and insights on changes now in train and the ways in which knowledge-building is being developed, recreated or weakened by them.

Local intranet 100%

Key questions

(from curriculum inquiry)

- How should we think about knowledge today?

(from policy inquiry)

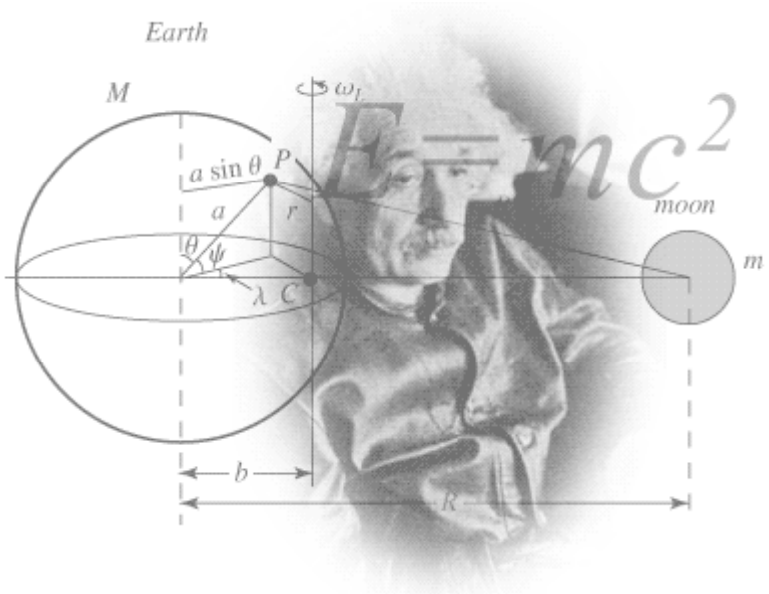
- Are audit and management practices distorting and undermining knowledge-building?

What is happening today in two major disciplines, history and physics?

- What forms, distinctiveness, key questions, strong or weak boundaries, awareness of change etc?
- How similar in different institutional and demographic contexts (elite/tech/working class)?
- What development or different agendas from school to undergraduate to research?
- Comparisons between the two disciplines and also with interdisciplinary, cross-curriculum, capabilities people/agendas

Proposed Interviews

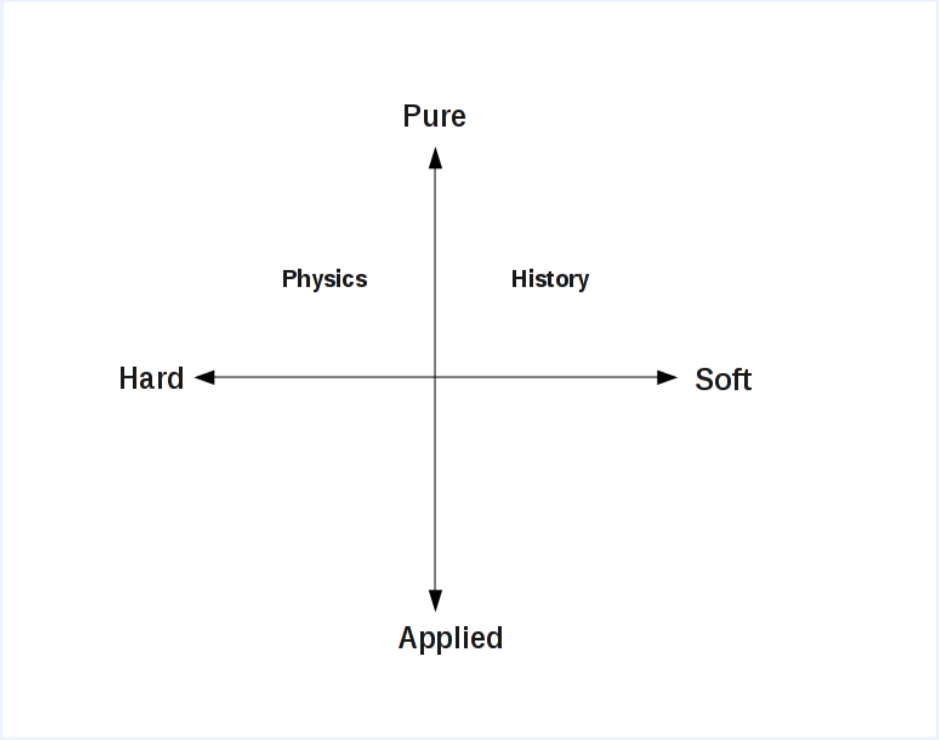
	Secondary School		**Higher Education**		
VIC	**25**	10 history 10 physics 5 cross-curricula	**20**	10 from Go8 10 from non-Go8	4 history 4 physics 2 cross-curricula 4 history 4 physics 2 cross-curricula
NSW	**15**	6 history 6 physics 3cross-curricula	**20**	10 from Go8 10 from non-Go8	4 history 4 physics 2 cross-curricula 4 history 4 physics 2 cross-curricula
QLD	**15**	6 history 6 physics 3 cross-curricula	**20**	10 from Go8 10 from non-Go8	4 history 4 physics 2 cross-curricula 4 history 4 physics 2 cross-curricula
	55		**60**		
					TOTAL = 115 interviews



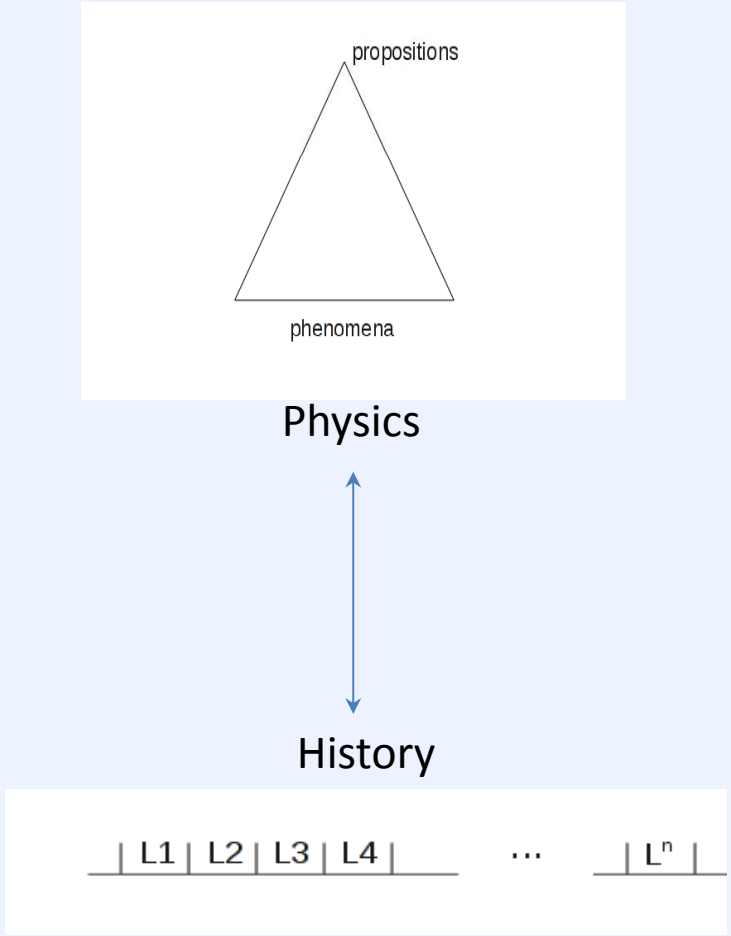
Knowledge in physics and history curricula across schooling and university

Victoria Millar

Knowledge in physics and history disciplines



(Biglan 1973)



(Bernstein 2000)

Disciplinary knowledge in education

‘Curriculum defines what counts as valid knowledge, pedagogy defines what counts as valid transmission of knowledge, and evaluation defines what counts as a valid realization of the knowledge on the part of the taught’ (Bernstein, 1973, p.85).

How is curriculum determined at university compared to at school?

Years 7 - 10	Years 11 &12	Undergraduate	Postgraduate Research
Physics as part of a broader science or integrated curriculum History as part of a broader humanities/SOSE or integrated curriculum or as a stand alone subject.	Physics and history as stand alone subjects	Physics and history as stand alone or part of integrated subjects.	Physics and history as a component of research.

State and soon federal curriculum authorities

↓

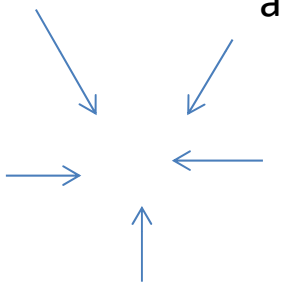
School curriculum committees and KLA leaders

↓

University academic boards

Individual academics

Departmental curriculum committees

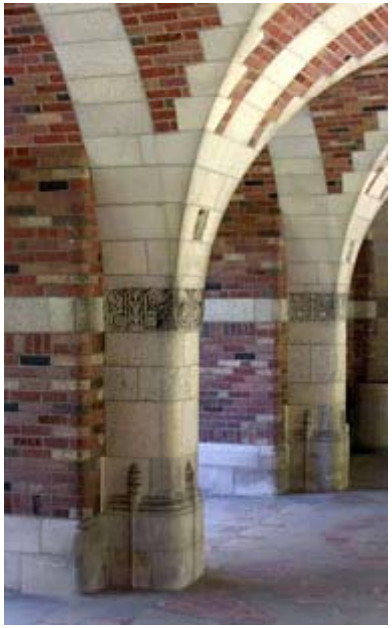


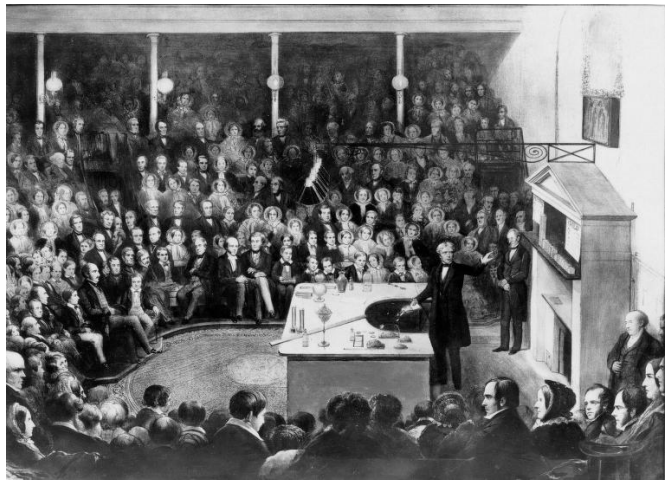
Disciplines within schools

- Disciplines still largely clustered together.
- Legitimate knowledge is contentious, this is particularly focussed around topics. Is this the result of a single curriculum?
- Exams are the strongest guide for what must be taught.
- Purpose is actively considered by teachers ie ` are we teaching little historians or are we teaching history'.

Disciplines within universities

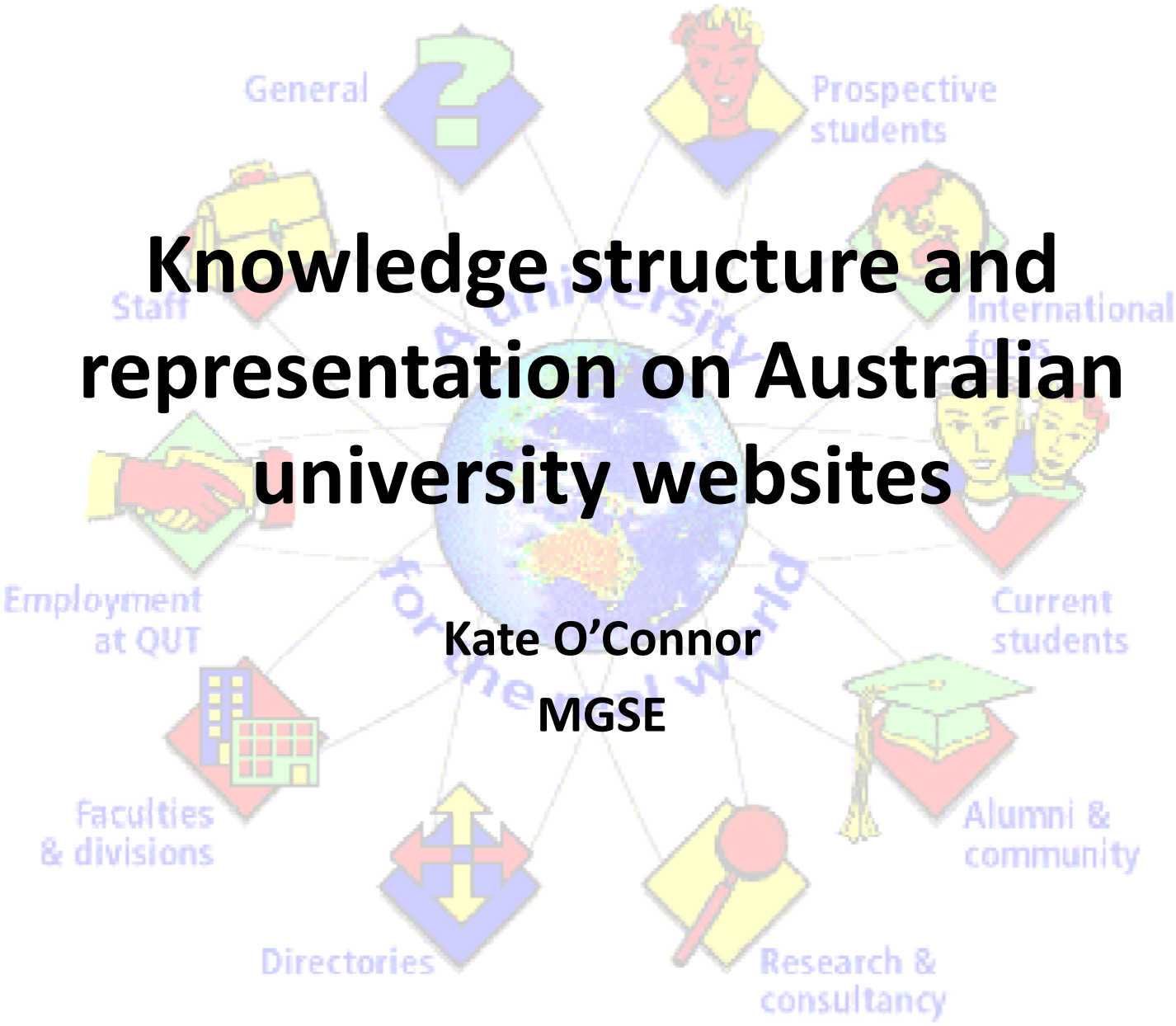
- Disciplinary location (Kate to discuss).
- Much content is decided on by what has gone before. Not always debated.
- Curriculum content not discussed as such a contentious issue as in schooling. Although concern around knowledge students come with from school.





Questions arising

- Do academics' views of what should be taught in schools align with teachers? Do they share the same issues, considerations, purpose? Does it matter?
- Does the nature of a discipline play a role in determining important knowledge?
- How do you determine valid knowledge in a university curriculum? How would this look if disciplinary curriculum in universities converged?

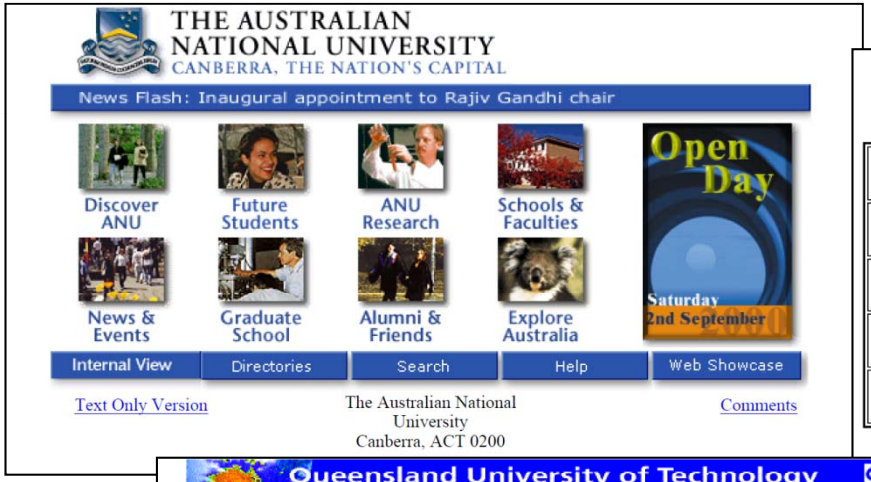


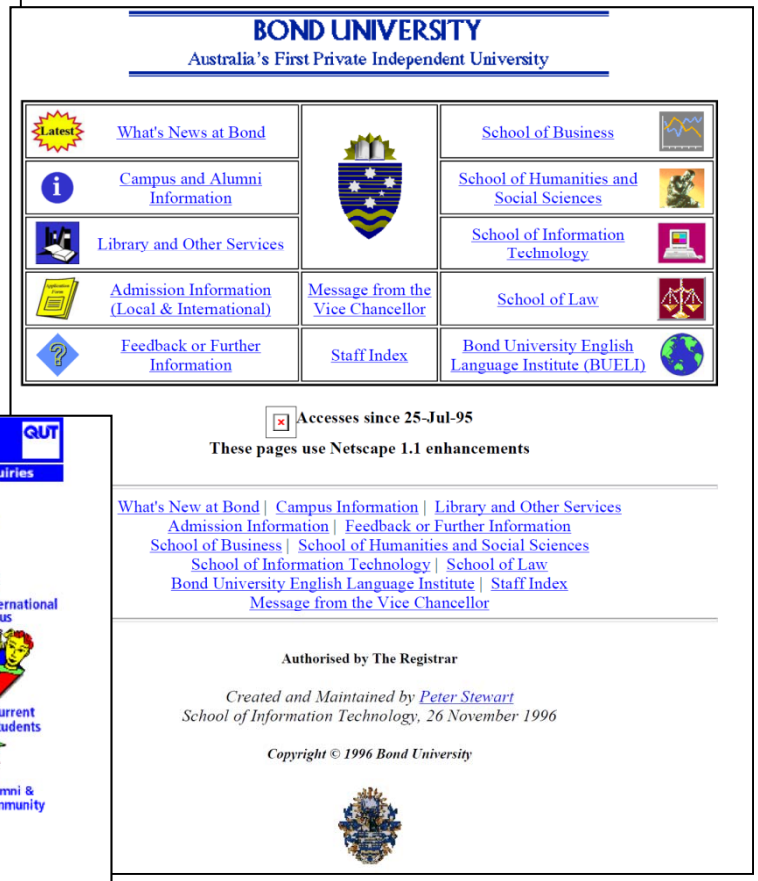
Knowledge structure and representation on Australian university websites

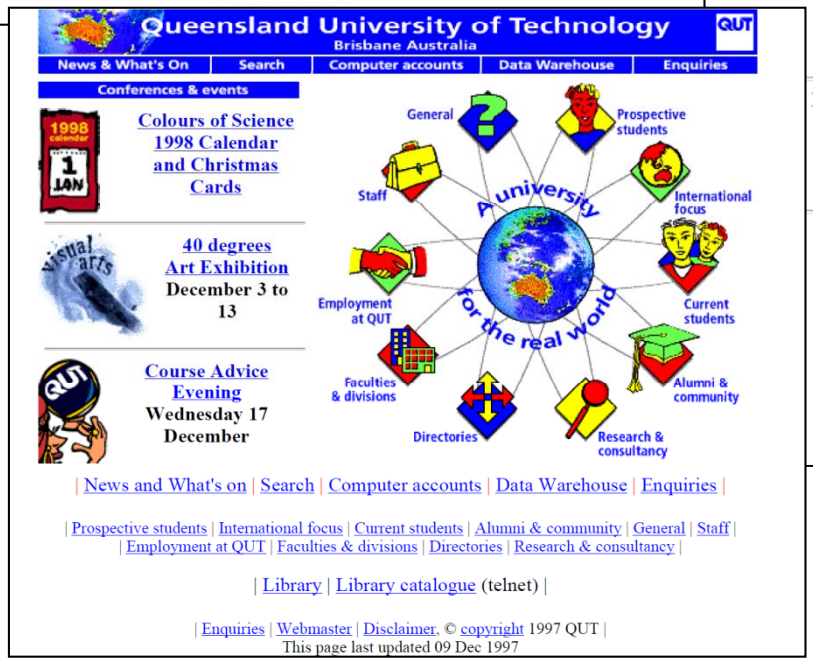
Kate O'Connor

MGSE

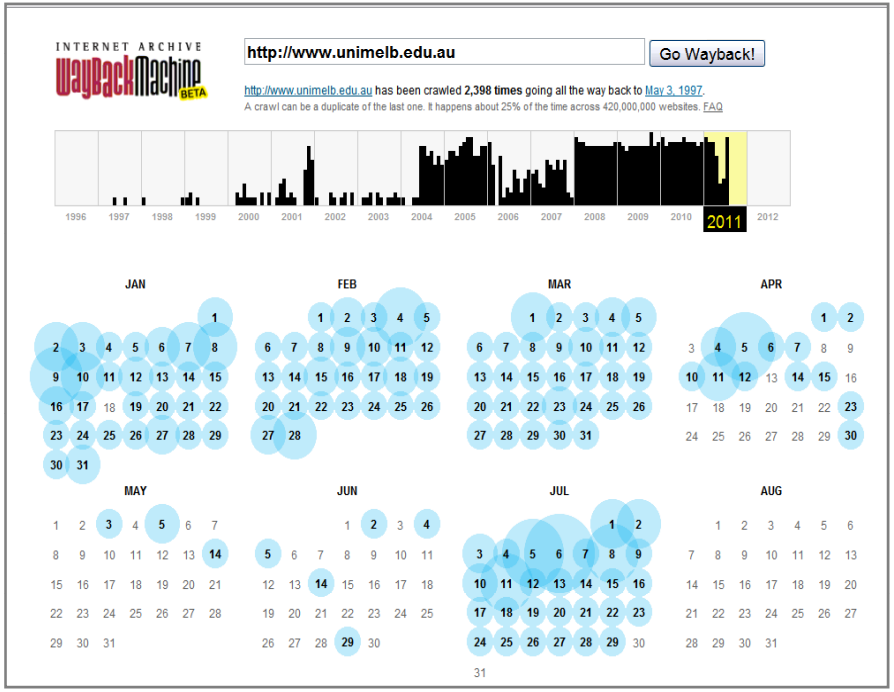
The Websites







Methodology



Available data:

1997: 32 institutions (27 offering history and physics)

2011: 39 institutions (35 offering history and 28 offering physics)

Comparable data available at both points for 27 history and 25 physics departments

History and Physics Departments, 1997-2011

Department Category	History			Physics		
	1997 (32)	2011 (32)	2011 (all)	1997 (32)	2011 (32)	2011 (all)
Single discipline	10	1	2	16	6	7
Multi discipline	5	8	10	6	11	11
Generic	12	18	23	5	7	9
Not offered	3	4	4	5	7	7
Not accessible/unclear	9	0	0	7	3	5

Go8 and Non Go8
History and Physics Departments

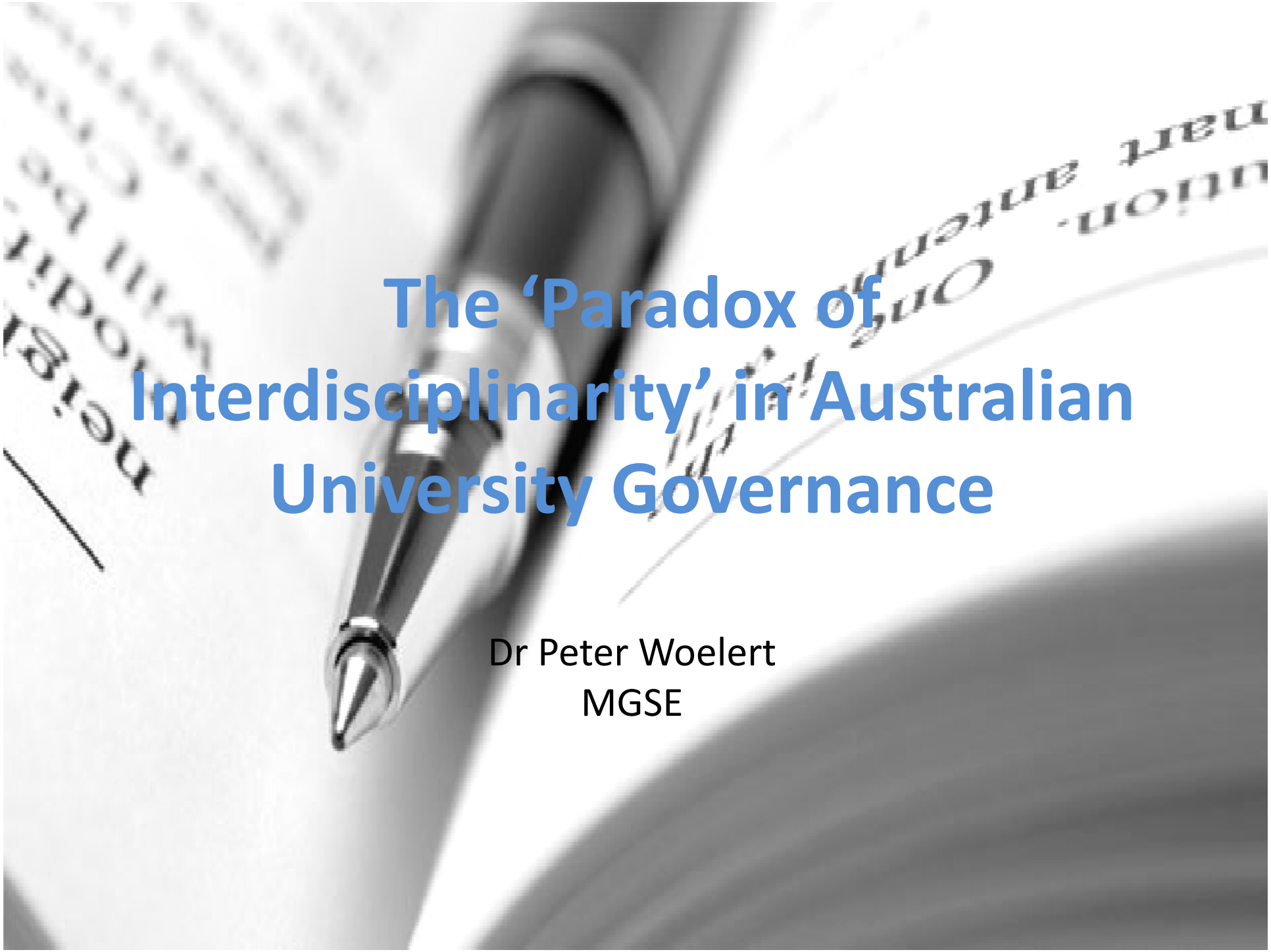
Department Category	1997 History		2011 History		1997 Physics		2011 Physics	
	Go8	Other	Go8	Other	Go8	Other	Go8	Other
Single discipline	7	3	2		7	9	5	2
Multi discipline		5	5	5		6	3	8
Generic		12	1	22		5		9
Not offered		3		6		5		9
Not accessible/unclear	1	10			1	8		5

Rate of Change

- 14 physics and 12 history departments changed categories
- 8 physics and 11 history departments changed names but not categories
- 4 history (all non-Go8) and 3 physics (2 Go8) departments unchanged
- With the exception of two physics depts, all changes broadened departmental scope

Implications: Do departmental structures matter?

- Rate of change can be seen to point to anxieties about structural questions and implications
- Growth of generic and multidisciplinary departments might suggest a weakening of disciplinary authority within institutions and a preference for supporting interdisciplinary research
- Declining distinctions between research and non-research intensive institutions may also be apparent



The 'Paradox of Interdisciplinarity' in Australian University Governance

Dr Peter Woelert
MGSE

Introduction

- What is the '*Paradox of Interdisciplinarity*' (see Weingart 2000)?
  - Proliferation of a programmatic discourse of interdisciplinarity
  - Reinforcement of modes of governance that almost exclusively rely on rigid discipline-based classification systems to evaluate and fund research

Classification Systems and the Production of Knowledge: Some Observations

Classification systems:

- help to reduce complexity
- are not mere representational tools but *from the outset shape the formation of knowledge*
- make certain things and aspects visible and in this sense ‘real’, while rendering others invisible
- both *enable and restrict* the production and recognition of new knowledge.

Disciplinary vs. interdisciplinary knowledge production: the discourse

- *Interdisciplinarity* is associated with:
  - Innovation, change, real-world orientation, flexibility, applicability, unorthodox ways of enquiry, etc.
- *Disciplinarity* is often presented as:
  - inward looking, conservative, static, rigid, being tied to (academic) autonomy and self-control.
- But: definition of interdisciplinarity not easy, as is demarcation from disciplinarity.
- *Integration* is often seen as one of the ultimate aims in interdisciplinary work.

The Form and Formation of the Australian University Research Governance System

- Dawkins reform: transition toward *a centralized model of research funding that puts a greater emphasis on competition* (Dawkins 1988, 83).
- Creation of the ARC (1987); also Research Quantum (1990), the RQF (2003-2006), and ERA (2010).
- Australia has strong RES system (see Whitley 2007)**:**
  - highly formalized, standardized, *organised around existing disciplines*, high proportion of research funding is awarded competitively, substantive form of governance.
  - Evaluation and funding mechanisms were from the *very outset based on a relatively rigid disciplinary matrix***.**

The ‘Fields of Research’ Classifications

- *Australian Standard Research Classification* (1993); Revised versions appeared in 1998 and 2008 (ANZSRC).
- *Tendencies:*
  - Strong increase of FoR codes from 1993 to 2008 (from 584 to 1417 codes, a 143% increase) – specialization and problem of fit.
  - Little references to interdisciplinarity*; ‘Logic of disaggregation’ (1993 and 1998 version, also still in 2008 version).

- *Result:*
  - Link to ERA and ARC grants
  - “[D]istortions are produced and hierarchies are reinforced by the taxonomy of the assessment process itself” (Nowotny, Scott and Gibbons 2003, 184, in reference to RAE in UK).

Paradoxes of the Australian research governance system

- **Two observations:**
  1. NPM changes have had a “conservative impact on intellectual changes and innovation; encourage scientists to work on popular, mainstream topics in preference to interdisciplinary, more open-ended endeavours” (Whitley 2007).
  2. Alleged conservatism in knowledge production that is associated with the disciplines is reinforced and maybe to a significant created through those static and inflexible RES systems the purpose of which it is to foster ‘innovation’.

Further Information

Project Website
http://www.education.unimelb.edu.au/kbp/

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