

Proceedings
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International Experience

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Impact of the Sorbonne-Bologna Process
on Engineering in Europe

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The Impact of the Bologna Process on Engineering Education in Europe

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How it all started?

- ▶ Paris, 1998 - a declaration signed by 4 ministers; France, Germany, UK and Italy.
- ▶ Bologna, 1999 - a new declaration signed by ministers from 30 European States.
- ▶ Prague, 2001 - a meeting in Prague that produced a communiqué.
- ▶ Berlin, Sept. 2003.
- ▶ Follow-up activities.
- ▶ Initially no European Union involvement.

What does Bologna mean?

- ▶ Mainland Europe has finally decided to replace its outdated system by an Anglo-American one?
- ▶ A use of the European argument to solve domestic problems?
- ▶ A way to bring various national systems closer and create a new common model?
- ▶ The natural analogue to the free movement of goods, people and capital and to the introduction of the € ?
- ▶ The destruction of classical and well-functioning systems?
- ▶ A revolution, shaking up an archaic system?
- ▶ A money saving scheme?
- ▶ An instrument for the creation of a European identity?

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- ▶ and to the implementation of the B

A dynamic reform process with large, but still unknown, consequences.

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- ▶ A revolution, shaking up an archaic system.
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What is in the Declaration?

- ▶ Adoption of a system of easily readable and comparable degrees in order to promote employability and international competitiveness;
- ▶ Adoption of a system essentially based on two main cycles, undergraduate and graduate;
- ▶ Establishment of the system of credits - such as the European Credit Transfer System (ECTS);
- ▶ Promotion of mobility by overcoming obstacles to the effective exercise of free movement;
- ▶ Promotion of European co-operation in quality assurance with a view to develop comparable criteria and methodologies;
- ▶ Promotion of the necessary European dimension in higher education

The two-tier system

- ▶ Adoption of a system essentially based on two main cycles, undergraduate and graduate.
 - ▶ Access to the second cycle shall require successful completion of first cycle studies, lasting at least three years.
 - ▶ The degree awarded after the first cycle shall be relevant to the labour market.
 - ▶ The second cycle should lead to the master and/or doctorate degree.
- *It is not a so-called 3-5-8 system; the first cycle should last at least three years.;*
 - *It is much too simple just to say the Europe is switching over to a UK or "Anglo-Saxon" model;*

Why a two-cycle model?

- ▶ It is claimed that most countries outside continental Europe use such a model.
- ▶ Could make (continental) Europe more attractive for overseas students.
- ▶ Could facilitate student mobility.
- ▶ Could save some money - if students leave university after three years.

The "BSc/MSc"-system: What has happened?

- ▶ Italy quickly introduced a new system in (almost) total conformity with the Declaration;
- ▶ The British ... ;
- ▶ Germany has introduced a Bachelor/Master system in parallel to the classical *Dipl.-Ing.* by an earlier decision;
 - *3% of all students are in the BSc and/or MSc system.*
- ▶ The classical French engineering education system has not changed;
 - *New French legislation for universities in May 2002, but the 2+3 system for Engineering Education - 2 years of "classes préparatoires" plus 3 years of Grande Ecole - remains.*
- ▶ Spain is quite busy with the new University legislation, but discussion is starting;

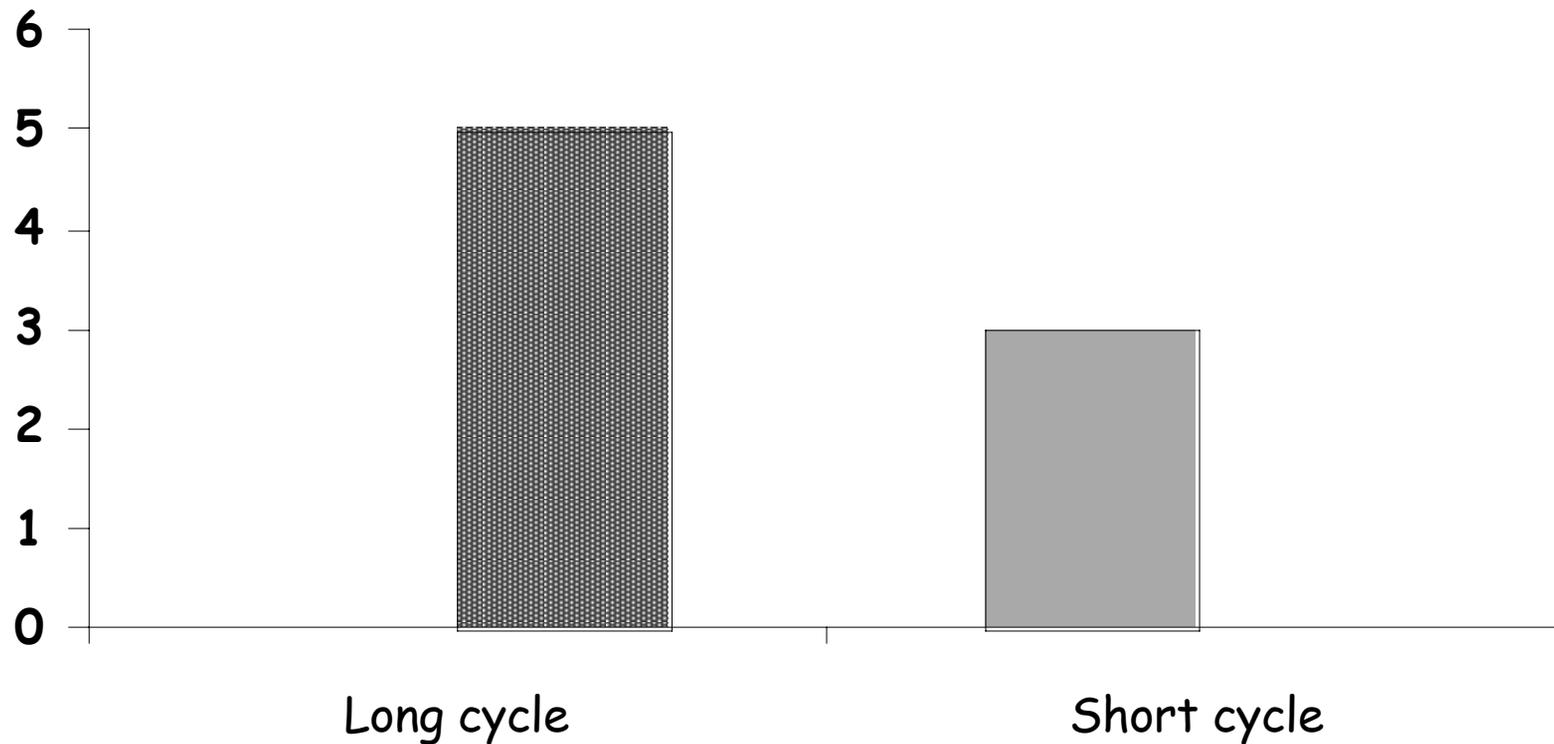
Other countries

- ▶ Some countries have a two-tier system in place since several years;
- ▶ Some governments impose a new BSc/MSc-system;
- ▶ Some countries leave universities to decide for themselves;
- ▶ In some countries very little seems to happen and no decisions are taken (yet);
- ▶ In some countries the new system will replace the old ...
... in others the new "BSc/MSc model" and a classical will exist in parallel.
- ▶ In some countries the new intermediate degree (BSc) will just be a point for mobility, a "pivot point", and not really *"relevant to the labour market"*.
- ▶ Other countries stay closer to the Declaration.

Why am I not entirely happy?

- ▶ How does Engineering Education fit into all this? Is Engineering Education even concerned by the Declaration?
- ▶ It's all about structure and not content, about time spent and not outcomes.
- ▶ The future of the application oriented, often shorter, curricula.
- ▶ Which are the real obstacles against student and staff mobility?
- ▶ Why has continental Europe difficulties in attracting overseas students?
- ▶ Mobility also for graduated engineers;
- ▶ We have already a good common understanding of what a degree in Engineering in Europe should be;
- ▶ The existing European integrated long curricula in Engineering are already compatible with the idea of a European Higher Education Area.

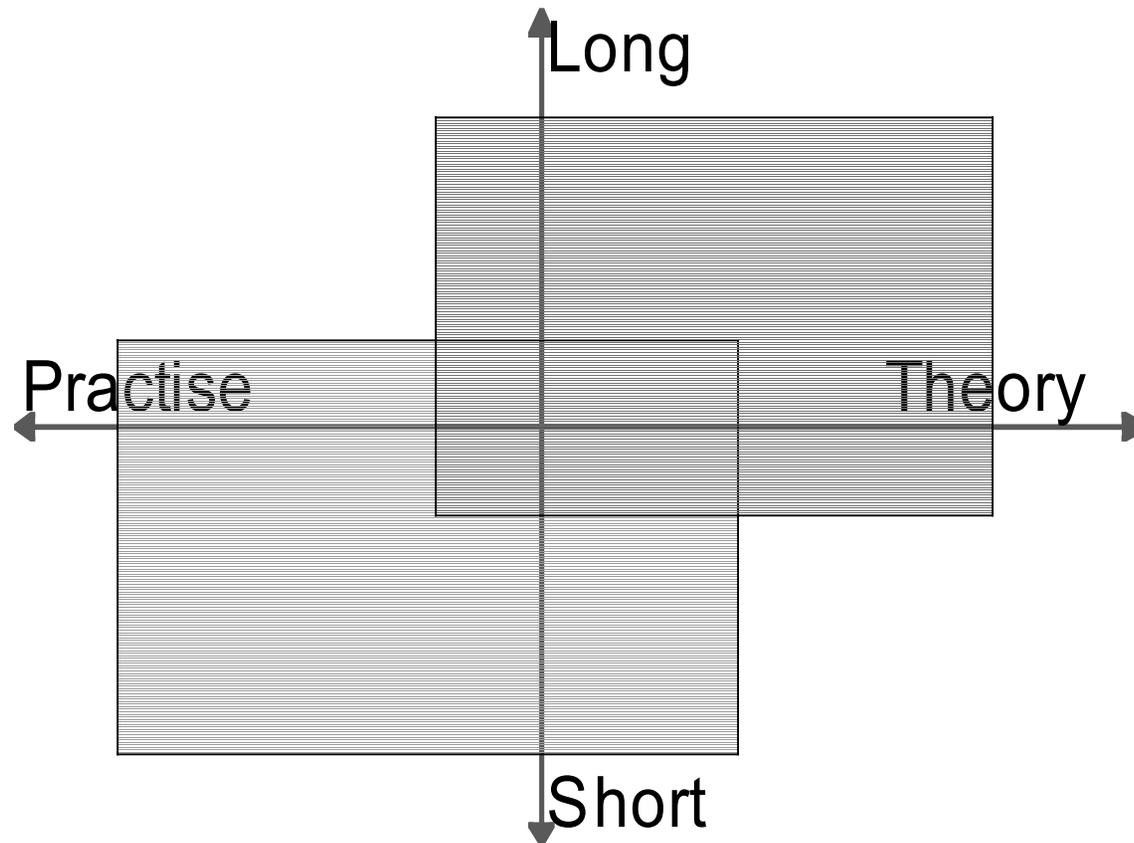
The Classical European Model for Engineering Education



Exceptions

- ▶ Spanish
- ▶ French
- ▶ German
- ▶ Swedish
- ▶ Albanian
- ▶ Italian
- ▶ British (2)
- ▶ Belgian (2)
- ▶ Austrian
- ▶ Bulgarian
- ▶ Slovenian
- ▶ Turkish
- ▶ Dutch
- ▶ Russian
- ▶ Estonian
- ▶ Lithuanian
- ▶ Latvian
- ▶ Polish
- ▶ Croatian
- ▶ Greek
- ▶ Swiss
- ▶ Irish
- ▶ Czech
- ▶ Belorussian
- ▶ Portuguese
- ▶ Finnish
- ▶ Hungarian
- ▶ Norwegian
- ▶ Polish
- ▶ Serb
- ▶ Slovak
- ▶ Icelandic
- ▶ Romanian
- ▶ Ukrainian
- ▶ Maltese
- ▶ FYROMic
- ▶ Danish
- ▶ ...

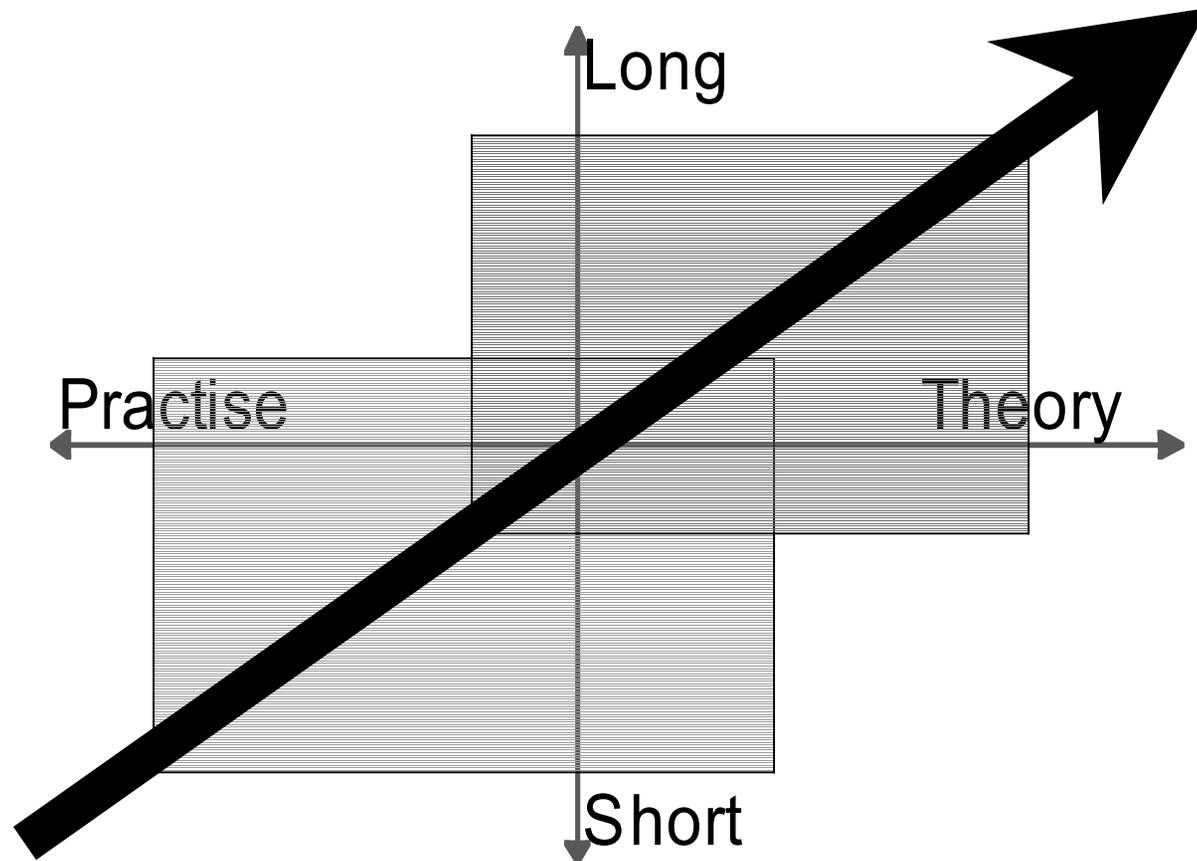
Two types of programme



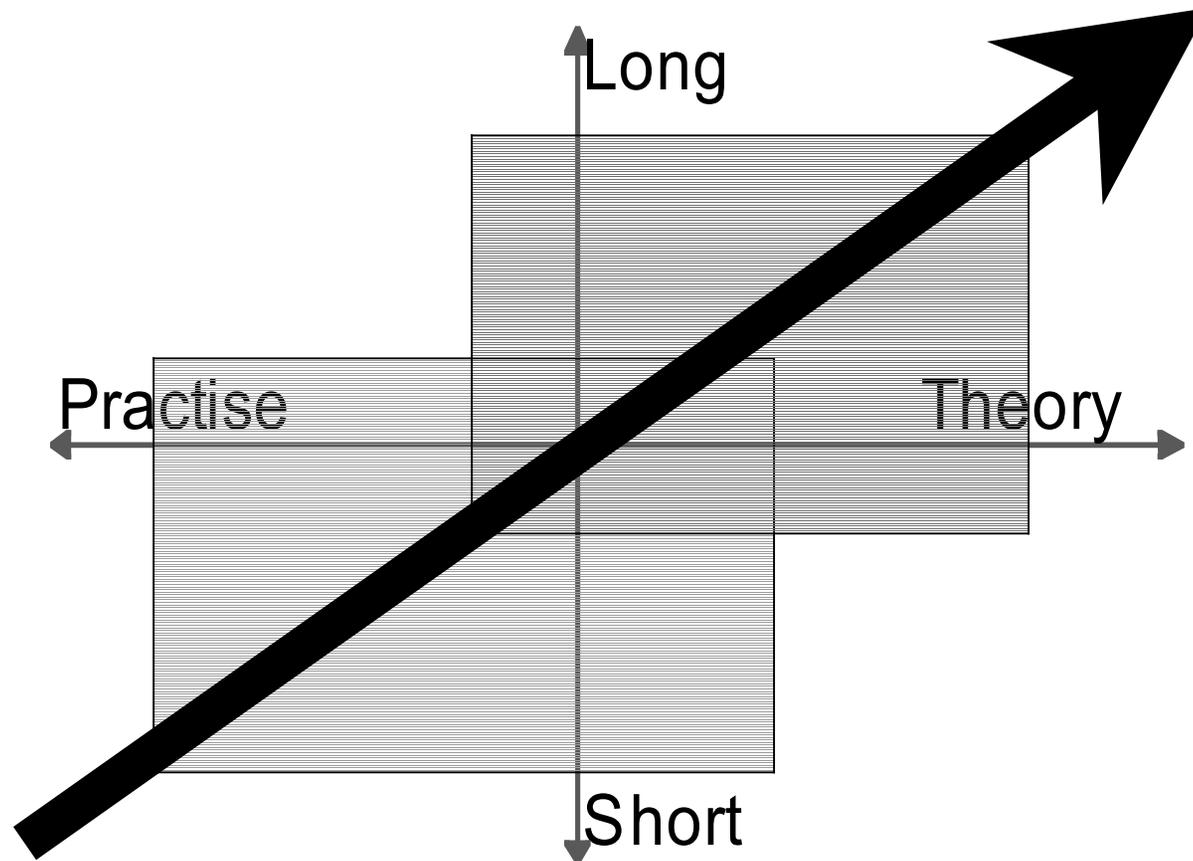
Application oriented programmes

- ▶ The main problem in the Bologna process as far as Engineering Education is concerned;
- ▶ How can they fit into the Bologna scheme?
- ▶ Major national differences;
 - *goals and aims;*
 - *length;*
 - *university or non-university?*
 - *history and status..*
- ▶ Difference between these diplomas and the new "BSc" degrees?
- ▶ Will they survive?

Two types of Programme



Academic Drift



What I think will happen

- ▶ The 3+2 system will become the normal one in most fields of higher education, but not necessarily in engineering.
- ▶ Convergence to five year degrees (also) in Engineering;
- ▶ *"Let us introduce a new three-year degree as a pivot point for mobility between universities and countries, rather than as a degree in itself relevant for the job market."*
- ▶ A credit system will be introduced in all European countries.
- ▶ Obstacles to student and staff mobility will gradually be removed, although the main obstacles mobility are economic and social.
- ▶ The number of Master's programmes in Engineering at continental universities in English for overseas students will increase.
- ▶ Accreditation will remain on the agenda.



What I hope will happen

- ▶ That a new "BSc/MSc", a "3+2" or a "4+1" system and the classical system for Engineering Education will exist in parallel, and that the "market" decides;
- ▶ That we focus on learning outcomes rather than time served;
- ▶ That we manage to keep the distinction between the new "intermediate degree" and the Applied Engineering degrees;
- ▶ That the ECTS will remain as it is; a common language, a quantitative measure;
- ▶ That the PhD-education remains outside the Bologna Process;
- ▶ That accreditation will be developed on the European level.
- ▶ Get more serious work on terminology and on information;

The Future Models for European Engineering Education

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