From *Artes Liberales* via *Humboldt’s idea* to the *Bologna paradigm*:

what is the idea of a modern university?

Jochen Litterst

PUC/Rio, CNI, SENAI
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I won't give an answer

I don't give a recipe for the “idea“ of a/the new university

We need a variety of designs for higher education institutions

Specific conditions, aims may be completely different and you have to decide which direction is the best for you

But what you need is an idea!

Which kind of personalities do you like to form? Which competences do you want to transfer? Etc.

When thinking somewhat “new“: always good to have a glance back what we had in the past, learn from errors, take with us the good things

Small review of designs/ideas of higher education
Typical nowadays complaints demanding changes in our higher education systems:

Lack of practice orientation

Too long stays at university

Ineffective, not market-oriented

Internationally not competitive

Not supporting innovation...

Students are immobile

.....
Pierre de la Ramée (1515-1572, humanistic philosopher, logic):

"After having been dedicated to scholastic philosophy for 3 years and six months according to our universitie’s rules: after reading, discussing, meditating on the various chapters of the organon (since all books on dialectic by Aristotle were read in the lectures again and again during these three years), after all this time I had completely spent for studies of the scholastic arts, I had asked myself for which purpose finally I could use (...) all this accumulated knowledge.

(it is good that our students mostly ask earlier...)

Soon I recognized that I had not become more educated in history and in knowledge of the antique times, no more skilled in speach, nor in poetry, no wiser in anything. What dismay and grief...“

Ossification of university system...
Reminds of Dr. Faustus (by Goethe):

Habe nun, ach! Philosophie, Juristerei und Medizin,
Und leider auch Theologie
Durchaus studiert, mit heißem Bemühn.
Da steh ich nun, ich armer Tor!
Und bin so klug als wie zuvor;
Heiße Magister, heiße Doktor gar
Und ziehe schon an die zehen Jahr
Herauf, herab und quer und krumm
Meine Schüler an der Nase herum -
Und sehe, daß wir nichts wissen können!

Turns to magic...

In part 2 of Goethe’s Faust he becomes a civil engineer...
Salvation!
What is the Bologna paradigm/process? (is it at all a paradigm?)

Original text of Bologna-Declaration (1999):

A pledge by 29 (meanwhile 45!) countries to reform the structures of their education in a convergent way

Common goal:

To establish a European Higher Education Area by 2010 in which students and staff can move with ease and have fair recognition of their qualification

In the Bologna Declaration, ministers affirmed their intention to:

- Adopt a system of easily readable and comparable degrees;
- Implement a system based essentially on two main cycles (B/M);
- Establish a system of credits (such as ECTS);
- Support the mobility of students, teachers and researchers;
- Promote European cooperation in quality assurance;
- Promote the European dimension in higher education (in terms of curricular development and inter-institutional cooperation).
Meanwhile achieved: (our university, Germany)

Changeover to Bachelor / Master (mostly 3+2 years) +
(before it was 5 years for Diplom-Ingenieur)

Improvement of international comparability/compatibility +

Modularization of curricula +

Design of curricula according to desired competences/abilities -

Creation of transparency
(course evaluation, diploma supplement, credits) ++

Reduction of effective study duration + -

Enhancement of practice-orientation + -

Promotion of students’ mobility - -

Proposed by DAAD: 4+2 years with integrated stay abroad
The Liberal Arts

concept of higher education
late antique to late mediaeval times

institutional idea for cultivating personal abilities, forming the human essence

Background much older…
Plato/Socrates  *politeia* 5-4th century BC

Formation not for a certain purpose but formation as purpose
Primary aim is not to the ability to manage specific professional problems or practical needs

Why not?
Then the human being won't be happy...

Anthropologic view:
A happy personality is acting better and more efficiently in state
Formation has to be adjusted to individual gifts/abilities

The way:
use mathematics as school of thought/distinguishing
(heritage from pythagoreans! Role of natural numbers, ratios, geometry! See Platonic bodies!)
Counterpart: the sophists

Teaching of general competences allowing for success in each aspect, economic, political, ... general rules

Methods which can be applied in as wide as possible areas

Competences not defined for a distinct purpose (general "tricks")

Advantage:

Flexibility, broad scope

Pragmatic and short formation

For money!

Travelling to sell their methodological approach

Platon and followers: rational formation and development of individual capabilities by "mathematical" means
Consequences referring back to Plato et al.:

**Quadriuvm** (Boethius, 5th century AD)
4 “mathematical sciences“, good for “distinguishing“

**Trivium** around 8th century
preparatory, propaedeutic

**Septem Artes**
Seven Arts

4-5 years
Baccalaureus
more 3-4 years
Magister

Unified basic education

On top
higher studies: theology, medicine, law
Hortus deliciarum
Herrad von Landsberg
12th century
Septem Artes Liberales

- Grammar
- Rhetoric
- Dialectics/Logic
- Music
- Arithmetic
- Geometry
- Astronomy

Trivium

Quadrivium

Septem Artes Liberales
in middle Europe the artes were understood
as knowledge about the **HOW** to do somewhat

Contact between different cultural systems (arabs!): arts become sciences (**WHY?!**) and therefore become parts of philosophy

In addition:

**Artes Mecanicae**  
(12th century, going back to 9th century: Al Farabi in Damascus)

Weaving, forging, construction, agriculture, navigation, medication/surgery
High estimate of manual work! Development of technics!
Flourishing of technological development in this period

Change of mathematics “paradigm“

Roger Bacon  **13th century:** description of empiric facts
17th century very slow change of paradigms!

3 main streams

Scholastics Mechanists Naturalists/Vitalists

Scholastics mainly at universities
description of nature using aristotelic qualities and quantities, forms, reasons for explaining phenomena

Mechanists e.g., Galilei: book of nature written in mathematical language, world as realization of divine mathematics
Mersenne, Gassendi, Descartes, Huygens, Newton, Leibniz

“Naturalists“ living nature, e.g., Kepler (Plato, Pythagoras!)
harmonia ad dei gloriam
Following time

Continuous decline of universities (see de la Ramée’s comments)

Anti-aristotelism!

See also Descartes, Leibniz, …not at universities!

Enlightenment, role of clear rational thought

Foundation of academies

Academies gain high reputation (Paris, Berlin, St. Petersburg, The Royal Society) combining humanities and sciences (Lagrange, Laplace, Euler …) coin engineering even now!

Escape of research from universities (see today!)

First schools of technology (e.g. Braunschweig)
Friedrich Wilhelm Christian Carl Ferdinand von Humboldt (1767-1835)
diplomat, statesman

Friedrich Wilhelm Heinrich Alexander von Humboldt (1769-1859)
“traveller“, discoverer

Friedrich Wilhelm Christian Carl Ferdinand von Humboldt (1767-1835)

Heinrich Alexander von Humboldt (1769-1859)

Which one?
Wilhelm Humboldt

Typical message about H.‘s idea:

romantic idea of „Bildung“ (individual formation of personality, see Plato)

Resides on studies of classical humanities

Unity of sciences at university, of research and teaching

Learning as everybody‘s basic right

A bit more realistic view:

Situation in Prussia around 1806:

lost war, lost large part of country, lost image, starving economy

What to do??
H.: Reform of school system (for benefit of country, see Plato!)

unite academies with universities: cheaper!

teaching + researching
or even better a strong cooperation academies + universities

let academy scientists teach also at universities (save money…)

role of universities for benefit of country! Pragmatic approach

Romantic attitudes agreed:

especially
unity of sciences, analogies between sciences, life-long learning
proper individual education for all (extremely liberal, dangerous at this
time in Prussia!), abolish privileged school for noble people, etc.

republic of scholars, students and teachers

Benefit for state, foundation of Berlin University (1810)
Today: “Bologna“

University programs serve as preparation, but for what…?

Competences vs. contents, (sounds much like sophistic)

life-long learning (Humboldt)

Mobility (Renaissance, Humboldt)

(Soft) competences in addition to the specific skills

Role of interdisciplinarity (7 arts)

All OK!

However, the measures taken are mostly of formal nature - but help!

But what is the idea behind?

Political answer: welfare for everybody?!

Do we have an academic answer?
The essential problems of our world are still the same since centuries, all refer somehow to engineering + ...! involving ethical, sociological, epistemological(!)... issues

All these problems ask for larger scale view:
trans-disciplinarity + inter-culturality

We need to enter with our disciplinary defined skills and methodology into other disciplines which are relevant in a problem‘s context and vice versa.

Problem: “languages“ of different disciplines are different (they are! esp. engineers/sciences vs humanities), means also their rational approach to a problem will be different (we need clarify our semantics, see grammar of the 7 arts!)

This will raise new questions and demand new methodological approaches for problems by now not even being defined:

i.e. thinking forward for the next decades
Could define a paradigm!
That’s what our societies are expecting from academia!

PUC/Rio has a suitable structure of university and of curricula for trans-disciplinarity and inter-culturality

Define the idea of your university (PUC, PUC-Rio)
Who is in the center? Whom do we have in view?
human - economy – both?
Who is master, who slave (speaking in terms of control engineering)?

Still more essential, but related:

Which kind of personalities do we want to form?

When you know this - start with transformation