3rd Generation Universities

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• Medieval universities (1GU): evolved from Catholic and Protestant church schools — then established specialized academic structures for properly educating greater numbers of students as professionals.

• First transition period: Age of Enlightenment → from the “preservation and transmission of accepted knowledge” to the “discovery and advancement of new knowledge”

• Humboldt universities (2GU): the goal was to demonstrate the process of the discovery of knowledge and to teach students to “take account of fundamental laws of science in all their thinking.”
  • Seminars
  • Laboratories
  • University education as the student-centered activity of research

• Third generation universities (3GU): ‘know how carousel
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<th>1st generation</th>
<th>2nd generation</th>
<th>3rd generation</th>
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<td>Objective</td>
<td>Education</td>
<td>Education + research</td>
<td>Education + research + know-how exploitation</td>
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<td>Role</td>
<td>Defending the truth</td>
<td>Discovering nature</td>
<td>Creating value</td>
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<tr>
<td>Method</td>
<td>Scholastic</td>
<td>Modern science, monodisciplinary</td>
<td>Modern science, interdisciplinary</td>
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<tr>
<td>Creating</td>
<td>Professionals</td>
<td>Professionals + scientists</td>
<td>Professionals + scientists + entrepreneurs</td>
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<td>Orientation</td>
<td>Universal</td>
<td>National</td>
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<td>Language</td>
<td>Latin</td>
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<td>Organization</td>
<td>Nationes, faculties, colleges</td>
<td>Faculties</td>
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<td>Management</td>
<td>Chancellor</td>
<td>Part-time academics</td>
<td>Professional management</td>
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THE MEDIEVAL UNIVERSITY (1GU)

- Abelard established dialectics and scholastic method.
- First university in Bologna (1158), then Paris (1200), 20 by. 1300.
- Faculties in theology, law, medicine
- Organization very much by Nations.
- Rector, chancellor and General Assembly.
- Loosely organized along individual teachers
- No research as we know it
- Objectives: enlightenment of the world and stimulation of obedience
CHARACTERISTICS OF THE HUMBOLDT UNIVERSITY (2GU)

• Elite university (intellectually)
• Research is the main task and education is integrated with it
• Based on rationality, not authority
• Research is mono-disciplinary
• University becomes nationalistic; latin disappears as lingua franca;
  • inter-university mobility ends
• Governance is by Senate (professors and doctors) and Supervisors, all part time jobs
3RD GENERATION UNIVERSITY

• Cooperation: via know how carousel and other ways. The 3rd generation university is a network university

• Addition of know how exploitation (valorization) as objective. Know how exploitation integrated with research and education (e.g. science parks, incubators)

• End of direct government contribution Fundamental research from state grants/donations

• Applied research from industrial and state grants

• Education via market mechanism, students pay full fees and get support from state or other grants

• Requires shifts in governance (e.g. theme based), incentives (e.g. for collaboration, valorization), attitudes
CHARACTERISTICS OF THE 2GU AND 3GU

Second generation university

1. Two objectives: research and education. No interest in the use of the knowledge created.
2. Operate on the local market. Other universities are seen as colleagues.
3. Stand-alone institutions with no formal links with other organizations.
4. Monodisciplinary research and dominance of faculties.
5. Mainly elite education for well to do students.
7. Important role of state financing and state interference.

Third generation university

1. Exploitation of knowledge is core business and becomes the third objective.
2. Operate on an international, competitive market.
3. Open universities, collaborating with many partners.
4. Transdisciplinary research and rise of university institutes.
5. Multicultural organizations; mass and elite education.
7. No direct state financing. No state interference.
CONTOURS 3RD GENERATION UNIVERSITY:

1. THE BASIS IS FUNDAMENTAL RESEARCH

- The difference between Higher Professional Schools and universities is research
- The difference between top universities and lesser universities is fundamental research
- It is essential to have a good output of international publications (national publications do not matter anymore)
- Membership of the top league is obtained by publications in top journals
- It is essential to have academics in Editorial Boards and have them attend international congresses

Source: Wissema Consulting Ltd
The 19\textsuperscript{th} century had mono-disciplinary research, the 20\textsuperscript{th} had multi- and interdisciplinary research.

Transdisciplinary research is: there are more disciplines than people sitting around the table.

Transdisciplinary research is best carried out in Institutes, not faculties.

These University Institutes are highly focused and they have an international orientation.

They incorporate PhD research and specialised MSc courses.

Source: Wissema Consulting Ltd
3. THE 3GU IS AN OPEN UNIVERSITY

- In research, education and commercialisation of know-how there is considerable cooperation with industry (technology-based enterprises, production firms, start-ups)
- There is also collaboration with independent research institutes and other (international) universities
- The motto is: “Even the best cannot go it alone”
- The 3 GU is an open university: via know-how carousel and including an academic hospital

Source: Wissema Consulting Ltd
CHARACTERISTICS OF 3GU

Know-how carousel: the more elements, the more the others are reinforced. Synergy and scale create winners.

- Private R&D institutions
- Scientific research and education
- R&D departments of companies, Technoparks
- Professional support organizations
- Financial infrastructure
- Technostarters

Know-how carousel or know-how hub: a group of institutions, in and around the university, and preferably on the university’s premises, that collaborate with the university, its academics and research teams and each other.

THE CAMBRIDGE PHENOMENON

- In 1960: few commercial activities around the university
- Now 3000 high tech firms with direct employment of 60 000
- Development largely due to private initiative and initiatives of Colleges
- After 1996 university seeks cooperation with industry
- After 1997: government funds for commercialization
- Business School in 1990, Centre for Entrepreneurship in 2003
- Many groups of business angels and professional service firms and other private initiative
- Still largest number of Nobel Laureates (72)

Source: Wissema Consulting Ltd
CONTOURS 3\textsuperscript{RD} GENERATION UNIVERSITY:

4. THE 3GU HAS TO COMPETE IN AN INTERNATIONAL MARKET

• In fact, there are three competitive markets: for the best students, the best academics and the best corporate and state-funded research contracts

• The 2GU was very much a stand-alone institution with almost a regional monopoly for the intake of students

• By contrast, there was a good deal of competition in the Medieval university (1GU)

• The 3GU realises it has to compete in international markets; national status does not count for much

Source: Wissema Consulting Ltd
5. THE 3GU IS A TWO-TIER UNIVERSITY

- Except for a few, universities cannot avoid being mass universities with standard courses for all students and focus on educational efficiency.
- In order to provide for the best students, the 3GU offers special courses ("honors degrees") that have extra value in the market.
- Such students get better facilities, more staff time and no multiple choice exams.
- Only invited students can participate in these courses.
- The two-tier university offers special opportunities for the best academics and serves to keep them.

Source: Wissema Consulting Ltd
CONTOURS 3RD GENERATION UNIVERSITY:

6. THE 3GU FOSTERS CREATIVITY

• In the 3GU, there is place for research other than “more of the same” (small science)

• Original work needs special support and protection

• There is a central role for the Design Faculty; no 3GU without a Design Faculty

• The Design Faculty is instrumental in the commercialization of research

Source: Wissema Consulting Ltd
CONTOURS 3rd Generation University:
7. The 3GU is Cosmopolitan

- The 3GU is a cosmopolitan university with English as *lingua franca*
- This puts a heavy burden on staff and students who have to master command of English language
- It also puts a burden on the Board of Management which has to provide for a cosmopolitan culture, taking into account the different cultures and religions of staff and students

Source: Wissema Consulting Ltd
8. THE 3GU HAS THREE OBJECTIVES

- The 2GU had two objectives: research and education
- The 3GU has a third objective: Know-how exploitation, of equal importance to the other two
- This is reflected in the composition of the Board of Management, in which there is a member responsible for this subject
- Know how exploitation will be integrated with research and education

Source: Wissema Consulting Ltd
9. THE 3GU IS DISENTANGLED FROM THE STATE

- 2GUs were mainly funded directly by the state
- 3GUs do not receive direct state funding
- Funds for (fundamental research) comes from state grants, via Science Foundations, industry and grants
- Students pay cost-covering fees, getting scholarships from state- or privately funded Education Foundations

Source: Wissema Consulting Ltd
3GU: basis is fundamental research

- Transdisciplinary research
- Exploitation as third objective
- Distentangled from state
- Cosmopolitan university
- Creativity and Design Faculty
- Two-track university
- International competition
- International know how hub

Universities will offer standard courses with a good deal of academic education to the majority of students, while offering science-oriented academic courses to the best and brightest.

Source: Wissema Consulting Ltd
THE NETHERLANDS

- Small country (41,000 km²), densely populated (16 m people)
- World’s 2nd largest exporter of food
- Several big food & agribusiness companies
  - Ahold (food retailer), DSM (food ingredients), FloraHolland (flowers), FrieslandCampina (dairy), Greenery (vegetables), Nutreco (animal & fish feed), Unilever (food), Vion Food Group (beef), Seed Industry
THE G3 WAGENINGEN MODEL

Research

Fundamental research  Strategic research  Applied research  Knowledge application

University education i.c. Wageningen University

Polytechnical i.c. Van Hall-Larenstein

Post experience training WI/WBS

Education
FUNDING SOURCES WAGENINGEN UR

- Specialized Research Institutes (375 m € - project funding)
  - 40% Ministry of Agric (strategic, policy support, statutory tasks)
  - 50% Other customers (wide range)
  - 10% Other sources (IP, sales etc.)

- Wageningen University (250 m €)
  - 65% Ministry of Agric (mainly teaching, some research)
  - 35% External funding (wide range)

- Van Hall Larenstein (50 m €)
  - 90% Ministry of Agric (teaching)
WHAT ABOUT TURKEY?
• The 3G University is a network university
• Valorization of knowledge as third objective.
• Know how exploitation will be integrated with research and education
• Recovery of academic integrity
• End of direct government governance
• Fundamental research from state grants/donations
• Applied research from industrial and state grants
• Education via market mechanism, students pay full fees and get support from state or other grants
<table>
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<th>Basis</th>
<th>3rd generation university</th>
<th>Entrepreneurial university</th>
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<tbody>
<tr>
<td>Basis</td>
<td>External changes in the university institution in society</td>
<td>Need for changes in society and economy</td>
</tr>
<tr>
<td>Basis</td>
<td>Increasing economic growth with new businesses by adopting new technologies</td>
<td>Proactively advancing economy, welfare and equality in societies</td>
</tr>
<tr>
<td>Basis</td>
<td>Drawn from the need to compete for funding, students and academics</td>
<td>Drawn from the need to change the culture, practices and pedagogy in university</td>
</tr>
<tr>
<td>Objective, role and focus</td>
<td>Exploiting know-how that is commercialization of knowledge</td>
<td>Solving economic and social problems for creating welfare</td>
</tr>
<tr>
<td>Objective, role and focus</td>
<td>Technology - based economic growth</td>
<td>Entrepreneurial mindset, behavior and practices</td>
</tr>
<tr>
<td>Objective, role and focus</td>
<td>Academic start-up activities</td>
<td>Entrepreneurial competences</td>
</tr>
<tr>
<td>Institutional and structural change</td>
<td>Managing university processes for know-how exploitation and entrepreneurship</td>
<td>Resulting from the entrepreneurial process</td>
</tr>
<tr>
<td>Institutional and structural change</td>
<td>Less dependent on state regulation and funding</td>
<td>Leading and supporting innovation, creative processes and communities</td>
</tr>
<tr>
<td>Institutional and structural change</td>
<td></td>
<td>Entrepreneurial culture surpassing boundaries and degrees</td>
</tr>
<tr>
<td>Strategy</td>
<td>Strategy-driven R&amp;D management</td>
<td>Entrepreneurship embedded in the overall strategy</td>
</tr>
<tr>
<td>Strategy</td>
<td>Innovativeness achieved through strategic planning - Innovation Pentagon: Strategy, organization, partners, technology</td>
<td></td>
</tr>
<tr>
<td>Curriculum, pedagogy and teaching</td>
<td>Aims at educating technostartners</td>
<td>Aims at creating entrepreneurial mindset, behavior and practices Broad understanding of entrepreneurship</td>
</tr>
<tr>
<td>Curriculum, pedagogy and teaching</td>
<td>Entrepreneurship as a skill, business and entrepreneurship as additional subjects</td>
<td></td>
</tr>
<tr>
<td>Curriculum, pedagogy and teaching</td>
<td>Awareness programs, obligatory introduction to entrepreneurship</td>
<td>Learning happens in the openings and gaps that the entrepreneurial process creates</td>
</tr>
<tr>
<td>Curriculum, pedagogy and teaching</td>
<td>Teachers help the students to make a decision to start a company</td>
<td>Learning as a social process Action-based experiential pedagogy</td>
</tr>
<tr>
<td>Curriculum, pedagogy and teaching</td>
<td>Teaching methods: lectures, case studies, management games, workshops</td>
<td>Real- life context studies</td>
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TECHNOSTARTERS

- Technostarters are optimistic, perseverant and passionate people who are motivated by creating their own employment rather than being employed elsewhere. Entrepreneurship is very much in the air, and this is not confined to the developed world. Entrepreneurship has acquired a positive connotation and it is stimulated by many governments.

- Many technostarters originate from universities of technology, business schools and other academic education. However, an increasing number of technology-based enterprises and independent research institutes also support technostarters. Technostarters in these organizations are no longer seen as defectors.

- Technostarters are innovators; they create value by bringing an idea or an invention to the market. The role of the idea or indeed an invention in the value-creating process is limited.

- Technostarters create great economic value. The companies created in connection with the Massachusetts Institute of Technology in the USA would constitute an economy the size of Thailand or South Africa if they formed a separate nation.

- Although the number of technostarters in the world is unknown, a rough indication is that they form 3 per cent of the adult population.

- Universities stimulate technostasters because of their contribution to the economy and the challenge that entrepreneurship poses to an increasing number of students. In addition, they do so in order to enhance their own competitive position, as technostasters are an invaluable part of the know-how carousel of which leading universities are the center.

- In addition to supporting technostarters, universities also take the initiative to create new enterprises themselves, using know-how generated by their research. Universities can receive substantial income from licenses, consulting, contract research and eventually endowments from the companies they create or help to create.
1. The president, responsible for the coordination of the activities, campus development, endowments, and representation to common external parties and the public.

2. The rector, responsible for the coordination and the quality of research, including PhD research.

3. A member responsible for the coordination and the quality of education and the application of modern teaching methods.

4. A member responsible for the collaboration with industry and commercialization of know-how. This includes coordination of the marketing activities, running the marketing support department and the instruments of know-how commercialization and cooperation, including the instruments to support technostarters and the technopark (if the university has one, including shared accommodation facilities for young enterprises).

5. A chief financial officer, responsible for finance and administration, human resource management and facility management.
SCHEMATIC FLOW OF FINANCE TO DIFFERENT GENERATIONS OF UNIVERSITIES

Medieval

Second

Present

Third
ENTREPRENEUR OR ENTERPRISER? TAKE THE TEST!

You know you are an entrepreneur if:
● You are prepared to risk everything – personal assets and reputation – to succeed
● You will work all hours at the expense of your personal life
● You prefer to take decisions quickly and based on gut feel
● You like to dominate proceedings
● You work on the basis of trust rather than contracts
Examples: Sir Richard Branson, Charles Schwab

You know you are an enterpriser if:
● You prefer to work in a corporate setting
● You are rational and require evidence before taking a decision
● You focus overwhelmingly on wealth creation
● You draw regularly on highly competent team members
● You make big bets but with limited personal risk
Examples: Sir Christopher Gent, Jack Welch

FURTHER READING

• The Turkish edition, published by Ozyegin University Press in Istanbul, has run out and will be reprinted; the new edition is expected to be out at the end of 2013.

• Wissema Consulting offers universities (re)design their approach for transition to 3GU