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On the Complementarity of Disciplines and Interdisciplinarity

Conference ‘Academic Demarcations: Disciplines and Interdisciplinarity, University of Oslo, September 13-14, 2012
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On the Complementarity of Disciplines and Interdisciplinarity

1 Scientific discipline as primary unit of differentiation in science
2 Societal function of disciplines
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Scientific discipline as primary unit of differentiation in science

*Three levels of the realization of disciplines:*

**Cognitive level:** Self-reproducing population of concepts, theories and methods

**Social level:** Community of specialists

**Communicative level:** Population of publications referring via citations to earlier publications
Societal function of disciplines

Guarantee of diversity of science. Requisite variety of science in relation to its environments.

Guarantee of stable addresses for communication processes in science and/or knowledge demands directed towards science

Systems in which disciplinary addresses are processed.

Science
Higher education
Primary and secondary schools
Occupational and professional roles
Articulation of knowledge demands by other function systems
Semantic background to «disciplines»

Late antiquity
- disciplina - discere
- doctrina - docere

Church fathers
- admonition, correction, punishment for mistakes

Renaissance
- coupling of «system» and «discipline» - but still archival function of «disciplines»

M. Foucault
- «discipline» as a way of disciplining oneself and others
Modern scientific disciplines (1750 – 1870)

Genesis of the scientific discipline as a real social system in science, as a system of the production of science, as a system of the dissemination of science

Which are the preconditions?
- Specialization vs. encyclopedic interests
- Role differentiation in educational organizations
- Communities of specialists
- New forms of publications
- Communities around publication outlets
- Search for novelties
- Research as the institutionalization of search for novelties
- Disciplinary careers
- Professionalization of scientific disciplines
Modern system of disciplinarity and interdisciplinarity (1870 – 2011)

1. Internal environment of other scientific disciplines («milieu interne»)
2. Expansionary strategies of disciplines trying to encroach on the domain of other disciplines
3. Incessant proliferation of ever new disciplines / subdisciplines (> 10.000)
   three parallel processes (in evolutionary terms)
   novelties – via interdisciplinary combinations
   selection – adaptation
   isolation, separation, closure – speciation
4. Globality of the scientific discipline (global small world)
5. Collaboration structures arising – as the structural form of interdisciplinarity (coauthorship)
   - building interdisciplinarity into the individual scientific paper
6. Global expectations of excellence drive interdisciplinarity
Fig. 1. Time evolution of the typical number of team members in (A) the BMI and scientific collaborations in the disciplines of (B) social psychology, (C) economics, (D) ecology, and (E) astronomy.
Interdisciplinarity or Transdisciplinarity?

Test of the strength of an elementary unit

Internationality vs. transnationality
Interdisciplinarity vs. transdisciplinarity