Crossing Over to the Future: EU Perspectives on Research and Innovation

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Croatian Delegation of the National Council for Science, Higher Education and Technological Development
Beijing, Chengdu, Shanghai, 26 February – 8 March 2018

Seminal thoughts and works in relatively recent times on ‘MULTIDISCIPLINARITY’ – whether seen as possible or not - date back quite a few years.

„More than fifty years has passed since C.P. Snow in his famous Rede Lecture of 1959 (Snow, C.P. 1964) on the ‘two cultures’ stressed the duality of the natural sciences and the humanities as a seemingly self-evident reality organizing academic production of knowledge. „

(Snow, C. P. (1964) *The Two Cultures.* Cambridge University Press.)

IMPORTANT CONTRIBUTIONS TO ARTICULATING DIFFERENT PERSPECTIVES OF 'KNOWLEDGE'

- Distinction between empirical and orientational knowledge

  „Empirical knowledge should transform into orientational knowledge which is by definition culturally defined and socially implemented."

(Jürgen Mitellstraß (1982) *Wissenschaft als Lebenform*)

(Mittelstraß, J. (1982) *Wissenschaft als Lebensform. Reden über philosophischer Orientierungen in Wissenschaft und Universität.* Suhrkamp Verlag, Frankfurt am Main.)

Also, the work of Nowotny, Scott and Gibbons (2001) on what is called Mode 2 knowledge production, that is, knowledge production seen as a process for which people come together in temporary networks to work on specific problems in the real world.

(Nowotny, Scott and Gibbons (2001) *Re-Thinking Science: Knowledge and the Public in an Age of Uncertainty.* Polity.)

„Temporary networks” sometimes fit into wider contexts that have existed for quite some time as is the following example within the context of Cognitive Science, which ‘officially’ began on September 11, 1956 during the „Symposium on Information Theory” at MIT.

The roots of **‘Cognitive Science’** extend back far in intellectual history, but its ‘contemporary’ collaborative endeavor of psychology, computer science, neuro-science, linguistics, anthropology, philosophy, etc. starts in the 1950s.

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HEALTH ICT

Emotionally literate tech to help treat autism

19 October 2015

by Sophie Hebden

Researchers believe robots can be more effective than puppets and other traditional methods of treating autism. Image courtesy of the DREAM project

Rene at the University of Zagreb

Faculty of Electrical Engineering and Computing (FER)

Faculty of Education and Rehabilitation Sciences (ERF)

in collaboration with

The Croatian Institute for Brain Research


UNIVERSITY OF ZAGREB
FER

However, not all Grand Challenges research has a “history” of collaboration across disciplines and domains.

Equipping cities to weather our changing climate takes many disciplines working together.

How to catalyse collaboration

Turn the fraught flirtation between the social and biophysical sciences into fruitful partnerships with these five principles, urge **Rebekah R. Brown**, **Ana Deletic** and **Tony H. F. Wong**.

***Nature*, Volume 525, 17 September 2015**

http://www.nature.com/news/interdisciplinarity-how-to-catalyse-collaboration-1.18343

- A successful endeavor is without a doubt the establishment of the Facility for Advancing Water Biofiltration that brought together in the beginning more than 20 researchers and PhD students across civil engineering, ecology and sociology at Monash University in Melbourne, Australia.

- The collaboration between SSH researchers and the engineers involved provided many challenges in the beginning, but with very high investments and mutual willingness to understand different methodologies and approaches to research topics has proven to be more than successful.

- At present, the Cooperative Research Centre (CRC) for Water Sensitive Cities, which developed out of the multidisciplinary endeavor covering both SSH as well a whole range of technical and natural sciences, now comprises a partnership of more than 85 organizations, including 13 research institutions, and around 230 researchers and PhD students from more than 20 disciplines and subdisciplines.

- This very impressive endeavor can be seen as innovation at its best and has become an Australian export since it has been implemented in Singapore, China and Israel.

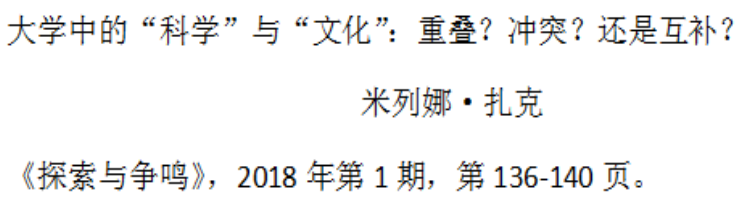
- These two snapshot examples are just an indication of **the complexity of the multilayered phenomena for which we use the cover term ‘multidisciplinarity’**.

A myriad of questions surface with regard to ‘multidisciplinarity’, of which possibly the fundamental ones are:

- How to bridge gaps between disciplines and research domains?
- Implications for resetting research agendas?
- Implications for the global dimension?

- The question also arises how to ‘reform’ universities which (with a few exceptions) are still far from even the basic changes for lowering institutional barriers and creating favorable cultures for both research and education from a multidisciplinary perspective.

- Milena Žic Fuchs (2018) ‘Science’ and ‘culture’ in university settings: Areas of overlap? Areas of tension? Or, areas of mutual complementarity?. *Tansuo yu zhengming (Exploration and Free Views)*, No. 1, 2018: 136-140.



大学中的“科学”与“文化”：重叠？冲突？还是互补？

米列娜·扎克

《探索与争鸣》，2018 年第 1 期，第 136-140 页。

(*International Conference On The Conflicts And Dialogues Between Science And Humanities*, Shanghai Jiao Tong University and Academia Europaea, Shanghai, 12-15 May 2016)


European
Commission
LAB – FAB – APP
Investing in the European future we want
Report of the independent High Level Group on maximising the impact of EU Research & Innovation Programmes

The so-called Lamy Report stresses a number of major challenges for the upcoming FP9:

- How to enhance ‘innovation’ within the European framework?
  - During the work of the Lamy Group quite a number of meetings were held with stakeholders and researchers from the “innovation world”.
  - to Pascal Lamy’s direct question as to what is the most important feature of ‘innovation’, the answer was always **‘multidisciplinarity’**

The Lamy Report presents 11 recommendations as foundations for FP9.

In Recommendation 5, the following is stressed:

- „Missions, or “moon shots”, should have a breakthrough or transformative potential for science, technology, industry or society. (...) Failure should be allowed, and unexpected spill-over benefits should be encouraged.”

- „Missions defined in this way will, by design, **fully integrate social sciences and humanities (SSH)**. Where missions concern the big social questions of our time, for example having rewarding work in an era of robotics, living and working well together in culturally diverse cities or ensuring equal opportunities in and fair benefits from an innovative society, SSH researchers will initiate and lead them.”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- Multidisciplinarity in research on the Grand Challenges combines different cultures of knowledge, and this combining should result in relational/orientational knowledge, which often means reconceptualization and reinterpretation of so-called hard facts.

- This implies new ways of interpreting facts and integrating them. In other words, *multidisciplinarity* should result in networks of knowledge which in themselves can present innovation at high levels.

Humanities and Social Sciences can help bridge and combine different ‘cultures of knowledge’

while

They can also provide new ways of interpreting facts and integrating them into wider networks

→ these kinds of approaches help bridge the gap between the so-called hard and soft sciences

→ also provides necessary links to the individual and society

New ‘networks of knowledge’ are embedded in ‘cultures of knowledge’ in two basic senses:

- embedded in different cultural, historical, etc. contexts
- embedded in different scholarly traditions/cultures of disciplines and domains

The big challenges are:

- How do we disseminate different kinds of ‘knowledges’ for obtaining future societal and natural sustainability?
- How do we disseminate ‘knowledges’ within academia but also to the general public?
- Can ‘multidisciplinarity’ be the trigger for changing mindsets in a constantly changing societal and natural environment?

WHY?

CROSSING OVER TO THE FUTURE

'MULTIDISCIPLINARITY' IN RESEARCH

"Wisdom may be defined as the knowledge of how to use knowledge for the social good. (...) Humanistic biologist should be organized into interdisciplinary scientific research and development groups with **SURVIVAL** as their first goal. Societal competence may be defined as a function of wisdom and knowledge."

(Van Rensselaer Potter 1971:183)

(Potter, V.R. (1971). *Bioethics*: ***Bridge to the future.*** Englewood Cliffs, N. J. Prentice-Hall)

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