

Onsite Panel: Overall proposal for panel presentation

Title

Strengthening knowledge, research and innovation systems for a sustainable future through research-teaching-study nexus in higher education

Objectives and main questions to be addressed

This panel, building upon the founding works of Burton Clark (1993, 1995), *invite national experts in developed and developing economies to share insights on strengthening knowledge, research and innovation systems for a sustainable future through research-teaching-study nexus in higher education.*

Three main hard questions are:

What does the historic research-teaching-study nexus in higher education look like in a new era?

At present day and for a sustainable future, what is the role of higher education/universities in strengthening knowledge, research and innovation systems for a sustainable world? How to understand and practise the research-teaching-study nexus in higher education/universities?

What is the convergence and divergence in national approaches?

Main perspectives and analytical frameworks

In a knowledge-based society, the crucial role of innovation-driven economic growth (rather than factors-driven) in one nation's competitiveness has established its legitimacy globally (Goldin, 2016; Teixeira & Queirós, 2016; Porter, 1990). As such, countries worldwide have expanded and enhanced their higher education system and science system to spur innovation and eventually contributing to national building (Marginson, 2022).

In the cross-national comparison of graduate education in advanced economies, including Germany, Great Britain, France, American and Japan, Burton Clark and allied national experts (Clark, 1993, 1995) hold that the research-teaching-study nexus

is a ‘basic feature’ (Clark, 1993, p. xv) and ‘enduring principle’ (Clark, 1995, p.1) of modern higher education. More than three decades after Clark’s founding efforts during 1978 and 1990, *the global, national, local, institutional and individual contexts regarding knowledge, teaching, learning, research, innovation and their configurations in higher education have experienced drastic changes.*

The conceptual frameworks of this panel is constructed as a cube. The front face includes the filed of knowledge, teaching, learning, research, innovation; the right face refers to the global, national, local, institutional and individual contexts; and the upper face consists of dimensions of property, dynamics, functions, structures and process. (See figure 1 below)

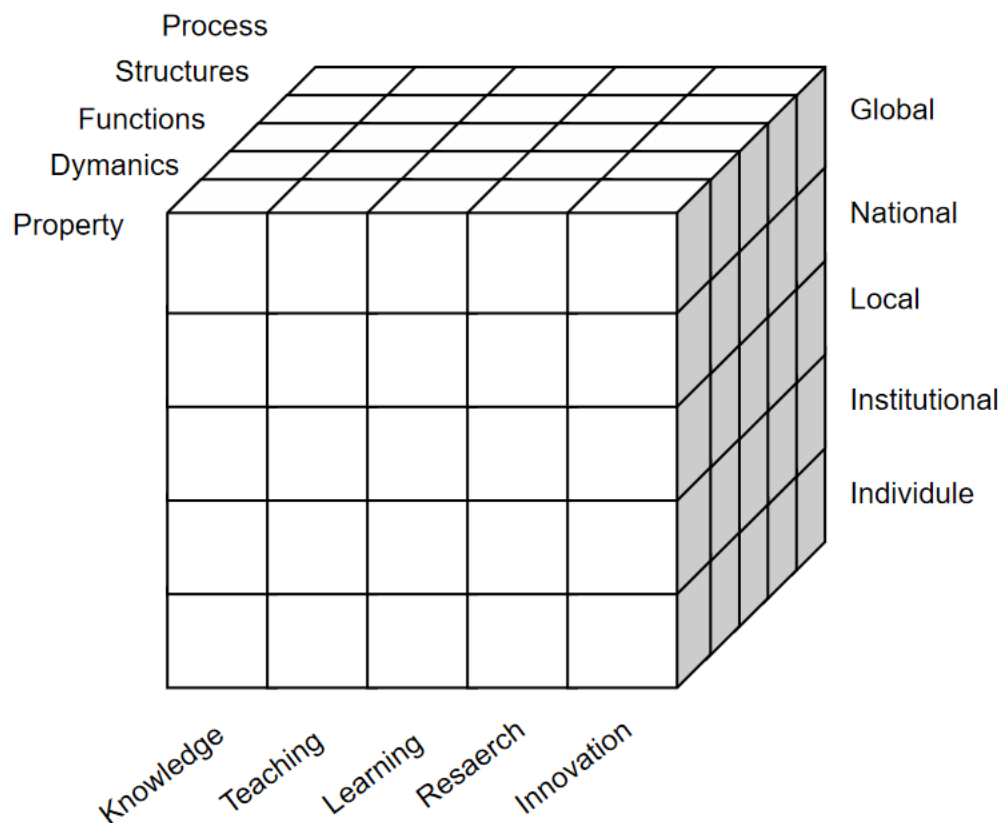


Figure 1 The analytical framework of this panel

Description of how the session will be structured

Four national experts (or research teams) from Germany, France, Canada and China will join this session onsite (See details below). They will share insights on the panel theme through **four papers** through aspects of national strategies, university

governance, universities' collaboration with outside stakeholders, and perceptions, practices and experiences of students and faculties.

Each of the four national experts will present their paper in 17 minutes. This will be followed by a 5-minute Q&A, allowing interactions with audiences.

The host of this panel is Ji'an Liu, professor in University of Chinese Academy of Sciences, who is also one of the caller of this panel.

Significance of the panel session to comparative/international education or the Congress them

This panel responds to the Congress theme, especially the sub-theme: *Strengthening knowledge, research and innovation systems(Underneath Governance of knowledge in a changing landscape)*

By inviting national experts in developed and developing economies to share insights, **this panel contributes to comparative education through** *understanding the convergences and divergences, in theoretical and practical dimensions, of national approaches in strengthening knowledge, research and innovation systems for a sustainable future through research-teaching-study nexus in higher education.*

Panel members and individual presentation

Panel members

1. Prof. Jean-Claude Ruano-Borbalan, chair Technology and sciences within society, National Art and Craft Conservatory, Paris
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4. Prof. Dr. Michael Hoelscher, German University of Administrative Sciences Speyer
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Each individual presentation

Presentation one

In excellence we trust: New Missions for Universities European and global perspectives

Professor Jean-Claude Ruano-Borbalan, chair Technology and sciences within society, National Art and Craft Conservatory, Paris

The paper traces first the evolution of knowledge production systems in the academic landscape, particularly over the past fifty years. Initially dominated by a strict separation between fundamental and applied research (the endless frontier regime) , a shift towards a "strategic research" regime emerged in the 1980s-90s, driven by global policies promoting a "Knowledge economy." This period witnessed the convergence of fundamental and applied research, with universities aligning closely with entrepreneurial and economic processes.

The paper highlights three major quite recent phenomena shaping knowledge production: the alliance of universities with economic processes, a focus on individual-level innovation and scientific production, and a strong connection between development facets, emphasizing responsible and sustainable practices.

Today, higher education institutions (HEIs) operate mainly in a standardized and globalized environment, characterized by uniform governance, objectives, and increasing dependence on financing, technology, and massification. HEIs have expanded their missions, emphasizing global, institutional, and organizational innovation. The evolving landscape necessitates universities to reevaluate their socio-economic roles and adapt without established guidelines.

The paper compares European excellence programs, such as the European Excellence Initiative (EEI), with case studies from France (Saclay and Lorraine University), Germany, China, and other Asian countries, considering American examples. It explores initiatives like European Universities alliances, aiming to strengthen the role of HEIs in innovation ecosystems, enhance links between science and business, and accelerate societal transitions.

In conclusion, the paper underscores the gap between innovation and excellence-based policies and the diverse strategies adopted by various actors in higher education and knowledge production systems. It emphasizes the need for universities to navigate uncertainties, innovate, and address resistance to change while considering national and macro-regional policies.

Presentation two

How Could Higher Education Research Be Reinvented to Forge Future-Oriented Universities?

Prof. Dr. Qiang Zha, York University, Canada

Higher education worldwide is now at a crossroads, facing the urgency of transforming existent patterns of organizing knowledge and delivering curriculum in order to effectively meet future needs (including fostering students' learning resilience to overcome constant changes and uncertainties, and optimizing human cognitive development) while improving relevance at the same time. Envisioning and re/orienting higher education for the new realities and future needs is a pivotal and vital undertaking. A few exciting experiments with such transformation are being spearheaded by institutions or initiatives like Minerva University, Singularity

University, London Interdisciplinary School, Olin College of Engineering, and Stanford 2025. They all aim to prepare students with essential competencies for the future life and society, and enable students to leverage knowledge to foster resilience, overcome uncertainty and solve complex problems with multiple disciplinary approaches. Nevertheless, they don't commonly appear on the radar of specialist higher education researchers, let alone being guided by the research outputs.

This presentation argues that the weakness in theoretical originality and innovation has ushered in a bottleneck for the field of higher education research to re/imagine the future of higher education; the status quo of fragmented and isolated research in this field has resulted in an inadequacy to capture the reality of higher education practices that increasingly require holistic effort and approaches. Hence, these render the field to fall behind and be unable to re/orient the practices. Inspired by the first principles thinking, this presentation advocates that the field must endeavor to be imaginative, interdisciplinary and holistic, in order to support and nourish a future-oriented higher education, via giving meaning to ambiguous informational cues and articulating viable interpretations and actions to cope with coming organizational and environmental demands. Specifically, the initiatives like Project Zero at Harvard (aiming to understand and nurture human potentials) should be called for to reinvent this field.

Presentation three

Deconstructing the phenomenon of 'University of Research Institute'

Yanru Xu, Ji'an Liu

University of Chinese Academy of Sciences

In 21st century, an innovative model of university has emerged worldwide, implementing the research-education nexus. These universities take advantages of the rich research resources from research institutes to cultivate talented graduates able to meet the challenges of the future.

To explore the rationale, dynamics and legitimacy regarding the emergence and development of the 'Phenomenon of University of Research Institute', this presentation investigates the case of University of Chinese Academy of Sciences (UCAS). UCAS is affiliated to Chinese Academy of Sciences, the leading national

research institute in China. Based on multiple source of data, including archived historical texts and interviews, this presentation constructs the ‘Phenomenon of University of Research Institute’ as a endosymbiotic evolving process of the complex adaptive system. Here, the complex adaptive system refers to Chinese Academy of Sciences which has kept adapting itself as responses to external requirements from the evolution of national knowledge, research and innovation systems.

The theoretical basics consisting of the endosymbiotic evolving include three dimensions: Property, Mechanisms and Process. The current state of such endosymbiotic evolving is a endosymbiotic structure - UCAS, who is an adaptive agent of Chinese Academy of Sciences.

Drawing on insights of the endosymbiotic theory originating from biology, and mapping them onto the system of higher education organizations, this presentation first advances understanding the new mode of research-education nexus in higher education, and their role in strengthening knowledge, research and innovation systems; and second, it contributes to studies on higher education organizations in terms of bringing in a new theoretical lens.

Presentation four

The Varieties of Capitalism approach in explaining observable differences in national higher education systems

Prof. Dr. Michael Hoelscher, German University of Administrative Sciences Speyer

The purpose is to discuss the usefulness of the Varieties of Capitalism approach (VoC) (Hall & Soskice 2001) for explaining observable differences in national higher education systems.

The VoC claims that different ways of organizing market economies can be similarly successful. In particular, Hall & Soskice distinguish between liberal market economies (LME such as US, UK, Australia) and coordinated market economies (CME such as Germany, Japan, Switzerland). While LME primarily rely on coordination via markets, prices and competition, CME put additional emphasis on networks, partnerships, contracts etc. This has influences on the innovation systems (e.g. Sternberg et al. 2010) as well as on vocational education and training (e.g.

Culpepper & Finegold 1999).

My hypothesis (tested in Hoelscher 2016) is that complementarities between varieties of capitalism and national higher education systems should exist as well.

To test this, case studies of two representatives of LME (UK) and CME (GER) are combined with broader quantitative country comparisons of 15+ OECD countries. Besides the REFLEX-study, additional data was used, for example from the World Bank, UNESCO etc. Where possible, comparisons over time were added.

Expected differences between national higher education systems can be indeed observed. LME exhibit higher participation rates in HE, acquired competencies are less specific and more general, and links between occupational fields and subjects are weaker. Currently, we are examining the role of privatization in HE within this context.

This study therefore links higher education to its national innovation systems in a comparative and theory-driven empirical way.