**Q1 Beaumaris Lounge Thursday 6 December 17.30 - 18.00**

***Present challenges to university construction, design and maintenance (0635)***

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It is estimated that there are over 26,000 higher education institutions (HEIs) (webometrics Ranking Web of Universities, 2018). The expansion of the tertiary sector is a world-wide phenomenon of huge financial significance. Many university buildings built centuries ago remain in service, bearing witness to former sound choice of materials and construction processes. HEI planners of today are under considerable pressure to accept the most economic bids. Instead of constructing for centuries, which may be more costly up front, campus buildings are being erected for shorter lifespans. However, later maintenance and renovation necessities are making huge demands on university and state capital. This paper, which is part of ongoing international research into administrative processes of HE estate management, presents decision-making involved in the procurement of new buildings and makes suggestions for the improvement of best practice, at both design and maintenance levels.

**1000 word paper outline**

HEIs typically contain libraries, lecture theatres, laboratories and seminar rooms. Over centuries they have been designed with many of these features, and in most cases there is some connection between the campus buildings and their surroundings, which may contain more, or less green. Various founding fathers had a vision of how the campus should appear, e.g. building design; open spaces; parkland; vistas, and in many early institutions such as Oxford, the University of Virginia or Bologna, buildings were made of high-quality materials. Indeed, many original buildings are still in service today (Coulson et al. 2010), even if some interiors may have since been re-allocated or re-designed. In this paper, which is part of ongoing constructivist and phenomenological international research which draws on a theoretical model of strategic capability (Thoenig & Paradeise, 2016) and which uses a number of methods including archival and online institutional research, documents from ministries, and interviews with main stakeholders, I examine young universities, e.g. those founded during the last 50 years (cf. THE ranking) and ask the following questions: How are architects being selected? Which problems are experienced post-occupancy? Are planners thinking more in longer or shorter terms? This research is important as HE maintenance is costly and to date there remains a considerable gap in our knowledge of university administrative planning processes, which this research aims to fill.

In architectural terms youth in 'young universities' is misleading as this does not mean that all of the buildings were constructed in modern times. The University of Potsdam, which celebrated its 25th anniversary in 2016, occupies three very different sites: the Philosophy Faculty is located within the "Neues Palais" (1763), which lies on the edge of park Sanssoucci; in rural Golm the university has erected futuristic buildings for its life- and natural sciences, whereas law, economics and the social

sciences are accommodated in modern red-brick designs next to Lake Griebniz. The university website states that two highly-modern laboratory and administrative buildings have been financed by subsidies from the Land Brandenburg because the faculties had acquired such a large amount of third-party funding for research projects which exceeded given space. This is a good example of an ongoing challenge experienced by HE planners. Researchers apply for funding, and when they are successful the institution may be stretched to allocate physical research space. Research may commence in spaces not ideally fit for purpose.

State-financed institutions are usually required to gain permission from the state before they can release a tender. Under European legislation, at least three bids need to be received. Competitions are one means of encouraging a number of architects to put forward designs and some of the world's leading architects have been selected, including Sir Norman Foster, Frank Gehry, Daniel Libeskind, the late Zaha Hadid, or Robert Stern (Morris, 2017). Their designs may be iconic and striking, however, a star architect is no guarantor for problems further down the line (Marmot, 2014; 2015). At the Vienna University of Economics and Business, a new library was commissioned to Zaha Hadid Architects. Soon after its official opening in 2013, however, large tiles started detaching from the starkly overhanging entrance structure as the adhesive used was faulty. Frank Gehry, who was responsible for Building 32 at the MIT, otherwise known as the Stata, was sued for "deficient design services and drawings" when masonry started cracking, leaks started and additional issues arose (Glahn, 2007). The Blavatnik School of Government at the University of Oxford, which was designed by Herzog & de Meuron and given a RIBA National Award by the Royal Institute of British Architects, is, according to interviews with university staff, difficult to manage in terms of heating and maintenance. All of the University of Regensburg's original buildings which were built in the 1970s are presently undergoing renovation. Work started in 2008 less than forty years after the foundation stone was laid and will last until 2026. Expenditure for one year's work in 2008 was €16,5 mil. (Gressner, 2008). A replacement building is needed for the natural sciences during the renovation process, which itself will cost a double figure million Euros. At the University of Oxford the Tinbergen building built by Sir Leslie Martin in 1970, which houses zoology and experimental psychology, was suddenly closed in February 2017 when asbestos was discovered. Staff and ongoing research projects needed immediate reallocation, while temporary buildings, which will house them until the new building is built, are erected elsewhere (BBC news, 19 July 2017). There are many more examples of post-occupancy problems, which raise a number of questions about the administrative processes pre-construction overall.

Firstly: architects are not necessarily specialists in the needs of higher education, as university design does not form a regular part of architectural degree curricula. In numerous interviews architects concerned that any building they had designed for higher education was, de facto, a prototype. Even *within* architectural practices there seems to be a lack of check processes that ensures experiences are shared.

Second: university leaders, especially those of fee-paying institutions, usually commission a star architect if the new building is to become an institutional flagship. Although the *physical* appearance of the building may be striking, if a stakeholder analysis has not been conducted in advance, then buildings may be erected which do not work as intended (Corcorran. 2014).

Third: due to financial constraints, architects may not always select the best possible materials (Cabe, 2005). The above-named Regensburg example is typical for many HEIs built in Germany during the 1960s and 1970s.

Fourth: The reduction of carbon emissions is a global concern and of significance to HE, however, to date there is no universal carbon footprint standard (Robinson et al., 2018). HEIs and their architects need to be made aware of the need for environmentally-friendly constructions and carbon management of existing estate.


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