

Research-Led Higher Education and 'The Bigger Picture'

Şerban Procheş¹ and Cecile Gerwel Procheş²

¹Discipline of Geography and ²Graduate School of Business and Leadership, University of KwaZulu-Natal, Westville Campus, P. B. X54001, Durban, 4000, South Africa

E-mail: prochess@ukzn.ac.za, gerwel@ukzn.ac.za

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Address for Correspondence:

Dr. Şerban Procheş,

Professor

Discipline of Geography

University of KwaZulu-Natal, Westville Campus

P. B. X54001, Durban, 4000, South Africa

Telephone: +27-31-260-1278

Fax: +27-31-260-7317

E-mail: prochess@ukzn.ac.za

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ABSTRACT There is increasing pressure on higher education institutions to be research-driven, and consequently populated by individuals whose main strength is research. It has already been pointed out that the skills necessary to make a good researcher are not the same (and in some cases not even easily compatible) with those that make a good teacher. Besides this simple observation though, there are other implications that this situation has on how teaching content is structured in terms of breadth and depth, and how breadth and depth of knowledge in turn may affect graduates' knowledge in their field, but also broader world views. In this theoretical paper, we briefly address the interaction between research assessment, research specialisation and lecturers' interests, and raise questions as to how this may impact the graduates. In particular, we place this discussion in the context of split-brain theory (breadth being a right hemisphere attribute, and depth added primarily by the left

hemisphere) – and highlight the potential of this theory in enhancing the higher education experience.

INTRODUCTION

It appears the “right brain-left brain” theory popular in the mid-twentieth century, although largely given up thereafter (Harrington 1987), was not entirely wrong. The two hemispheres of the human brain do serve different functions, although not those initially attributed to them. The left hemisphere is not so much about rational thinking, as it is about adding detail to things we already know. The right hemisphere is not so much about emotion, but about seeing the bigger picture, and staying open to the unexpected. There is little doubt that today we live in a left-brain world (McGilchrist 2010). This is not without relevance to higher education. Having research at the core of academic activities is tremendously important to what and how students get taught.

On the one hand, research has in recent years become increasingly specialized (Belmaker et al. 2010), and interdisciplinary approaches are often viewed as a lack of focus by other academics and funding bodies alike. Fields of research act in a very much left-brain manner, by simply adding details to already crystalized cores of knowledge. Where interdisciplinarity is encouraged, this is often in a focused sort of way, which soon results in the addition of new cores of knowledge, but not in keeping communication channels open between fields (Rafols et al. 2012).

On the other hand, university teaching should ideally ensure first that the students get the bigger picture of whatever they are studying, and only then start adding detail – unless there is an implicit assumption that students bring along that bigger picture from school level (though constructivist approaches argue that learning cannot occur unless present knowledge is brought to the fore; McMillan 2007). This separation between a ‘breadth phase’ and a ‘depth phase’ resulted in the initial distinction between undergraduate and postgraduate studies, although the differences between these two stages have recently become more complex (Lindsay et al. 2002).

Academic staff primarily prepared for research (especially those with postdoctoral experience – see Rybarczyk et al. 2011) are often thrown in at the deep end of a poorly prepared teaching career (Quinn 2003), many having already figured for themselves in their research-only days that dwelling on the bigger picture is unlikely to take them too far. In this context, they often fail to attain the ‘teacher’ status as defined by McMillan (2007) –

implying that they do not assume a role of shaping the student in the field, but remain at the ‘lecturer’ status, merely imparting knowledge. At a glance, this situation seems like a perfect recipe for schizophrenic academics and poorly prepared students. Of course, things vary across countries, institutions, and fields of knowledge.

In this paper, we review already published evidence, trying to gain some insight into the following questions: (1) do current research structures truly inhibit breadth, and if so, how exactly? (2) could teaching inform research and make lecturers be interested in broader topics? and (3) how can we use split brain theory to bring research and teaching closer together?

RESEARCH STRUCTURES AND THE BREADTH OF RESEARCHERS’ INTERESTS

Knowledge accumulation is either driven by a pure desire for knowledge, in which case completeness would be ideal – and so breadth should be preferred over depth, or by more practical purposes, in which case there are areas of immediate interest, and depth takes precedence at the expense of breadth (*e.g.* Crow and Tucker 2001). The latter approach is viewed as critical for justifying research, and while universities were initially bastions of ‘pure’ research, they are increasingly switching to ‘applied’ research – although the distinction between the two is not as clear as the words may suggest (Calvert 2004).

The needs of society change in a very dynamic fashion. However, once a field has been identified as critical (through its applications or otherwise), research funding allocated to it can result in the building of research capacity which then needs to justify its continued existence. While measuring research impact is important in achieving some clarity in these respects, the recent developments in this direction have also provided fields of research with a means of self-justification (Brown and Duguid 2001).

Thus, although evidence of practical applications is still taken into consideration when dividing the funding pie at international, national, or institutional level, measures such as journals’ impact factors and individual researchers’ H-factors (*e.g.* Ball 2005) are increasingly viewed as key, generally without looking in detail at self-citations and within-field citations. This means that, at least in certain cases, research can now be viewed as high-impact simply because it cites itself. Within-group citation is particularly relevant here, as it creates boundaries around certain research groups and narrow research fields. Citations within such a field further increase the field’s credibility, whereas collaboration with other

fields, institutions, groups and authors (especially if these are viewed as low-ranking, and this could be specifically because they do not self-cite as much) has been shown to actually decrease research impact (Jones et al. 2008). This can explain why, although interdisciplinary studies are apparently on the increase, the percentage of all research they represent is actually decreasing (Bhupatiraju et al. 2012). Essentially, the use of citation measures can result in suppressing interdisciplinary research, and this conclusion has recently received quantitative support (Rafols et al. 2012).

The next step would be to establish whether this sectarian approach to research already impacts university learning outcomes.

BREADTH OF INTERESTS AND THE RESEARCH-TEACHING NEXUS

What can be said conclusively at this stage about sectarian research and its impact on teaching is that teaching definitely suffers from the rejection of concepts originating in other disciplines (the “Not-Invented-Here” syndrome; Kathoefer and Leker 2012). Jawitz (2007) found that new academics are shaped by two distinct communities of practice in higher education. The first is the research community of practice which is focused on research and providing teaching to postgraduate students, and is composed of academics who are more senior and some middle-level. The second group, the undergraduate community of practice, comprises junior and some middle-level staff who are responsible for delivering undergraduate level teaching. This divide affects new staff who have to develop a research profile and this may align their research interests with prevailing research interests, whereas new academics who may have a different interest from the dominant area or who are unsure about their research interests, may be left on the periphery.

This state of affairs is not unrelated to the applicability of both research results and learning outcomes. Schon (1985: 9) argues that university-based schools of profession operate under an assumption that “academic research yields useful professional knowledge and that the professional knowledge taught in the schools prepares students for the demands of real-world practice”, but that some researchers in professional schools nevertheless produce very little research of value to practitioners.

Nevertheless, recent articles on how research and teaching fit in together in higher education institutions tend to focus on positive aspects. Quinn (2003), for example, places an emphasis on the relationship between research and teaching by arguing that lecturers should be informed of the comprehension and advancement of knowledge in their disciplines, in

order to facilitate learning. O' Brien (2002) notes how essential lecturers' epistemological understandings is in ensuring an effective learning experience.

There is an ample body of literature looking at the "research-teaching nexus", distinguishing between research-led, research-informed, research-tutored and research-oriented teaching, and indicating how each one can make universities a better place (Eslen et al. 2009). Very few such articles point out any negative aspects resulting from putting the two together. Lindsay et al. (2002) found that lecturers' engagement in research made them appear more reliable and eager in the eyes of both postgraduate and undergraduate students. More specifically though, undergraduate students tended to feel left out of research, whereas postgraduate students regarded themselves as stakeholders, but were of opinion that lecturers had to engage in relevant and useful research, as opposed to being overly academic (these authors stressing that present-day postgraduates are less willing to engage in theoretical research than was the case in the past).

Students who took part in the research of Healey et al. (2010) indicated several less-than-ideal things about their lecturers being involved in research, but the most commonly reported among these was simply the fact that these two activities compete for their lecturers' time. More relevant here, and also frequently cited in that study, was a lack of interest in teaching on the lecturers' side; even more relevant, but seldom noted, was the fact that lecturers' "...research interests distort[...] the content of what they teach" (Healey et al. 2010: 242) – although how exactly this distortion happened was not mentioned.

Buckley (2011) indicated that students and lecturers have different perceptions of how teaching and research fit together, but that they also have much in common. More radical was the review of Robertson (2007), where the author pointed out that, insofar as teaching and research success can be measured, the two are not really related. The same work highlights the difficulty of bringing into teaching the kind of critical thinking needed in research, and concedes that "...it may be possible for (some) students to graduate from higher education study with little awareness of the contested and constructed nature of knowledge", and that there may be "...a dissonance between the rhetorical objectives of the (liberal) university and the reality of belief and practice at a local, disciplinary level" (Robertson, 2007: 552). This would be rather alarming, considering that higher education is becoming increasingly complex, with employers expecting graduates to display transdisciplinarity and problem-solving skills (O'Brien, 2002).

Robertson's (2007) alarm bell, as cited in the paragraph above, is highly relevant here, providing a link between breadth of knowledge within one's own field of study and one's

overall worldview. O'Brien (2002) challenges us in the higher education domain to become aware of how we view knowledge and knowing but also how students see it and how we can reconcile this. This therefore places emphasis on academics becoming more student-centered, but also reflective in designing curricula. Quinn (2003) notes that lecturers have to first critically engage their own beliefs about the epistemological and ontological nature of their disciplines, before considering how to present students with the discipline.

HOW THE NEXUS STARTED, AND WHERE IS IT GOING?

The research-teaching nexus started with Humboldt's ideas (Eslon et al. 2009) and Humboldt was *the* encyclopedic spirit by definition. Looking even further back, we also find higher learning to be encyclopedic and furthermore holistic, being driven by worldview approaches. This was the case across the world, from Indian gurukulas and Buddhists schools to medieval European institutions, with teaching being centred on sometimes religious but often purely philosophical concepts, subsequently refined top-down (Perkin 2006). From a split-brain perspective, those were days when the right and left hemispheres were running the world in good balance (McGilchrist 2009). The modern shift in the philosophy of education from promoting breadth to focusing on depth of knowledge originated in 19th century US (Florer 1968) – yet it's the US that still promotes in some cases a balance of the two (Nightingale and Scott 2007).

The impact of the search for research excellence on the functioning of universities has already been decried (*e.g.* Martin 2011). But what about the graduates produced in the process, who are expected to function as the educated tier of entire societies? Can the present-day (already left-brain-driven society) truly benefit from the coexistence of teaching and research in universities, or is the teaching-research nexus just a fashionable phrase trying to justify *a posteriori* these institutions' current structure?

We feel that there may be serious implications, for both individuals and society. From breadth within one field, lack of cohesion has likely spread into the realm of the personal worldview. At the individual level, holistic thinking is relegated to the realms of religion and philosophy. In universities, this is left to those who study these fields, a dwindling cluster. In a societal (and especially multicultural) context, world views often become in-group only topics, dividing rather than uniting society.

Our brief enquiry into such matters was intended more as an appetizer for further questions, than as a fully formed set of answers. The self-validating nature of today's

dominant left-brain institutions (McGilchrist 2009) means that our results could only be limited, and that searching for them has been somewhat frustrating. There are, however, fascinating developments, which bring a promise that split brain theory at individual level can be highly relevant to defining one's career path (Morton 2003, Morton et al. 2014), and applicable in an educational context (Gülpınar 2005). How this may or may not in the future influence the structure and functioning of academic institutions and the worldviews of graduates, remains to be seen.

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