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Emergent learning and threshold concepts in tertiary education

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Foreword

Ah, but for the capacity to look forward! The notion of a threshold concept was first expressed by me in 2001 at a two-day meeting held at the University of Edinburgh on 8–9 February. The occasion was routine: To discuss research business in the context of the 'ETL Research Project[i]'. In the midst of one particular monologue on an important strand of the project (to do with assessment and outcomes of learning) I expressed the view that there might be something more energising and productive to discuss in that context—a new lens as it were—in the form of what I referred to as a *threshold concept*.

At that moment, everything I knew about variation in student learning was compressed into a few unrehearsed sentences that fell on mostly deaf ears. Politely ignored, the business of the meeting droned on and the minutes record no trace of this brief moment of heresy. Ray Land was at that meeting and after it ended he sidled up to me and basically said, "Let's do it!". Thus began an adventure of exploration and discovery. It soon dawned on us that our subsequent activities were being frowned upon. Alarm bells starting ringing within the project. In fact, at a later project meeting we were called to attention behind closed doors and chastised like two disobedient school children. Our response was to merrily continue on our way to see how this little gem of an idea was clasped, and sparkled, in different disciplinary settings and subject landscapes. There are some good stories to be told here, including the intriguing end game of the project in which 'threshold concepts' sparkled as "An important insight emerging from the project's work in economics" (Hounsell et al., 2006, p. 5). And that is the beauty of heresy: It forces you to think for yourself.

This special edition of the Waikato Journal of Education presents a stimulating collection of papers that reports many new sparkles across a range of threshold concept terrains. With, in one case, a bit of heresy as well which is good! Remarkable is that every single paper makes a distinctive contribution to the threshold concepts literature in terms of discourse, theory, further examples of threshold concepts, or new research questions.

How then to provide some conceptual organisation for what awaits the reader? Recent work by Meyer and Timmermans (2014) provides a convenient (and timely) *practitioner* theoretical perspective for how to 'respond' (to variation in students' learning of threshold concepts) using Integrated Threshold Concept Knowledge (ITCK) as a basis for repertoire in doing so. Essentially ITCK represents a fusion of different 'types of knowledge' that are empirically based, and socially constructed, in the learning context of specific *transformational* subject matter.

Meyer and Timmermans emphasise that the construction of such knowledge in that context begins with analyses *for*, and *of*, threshold concepts. To be of any value it is also emphasised that such analytical endeavour, and the knowledge thus created, must be actionable; that is, form one basis for contributing to a repertoire of 'responses' and interventions (in pedagogic, student learning, and curriculum domains) that impact positively on the student learning experience of threshold concepts.

In the hitherto relatively unexplored context of religious education and spirituality, the paper by Mudge (this volume) is exemplary in its analytical focus on methodology and episteme as one basis for constructing ITCK. Another source for constructing ITCK lies in knowledge of how students vary

[i] Enhancing Teaching-Learning Environments in Undergraduate Courses, funded at that time as part of a broader ESRC Teaching and Learning Research Programme.

in their apprehension of, and learning engagement with, threshold concepts. Included here is knowledge of variation in epistemic inclination: The tension that can exist between students' contrasting epistemic 'views' of subject matter. More generally epistemic inclination may extend to a particular part of, or entire subject domain such as undergraduate physics. A resultant problem is then that some students comprehend physics as a product of mathematical expression rather than a science based on observation. The 'epistemic games', including mimicry, that represent this tension are well described by Wilson in this special issue and represent a source of ITCK. The point here lies less in a rehearsal of how physics education research has attempted to deal with attendant problems of pedagogy and more in a recognition that ITCK can contribute substantively to disciplinary-contextualised professional development programmes for university teachers.

In quite different terrain, doctoral supervision has provided a context in which to explore and re-interpret the learning journey of (postgraduate) students in terms of 'threshold crossings' that may be, but are not confined to, learning episodes in which threshold concepts are embedded. The paper by Johnson sits well here, but also importantly contains an extended discussion on the implications of work in this area for the professional development of supervisors. More generally, there is again a resonance with ITCK because 'supervision' is a special form of 'teaching' and research-as-learning is a journey characterised by many 'threshold crossings', a knowledge of which forms a basis in the 'response' domains already referred to.

Four other papers (Parker and McGill, Rowe and Martin, Moffat and McKim, Harlow and Peter) make a substantive contribution to the theorisation and practicalities of *curriculum design* (in respectively engineering, the performing arts, a foundation Bachelor of Arts course, and more generally from a combined cross-disciplinary perspective of arts, leadership, doctoral writing, and electronic engineering). We see here 'responses', operating primarily in the curriculum domain, to support the pedagogy, student learning, and assessment, of threshold concepts and (perhaps more generally) threshold crossings in the performing arts, and leadership. The point, trenchantly made by Harlow and Peter (this volume, p. 9) is that 'a curriculum change may be the first step where lecturers can create the conditions that support [the learning of TCs]. A fifth paper by Hedges is also effectively an example of a curriculum 'response', detailed as a case study in the process of embedding threshold concepts in an MBA economics course

Finally, the paper by Scott radically revisits the liminal state in proposing that a successful learning journey 'through the portal' involves (this volume, p. 116) 'a phase change in the ontological organisation in the mind of the learner'. There is a captivating argument here that rests on the conjecture that threshold concept comprehension requires mental ordering of the connectedness of associated ideas – in effect a reduction in *entropy*. We are in exotic terrain here. *Hamba kahle!*

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References

Hounsell, D., Entwistle, with Anderson, C., Bromage, A., Day, K., Hounsell, J., … Xu, R. (2006). *Enhancing teaching-learning environments in undergraduate courses* (Final report to the Economic and Social Research Council on TLRP Project L139251099). Retrieved from http://www.etl.tla.ed.ac.uk//docs/ETLfinalreport.pdf

Meyer, J. H. F. & Timmermans, J. A. (2014, July). *Integrated threshold concept knowledge*. Plenary paper presented at the 5th biennial international Threshold Concepts Conference, Durham, England.