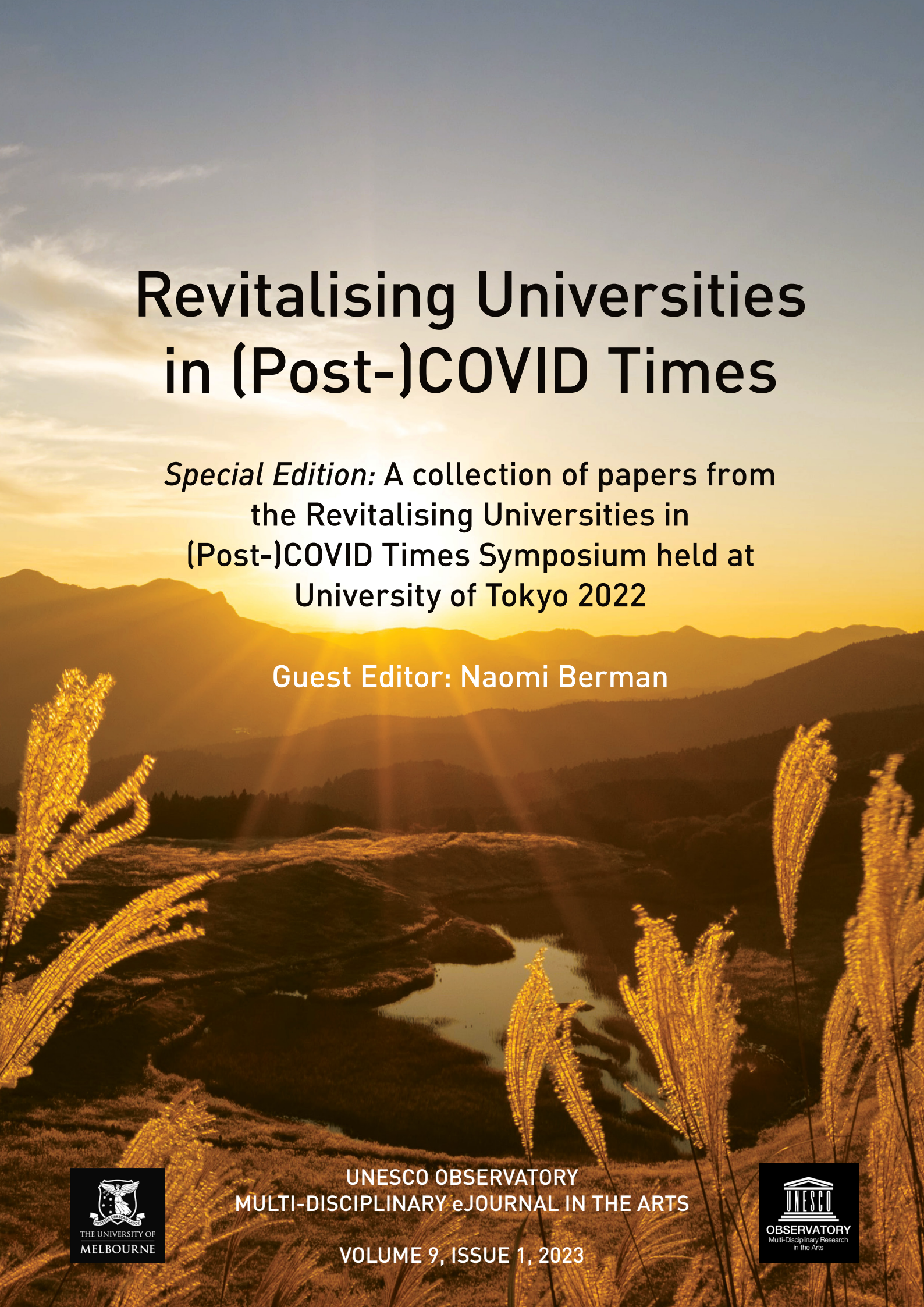

Revitalising Universities in (Post-)COVID Times

Special Edition: A collection of papers from the Revitalising Universities in (Post-)COVID Times Symposium held at University of Tokyo 2022

Guest Editor: Naomi Berman

THE UNIVERSITY OF MELBOURNE

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INTRODUCTION

This special Issue presents a selection of papers presented at the Revitalising Universities in (Post-)COVID Times Symposium, held at the University of Tokyo, November 2022. This hybrid event gathered academics, educators, and experts from Australia, Japan and other regions to discuss the future of higher education as universities navigate pathways out of the pandemic. The experience of the pandemic may vary between countries based on cultures, expectations, and social organisation, therefore exploring a diversity of experiences and expectations as universities reopen offers a fruitful point of differentiation and comparison between globally diverse educational spaces.

Echoing Connell's original call to rethink the 'good university', COVID has thrown into question taken-for-granted notions about the position of universities, forcing a reframing of understandings around their social purpose. The pivot to online during the pandemic has highlighted the potential for digital technology to transform the way we teach and learn. Yet it has also become clear that such transformation does not come without its social, economic and wellbeing costs. Indeed, questions around whether the response measures introduced by universities across the globe early in the pandemic are still valid and viable need to be asked, as institutions decide what gets kept, thrown away, amplified, or diminished. The symposium provided a space for reflection on these questions as well as broader philosophical and theoretical deliberations on the 'good university'.

Naomi Berman
Guest Editor

THE UNIVERSITY AS A LIVING SYSTEM

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BIOGRAPHY

Dr Stanley Frielick is a senior lecturer in Te Ara Poutama, the Faculty of Māori and Indigenous Development at the Auckland University of Technology (AUT). His academic activities span a range of interests and experience across a number of institutions in Aotearoa New Zealand, with previous leadership roles in higher education development and e-learning. He currently teaches undergraduate courses, supervises postgraduate students in different fields of study, and develops new approaches to learning and research in the digital humanities.

ABSTRACT

Revitalising the university in the context of the pandemic and climate change requires a new ecological framework. Here the institution is seen as a living ecosystem in which information is transformed into knowledge through the entangled processes of teaching, learning and research, which optimises the system for deep approaches to learning. This idea of the university entails a shift from a Cartesian-Newtonian view to an ecological/relational epistemology.

An ecological perspective focuses on the relationship of the individual with their physical environment and views the world as an interconnected and interdependent whole. This implies that we return to nature as a model for cognition and the design of institutions rather than the abstractions of mechanical and dualistic reason. In this view research and teaching exist in a symbiotic relationship to each other, in a new concept of the university as a living system.

KEYWORDS

Learning, Teaching, Ecological, Living Systems, Deep Approaches

In 1978 Gregory Bateson wrote a memorandum to his fellow members of the University of California Board of Regents, explaining a comment made during an Educational Policy Committee meeting when Bateson remarked that:

> Current educational processes are a 'rip off', from the point of view of the student....It is a matter of obsolescence. While much that universities teach today is new and up to date, the presupposition or premises of thought upon which all our teaching is based are ancient and, I assert, obsolete. (Bateson 1979, p. 231)

In this short memo Bateson links the causes of obsolescence in teaching to the structure of the university itself, which in his analysis is rooted in the assumptions of Cartesian-Newtonian thinking, and needs to be addressed by a new unity between mind and nature in the ecology of ideas that constitutes the institution. This deep connection between mind and nature is a necessary unity for revitalising the university in these (Post -) COVID times.

In *The Moral Collapse of the University*, Wilshire (1990) concurs with Bateson's diagnosis that the problems of the university are rooted in the obsolete Cartesian-Newtonian worldview of seventeenth century science. For Wilshire, the university no longer educates. Its moral collapse is the abandonment of responsibility for teaching by the professors who have been professionalised into the split and fragmented specialisations of their research fields. The process of academic professionalisation closely mirrors the philosophical bias of the modern university. In this view the self is seen as a purely thinking substance separate from its body and independent of the social and physical environment that surrounds it.

The solution posed by Wilshire is to address the moral collapse of the university by framing its theory and practice within the ecological perspective. One such process is the development of ecological models of teaching/learning which actively counter dualistic and mechanistic assumptions. Another is the reconceptualisation of the university as knowledge ecology or living system.

In this view the systems and subsystems that constitute an institution of higher education are comparable to a living ecosystem in which information is transformed into knowledge. This understanding of the university entails a profound epistemological shift from a mechanistic/dualistic or Cartesian-Newtonian view to an ecological/relational epistemology:

> It is time to wake up to the fact that we live in an interconnected world, embedded in a fabric of relationships that requires us to pay attention to the dynamics of systems, not isolated individuals, buildings, or events. As we try now to leave behind our rusting machine-image concepts of organization, it is a relief to notice that we are surrounded by life itself, the natural world which is adept at change, unfathomably complex, and filled with systems that support increasing diversity. (Wheatley 2001, p.5)

The ecological perspective focuses on the relationship of the individual with their physical environment and views the world as an interconnected and interdependent whole. This implies that we return to nature as a model for cognition and the design of institutions rather than the abstractions of mechanical and dualistic reason. An ecological awareness implies the renewal of knowledge as a unified field in which science and the arts, and research and teaching, exist in a complementary and symbiotic relationship to each other, in a new concept of the university as a living system (Capra & Luisi 2014).

Barnett (2018) points towards this mode of thinking, and sets out his vision of *The Ecological University*, where a new idea of professional life as an ecosystem of a loose assemblage of elements, systems and ethics informs the idea of the university. For Barnett the ecological university is a feasible utopia, that can be realised through a detailed understanding of the seven ecosystems - knowledge, social institutions, persons, the economy, learning, culture and the natural environment – in which the university is embedded. The university has a responsibility to consider ways in which it can engage with the world proactively, and ecological thinking has to run right through a university at all levels and in all of its activities.

But despite the increasing amount of literature on ecological perspectives, we have not seen major changes in the underlying structures and assumptions that inform the idea of the university. To a large extent research and teaching are still separate, and teaching seems to remain grounded in mechanistic notions of information transmission, rather than an interconnected dynamic system of knowledge formation. As we know from student learning research in the 1980s and 1990s, these outdated notions perpetuate a surface approach to learning which is inadequate for the challenges of a complex world. In this article I propose an ecological model of teaching and learning, and an interconnected view of research and teaching, that can foster deep approaches to learning and contribute to the idea of the university as a living system.

Nora Bateson's concept of 'warm data' is an important aspect of this living systems perspective:

> Warm Data is a specific kind of information about the way parts of a complex system, such as institutions in society, or departments of organisation, come together to give vitality to that system. By contrast, [cold] data will describe only the parts, while Warm Data describes their interplay in context (Bateson, N. 2017).

The models presented below show how the different elements of learning, teaching and research come together in the sense of warm data, to give vitality to the system.

AN ECOLOGICAL MODEL OF LEARNING AND TEACHING

The ecological model builds on earlier theories of learning and teaching developed in student learning research in the 1980s and 1990s. These are the phenomenographic theories of deep and surface approaches to learning (Marton & Saljo 1976, Trigwell & Prosser 1996), the relational perspective (Ramsden 1992), and the systems of view of learning and teaching (Biggs 1999). While there are differences between these theories, they have the following characteristics in common:

1. Deep and surface approaches to learning.
2. Variation in conceptions of teaching and learning.
3. The close relationship between learning approaches and outcomes.
4. The ways in which perceptions of the context influence approaches and outcomes.
5. The influence of other aspects of teaching such as assessment, teaching modes, content/workload, and course design on approaches and outcomes.
6. A systems view of teaching/learning, in which an approach to learning is a description of multiple relationships between different parts of the system.

These theories gesture towards an ecological view of learning and teaching, but a living systems perspective needs to integrate their common characteristics with ideas such as the ecology of mind (Bateson 1979), concepts from the sciences of complexity (Davis & Sumara 1997), and biological approaches to cognition such as the enactivist approach (Valera, Thompson and Rosch 1991). These living systems ideas include the concepts of non-linearity, emergence, complexity, co-evolution, mind as immanent, embodiment, learning as dialogical enquiry, communities of learning and practice, the shaping influences of power relations, networks, relationships, variation, and process as primary. They can be summarised in the following key principles:

1. Both the cognizing agent and everything with which it is associated are in constant flux, each adapting to the other in the same way that the environment evolves simultaneously with the species that inhabit it.
2. Learning (and similarly teaching) cannot be understood in monologic terms; there is no direct causal, linear, fixable relationship among the various components of any community. Rather, all the contributing factors in any teaching/learning situation are intricately, ecologically and complexly related.
3. Cognition is thus not the passive representation of a pre-existing world 'out there' but rather the ongoing bringing forth or enactment of a world through the biological processes of living.

4. Learning/teaching is a process of mutually enacting meaning the student and teacher bringing forth a world together. The teacher's actions are shaped by her own dynamic structure but are also occasioned by the interactional dynamics with students in the act of teaching/learning.

5. Cognition is not located within the abstractions of a decontextualised individual consciousness, but rather in the processes of shared action.

6. Knowledge is not separate from the world but embedded within it in a series of interrelated systems.

7. The individual self is thus constituted in a network of relationships.

8. Enactivism is an ecological epistemology where individual mind is an emergent property of interactions between organism and environment.

9. An enactivist view of the teaching/learning ecology sees teachers and learners embedded in a dynamic system of relationships between people, information, knowledge, and the institutional structures and processes that form the context of learning. The system acts to generate knowledge by transforming information into understanding.

10. Deep and surface approaches are emergent properties of the learning/teaching ecosystem.

11. A coherent system will optimise the probability of deep approaches to learning, with consequent outcomes of functioning knowledge which can be applied to new situations or transferred to different contexts.

12. An incoherent system will minimise the probability of deep approaches to learning and will tend to generate low-quality learning outcomes, which are essentially replicated information with no application to new situations or transferability to different contexts.

An ecological model of learning/teaching based on these principles, and integrating the key characteristics of the earlier student learning research, would look like this:

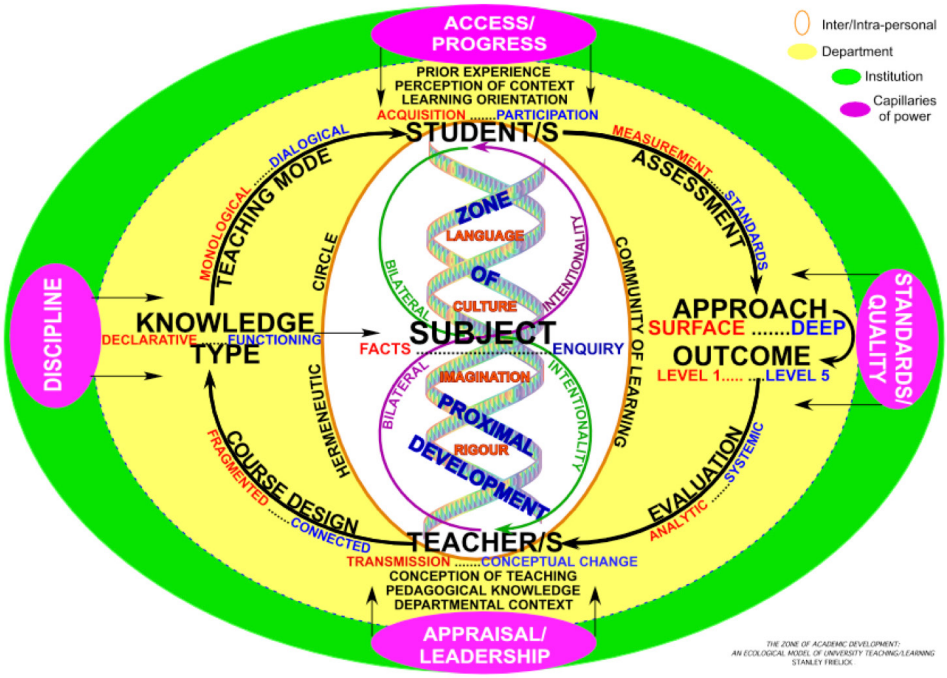

Image 1.
The zone of academic development: An ecological model of university teaching/learning, Stanley Frielick.

The model resembles a biological cell, with a nucleus of DNA at the centre and two zones in further layers around the centre.

It emphasises learning as an enactive and embodied dialogical process, embedded in networks of power relations in the capillaries and information pathways that constitute the learner in their environment. Natural ecologies are systems of energy exchange, conversion, and transformation. Information or learning ecologies (Nardi & O'Day, 1999) exhibit similar processes of information exchange, conversion and transformation. In this sense a learning ecology is *a system where information is transformed into knowledge by teachers and learners through dialogical interaction in a community of enquiry into the subject.*

The model depicts three layered and interrelated zones. The inner or inter/intra-personal zone (white - Zone 1) represents the network of communication pathways that constitutes relationships between student/s, subject and teacher/s in the zone of proximal development. These are informed by the enactivist understanding of learning and cognition, in which the student-subject-teacher relationship is indivisibly part of the larger learning context.

The enactivist understanding is also a biological view of cognition and learning, signalled by the DNA double helix which is at the centre of the model.

Surrounding this inner layer is the departmental zone (yellow - Zone 2), in which the process of teaching/learning is represented cyclically to convey the non-linear nature of a knowledge ecology. Each phase of this cycle is marked by a continuum, along which possible positions in particular contexts can be related to the variation in approaches and outcomes. The outer layer (green - Zone 3) contains the nodes of capillary power that shape and influence the teaching/learning cycle and inter/intra-personal relationships in the enclosed layers.

1 – THE INTER/INTRA PERSONAL ZONE

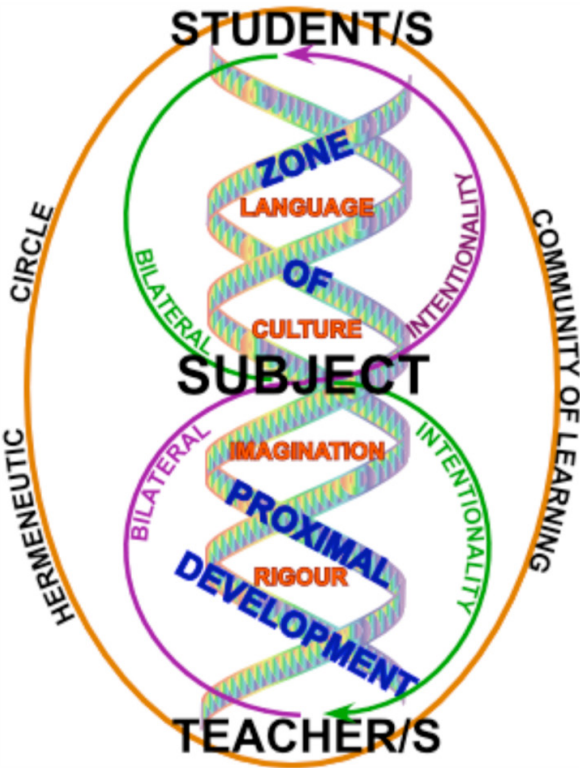

Image 2.

In an ecological postmodern frame the basis of pedagogy is *enactive* - the dependent co- arising or co-emergence of knowledge in a community of learning or inquiry. There is a strong emphasis on the conception of language as a process wherein relationships evolve through the continual feedback of information exchanges (Bateson, 1979). Here there is no conception of the self as separate from the world. *Teachers and students are entwined in webs of language and thought in processes of bilateral intentionality in the zone of proximal development.*

The placing of the DNA double-helix symbol at the centre or nucleus of the inner core is primarily metaphoric. It signals that the processes of learning and cognition are inherently biological, embodied, and share similarities with the discontinuities and emergent processes of evolution. DNA is a symbol here for the enactivist understanding of mind and the ecological approach to teaching/learning developed in this study. On a speculative level, it suggests that emerging understandings of genetic function may shed a great deal of light on the biological bases of learning.

An ecological or enactivist view demands an undivided conception of the teacher- subject-student relationship. In an ecological view the teacher and students are participants in co-creating understanding of the subject. The relationship is dialogical, dynamic, non-linear, holistic and multidimensional. This is a *subject-centred* view of teaching/learning, which avoids the pendulum-like tendency for educational fashions to oscillate between teacher-centred and student-centred views of education.

Zone 1 of the ecological model thus presents a transformative and participatory view of learning as a dialogical process that leads to coherence and enactment of meaningful knowledge in practice. This is a hermeneutic, dialogical conception of teaching and learning, rooted in a biological view of cognition that is integrated with an expanded understanding of the zone of proximal development. This view that transcends the dualistic assumptions of a modernistic pedagogy that still tends to inform the practice of university teaching, where notions of learning as the creation of identity through meaningful participation in the subject still remain alien to many lecturers.

2 – THE DEPARTMENTAL ZONE

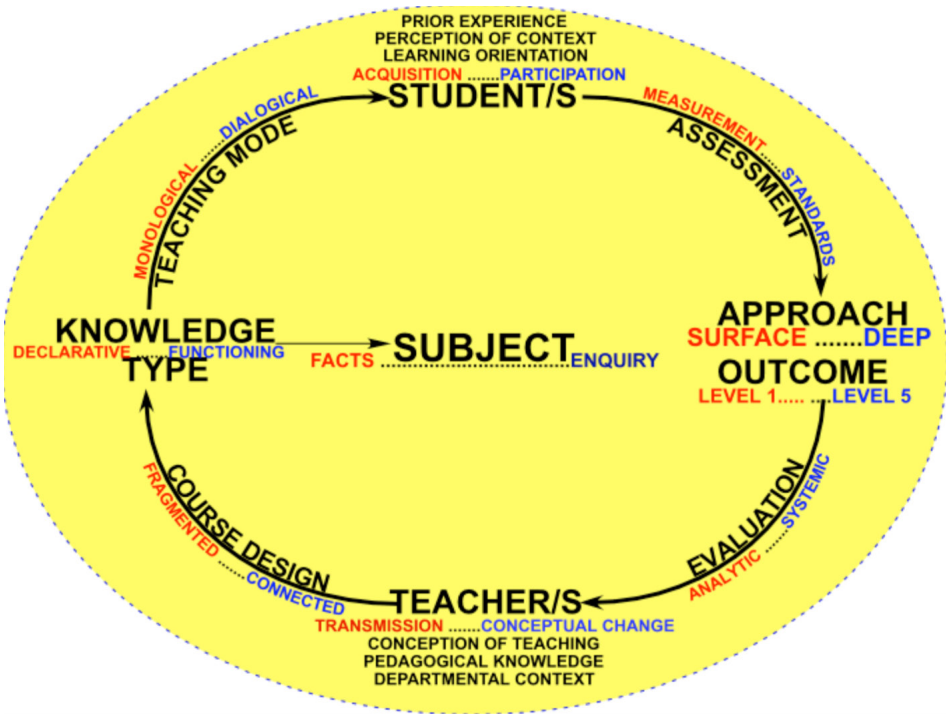

Image 3.

In a university, departmental and institutional contexts are significant influences on conceptions of teaching. From an ecological perspective the pattern which connects the items of learning (Bateson, 1979) is the key to integrating the main findings of the earlier student learning research, modelled here as a cycle of the eight phases or zones of the teaching/learning ecology (i.e. Teacher - Course Design - Knowledge Type - Teaching Mode - Students - Assessment - Approach/Outcome - Evaluation).

This zone captures the salient features of the pattern which connects the phases of the teaching/learning process to the outcomes of learning. The student learning research theories discussed above show this in linear terms, whereas the cyclical depiction here signals an ecological postmodern sensibility characterised by non-linearity and acausal relationships. Each aspect of the cycle is associated with a descriptive continuum of variation which represents a spectrum of possibilities. The idea here is to graphically represent a synthesis of the influences on deep and surface approaches to learning already described in the earlier learning research literature.

The colour-coding at the different phases of the model is intended to show the pattern which connects the continuum at each phase to the relationship between approaches and outcomes. This is a non-linear, acausal pattern that shows that the optimal conditions for deep approaches are generated by teaching approaches and conceptions that are located towards the 'blue' end of the continuum at each phase or node. A teaching/learning system that is directed towards the 'blue' end of the spectrum will increase the probability of deep approaches and high-quality outcomes. In terms of chaos theory the point on each continuum in a particular teaching/learning situation is metaphorically equivalent to a 'strange attractor' that provides the 'basin of attraction' around which the variation in learning approaches and outcomes will tend to settle.

For example, it is possible to conceive of a course where the teacher holds a predominantly transmission conception of teaching, and students are primarily orientated towards acquisition of knowledge, with fragmented course design, mainly monological teaching modes, subject content based largely on declarative, factual knowledge, a norm-referenced mode of assessment dominated by recall of facts, and an analytic reliance on quantification in course evaluation. In terms of the ecological model the cumulative effect of these interacting processes will act as a basin of attraction that will 'pull' the teaching/learning system into a state where surface approaches to learning are prevalent.

Zone 2 then is a reframing of the earlier student learning models within an ecological discourse. It integrates other concepts from educational research with established knowledge about the effects of the teaching context on student learning approaches and outcomes. It also sets out a framework for change and transformation in teaching practices by indicating developmental continuums or sites of engagement in each zone of the teaching/learning ecology.

ZONE 3 - THE INSTITUTIONAL CONTEXT AS AN ECOLOGY OF POWER

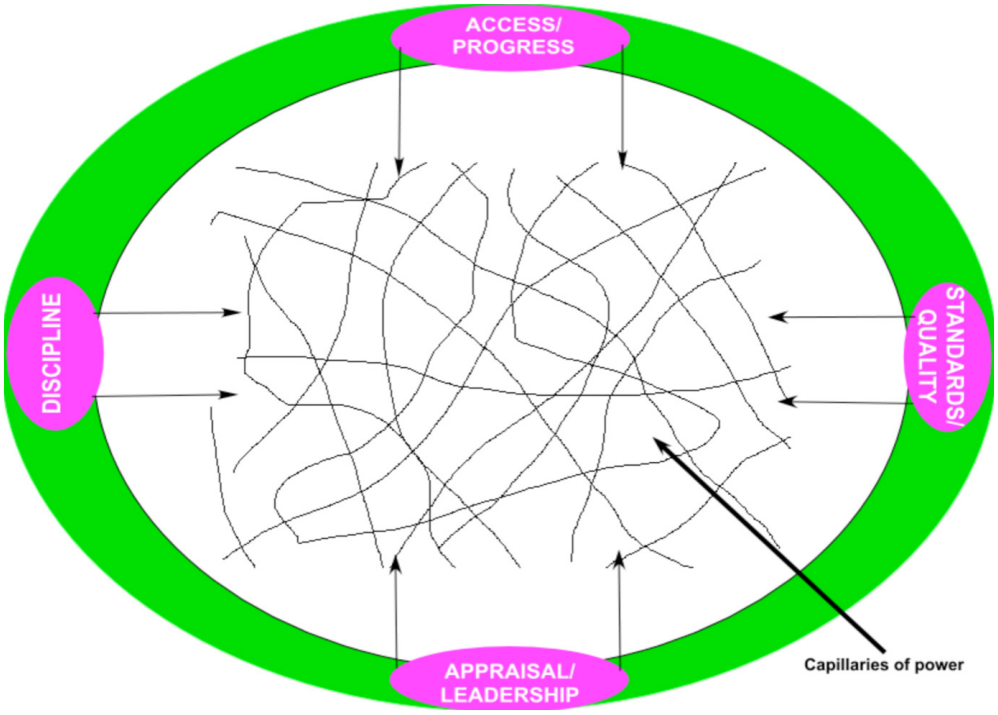

Image 4.

In an ecological view, power is not a hierarchical construct that is held by a dominant group and then wielded over the oppressed. Rather, institutional power circulates through the arteries and capillaries of the body of reason, and exists as a set of relations between the forms of knowledge and their material manifestations.

The capillaries of power in the university can be conceived of as various nodes and networks of relationships between the mental ecology or idea of a University, and the university corporation, i.e. the staff, students and the buildings they learn and work in. Here there are primarily four sets of nodal relations (Howley & Hartnett 1992) which interact with each other in various ways to form the patterns that characterise academic activity. These are:

a. the canonisation of the general education curriculum (DISCIPLINE)

b. the induction of the novice scholar (ACCESS/PROGRESS)

c. the evaluation of staff (APPRAISAL/LEADERSHIP)

d. the standards and criteria for granting of degrees established by external agencies such as accreditation bodies or quality assurance processes (STANDARDS/QUALITY)

In this view the pathways of information exchanges in a mental ecology that mediate communication about relationships also involve exchanges of power. The concern in an ecological approach to teaching/learning is not to eliminate the exchanges of power, but to analyse the ways in which the relations of power act to shape and influence particular forms of activity and assumptions about education.

To take one example, the APPRAISAL/LEADERSHIP or evaluation of academic staff node is an important influence on teachers' conceptions of teaching and pedagogical practice. In the same ways as students' study approaches are influenced by the ways in which learning is assessed, academic staff will to an extent shape their teaching practices according to the ways in which their teaching is evaluated. And the chain of associations between departmental leadership and students' approaches to learning suggests that a more open and participative ethos and leadership style in the department is associated with deep learning outcomes. Following the notion of a developmental continuum, the implications are that evaluation and appraisal should move towards participatory modes, where appraisal becomes more like a form of conversation instead of an instrument of measurement and control.

THE WIDER PERSPECTIVE – AN ECOLOGICAL VIEW OF KNOWLEDGE FORMATION

The ecological model of learning and teaching set out above is one aspect of the university as a living system. In a wider perspective we need to consider the university as whole and examine the interrelated processes of research and teaching from a living systems point of view.

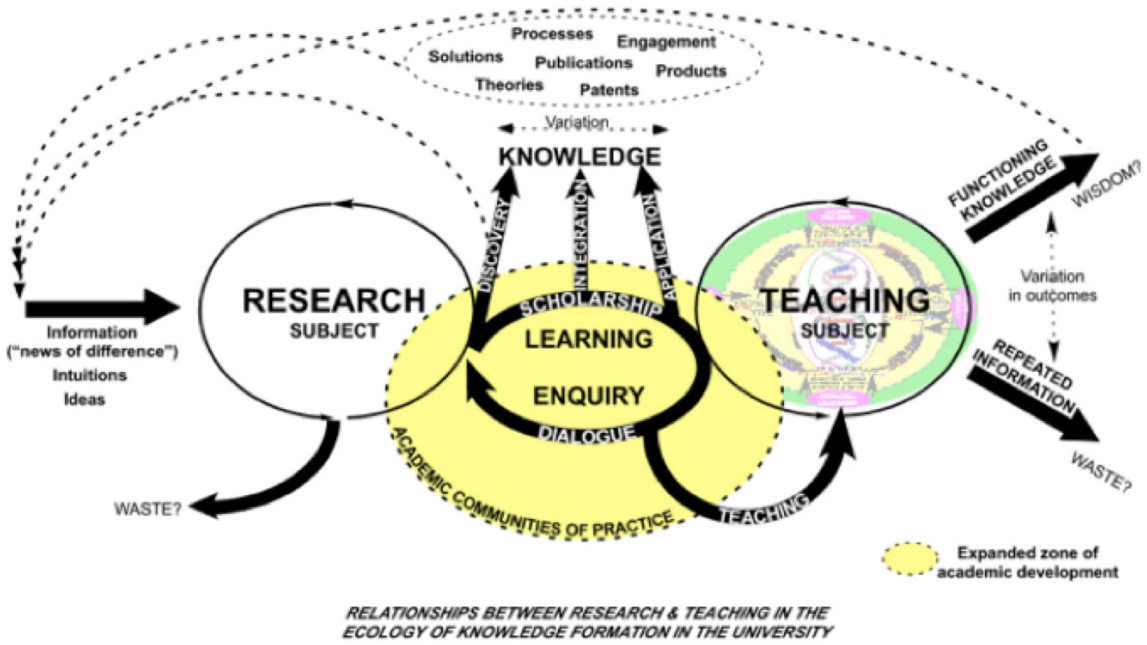

Image 5.

This ecological model of knowledge formation shows the relationships between research and teaching that are present when both are understood as *processes of learning* (Brew 1999). It demonstrates that research and teaching are truly symbiotic in the sense of complementary processes that both contribute to the overall functioning of the ecosystem in which they are embedded. This symbiosis shows the deep interdependence of the research and teaching functions when knowledge formation is seen ecologically, for the system would tend to be dysfunctional if they were not linked through the conception of learning as enquiry in communities of practice.

In this view knowledge is formed in a complex series of information exchanges and transformations, which are occasioned by embodied human minds engaged in dialogical enquiry into specific subjects in academic communities of practice. The model acknowledges the idea of interdisciplinarity in knowledge formation but also recognises the disciplinary and departmental constraints that channel and shape the growth of knowledge. It also assumes that knowledge is not separate from the knower, that there are contesting notions of what counts as knowledge, and that the ways in which the nature of knowledge is understood affects the relations between research and teaching.

But as in the case of an ecosystem, the key processes of energy transformations remain the same even though the environmental conditions may affect the interactions of variables within the system.

The model is ecological in the sense that it shows the process of knowledge formation as a *transformation* of information into knowledge - metaphorically speaking, in the same way as light is transformed into biological energy in photosynthesis, or over a much longer period of time, in the same way as a forest develops through the successive growth and decay of different species until mature trees develop. Perhaps in this sense the tree of knowledge (Maturana & Varela, 1987) is more than a metaphor.

By situating knowledge and the mind outside the processes of biological and bodily functioning, mechanistic consciousness is blind to the ecological dimensions of knowledge formation. Knowledge in the scientific worldview of modernity is seen as a quantity of 'stuff' being built up or accumulated over time, a 'body of knowledge' which is ironically dissociated from the embodied minds that give rise to its creation.

In contrast an ecological approach to understanding knowledge formation emphasises pattern and process and focuses on relationships rather than discrete entities. It also insists on *learning* as the link between research and teaching. Specifically, it advances the notion of learning as dialogical interaction between embodied minds engaged in enquiry into a specific subject, in a disciplinary context framed as an academic community of practice. When conceptualised in this way the interface between research and teaching becomes the primary influence on knowledge formation processes in the academy.

The ecology of knowledge formation in a research university is thus a complex system in which inflows of information are transformed into knowledge, in a research system that is linked to the teaching system through the modes of scholarship and the concept of learning as enquiry in communities of practice.

The different modes of scholarship - discovery, application and integration - yield different types of knowledge in different forms (e.g. publications, patents, products, processes, solutions, theories, and methods of engagement in various social problems). The scholarship of teaching develops a specialised kind of knowledge about how best to teach particular subjects in particular disciplinary contexts.

The ecological cycle of knowledge formation can thus be described as process in which data, organised into information and embodied in human subjectivity, flows into a research system in the form of intuitions, ideas, hypotheses, or problems. Knowledge emerges from the research process, defined here as the four forms of scholarship which share the common underlying concept of learning as enquiry into a particular subject. Knowledge created in the research process forms the basis for the teaching/learning process, where students engage with and transform information into embodied knowledge which may be applicable in different situations and contexts.

CONCLUSION

In the (Post-) COVID era, the ecological perspectives sketched out here can play an important role in the revitalisation of the university. The pandemic and climate change emphasise the importance of ecological and biological understandings of the world. But despite the many advances in knowledge and increasing modes of interdisciplinary activity to address current problems, the underlying structures and premises of thought in the university remain grounded in obsolete dualistic and mechanistic assumptions about learning and teaching. These lead to surface approaches to learning which fail to help students understand the interconnected nature of life in a complex world.

Reconceptualising the university as a living system, through developing ecological views on teaching and knowledge formation, optimises the institutional environment for the deep approaches to learning that are necessary for these challenging times.

BIBLIOGRAPHY

Barnett, R. (2018). The ecological university: A feasible utopia. London: Routledge.

Bateson, G. (1979). Mind and Nature: A Necessary Unity. London: Fontana.

Bateson, N. (2017). Warm Data. https://hackernoon.com/warm-data-9f0fcd2a828c

Biggs, J. B. (1999). Teaching for Quality Learning at University. Buckingham: Open University Press.

Brew, A. (1999). Research and teaching: Changing relationships in a changing context. Studies in Higher Education, 24(3), 291-301.

Capra, F., & Luisi, P. L. (2014). The systems view of life: A unifying vision. Cambridge University Press.

Davis, B., & Sumara, D. J. (1997). Cognition, complexity, and teacher education. Harvard Educational Review, 67(1), 105-125.

Howley, A., & Hartnett, R. (1992). Pastoral power and the contemporary university: A Foucauldian analysis. Educational Theory, 42(3), 271-283.

Marton, F., & Säljo, R. (1976). On qualitative differences in learning-I: Outcome and process. British Journal of Educational Psychology, 46, 4-11.

Maturana, H. R., & Varela, F. J. (1987). The Tree of Knowledge: The Biological Roots of Human Understanding. Boston: Shambhala.

Nardi, B., & O'Day, V. (1999). Information Ecologies: Using Technology with Heart. Boston: MIT Press.

Trigwell, K., & Prosser, M. (1996). Changing approaches to teaching: a relational perspective. Studies in Higher Education, 21(3), 275-284.

Ramsden, P. (1992). Learning to Teach in Higher Education. London: Routledge.

Varela, F. J., Thompson, E., & Rosch, E. (1991). The Embodied Mind: Cognitive Science and Human Experience. Cambridge, MA: MIT Press.

Wheatley, M. (2001). Bringing schools back to life: Schools as living systems. In F. Duffy & J. Dale (Eds.), Creating Successful School Systems: Voices from the university, the field, and the community. Norwood, MA: Christopher-Gordon.

Wilshire, B. (1990). The Moral Collapse of the University. Albany, NY.: State University of New York Press.