# Chapter 1
# Introduction

In this book we respond to a higher education environment that is on the brink of profound changes and that consequently requires a continuous flexibility to education renewal at all levels. When we say it is on the brink, what we are really saying is that many of these changes are already underway. There are numerous other examples of industries that have been slow to adapt – slow to recognise, respect and respond (Chickering, 2006) – to fast-changing contexts, and they have been forced to face the consequences. One example in Australia is the demise of the national car manufacturing industry and the most recent example is the journalism profession. To some who have worked in the journalism profession for a long time, such as long-serving newspaper journalists at newspapers like *The Age* in Melbourne or *The Sydney Morning Herald*, it must have felt like the bottom fell out of their well-established world from one day to the next, and they were obviously ill-prepared for it. After all, these newspapers had been Australian institutions for more than a hundred years; surely would this not change from one day to the next? Think again.

There is no doubt that we are in the midst of profound disruptions to the way things have been done for a long time, not in the least due to fast-changing technologies and the possibilities they afford. The Internet and the World Wide Web have had huge impacts, which in turn have influenced the social fabric of our lives through the growing ubiquity of social media, networking and mobile media tools. In education in general, and in the universities in particular, these changes have ushered in an age characterised by a rapidly increasing evolution of online learning with integration of online, hybrid and collaborative learning and, most recently, phenomena such as massive open online courses (MOOCs), the rise of big data analytics driving learning and personalised learning and support for students. Each of these developments have the potential to cause major disruptions in the way we operate in the universities, and if we do not prepare to engage with these changes and indeed respond, we are in danger of facing a situation where one day the bottom will have fallen out, and we would never have seen it coming. We need to recognise that changes are inevitable and respect that these changes are here to stay, some evolu-



M.Y.C.A. Kek, H. Huijser, *Problem-based Learning into the Future*,
DOI 10.1007/978-981-10-2454-2_1

tionary, some revolutionary, and we need to respond but respond in adaptive and agile ways and, importantly, with imagination and creativity.

You may think that we are suggesting there is a sense of inevitability about this, in a technological determinist sense. This would betray a kind of defeatist attitude whereby we lack a sense of agency to influence or take charge of any of it, or that it is trendy or educationally fashionable. In fact, we suggest the exact opposite. Rather than seeing change as something that is 'done to us' and that we cannot control, we are concerned with responding by taking charge of the changes, through using problem-based learning (PBL) as an adaptive approach to empower students and ourselves. In this way we could enable everyone – students, teachers, administrators and policy makers – to engage with technology and with broader changes in productive and enriching ways. Such an approach to university education would recognise 'the teleological character of higher education – the fact that education always raises the question of its purpose – and account for the fact that the question of educational purpose always poses itself in relation to three different domains' (Biesta, 2015, p. 84), which are 'qualification, socialisation and subjectification' (p. 77). Qualification refers to the transmission and acquisition of knowledge, skills and disposition; socialisation is about students being presented with ways of being and doing; and subjectification addresses the qualities of being a subject such as autonomy, independence, critical reasoning and so forth (Biesta, 2015). Central to these three domains is having the judgement 'to maintain an educationally meaningful balance between these domains' (Biesta, 2015, p. 84). As such, we recognise that we will always have to engage with knowledge, skills and dispositions and the mechanisms of achieving results in each of them, but we argue that it is crucial to also consider the *person* whom the university is targeting and developing in a more holistic sense. In other words, the *person* is about a lot more than discipline-specific knowledge and skills and includes a level of adaptability and an ability to cross boundaries that are increasingly required to function effectively in a contemporary society.

The way we define the purpose of university education here is towards building meaningful participation and contribution between students and ourselves – teachers, administrators and professional staff – and the 'world' and vice versa. No longer are we satisfied with just enabling students so to do specific things or to perform (qualification), but we also want to ensure that they are being socialised (socialisation), through PBL, into what becomes a 'way-of-being' (subjectification), which includes attributes such as willingness and comfort in taking risks, critical reasoning, reflection, resourcefulness and being functionally autonomous – all qualities of lifelong learners – that can be applied when they work and live in a world where the only certainty is uncertainty. In this vision, universities have a big role to play, but not in a 'business as usual' kind of way. In this book, we focus specifically on the potential of PBL as a broad-based approach to learning and teaching in the universities to connect students and the world, and vice versa, for learning. Here, we share Ito et al.'s (2013) connected learning model of education, which:

> advocates for broader access to learning that is socially embedded, interest driven, and oriented toward educational, economical, or political opportunity. Connected learning is realised when a young person is able to pursue a personal interest or passion with the support of friends and caring adults, and is in turn able to link this learning to academic achievement, career success or civic engagement.

Even though Ito and her team's connected learning model is targeted at young children, we share a similar notion of connectivity where students are connected to learning beyond the garden walls of university, where the world beyond the university is also meaningfully participating and contributing to education, rather than separated out. In Barnett's (2013, p. 4) words, 'we are at a fork: we are faced with a self-imposed entrapment within some very narrow ideas of the university in one direction and, in the other, a glimpse of the *possibility of possibilities* is just beginning to open'.

Since PBL's conception in medical education nearly 50 years ago (Barrows & Tamblyn, 1980), it has been incorporated into many learning and teaching contexts with varying success. PBL is still being adopted and adapted in a wide range of educational fields and levels. The 'elastic' quality of PBL has allowed for different types and culturally variant versions of PBL with associated challenges and successes in implementation (see, e.g. Hmelo-Silver, 2012; Hung, 2011; Hung & Loyens, 2012), and PBL continues to evolve with new types or 'constellations' (Savin-Baden, 2014, p. 197) for the uncertain and yet unknown challenges of the twenty-first century. New PBL constellations must 'embrace "liquid learning" – the sense that learning and knowledge are always on the move … within and beyond disciplinary areas' (Savin-Baden, 2014, p. 210). Interestingly, herein lies both its strength and its potential weakness, for PBL is obviously seen as elastic enough to be 'stretched' into a wide variety of context-specific versions, or indeed constellations, but at the same time this creates a potential danger of 'anything goes'. In this book, we choose to engage with PBL for its potential, and so we are consciously positioning ourselves on the side of the fence where (with Barnett, 2013) imagination is allowed to think about future possibilities in an unrestricted manner. However, we are clearly not the only ones to think along these lines. So what are we adding to this already crowded space? We acknowledge that much has been written about the practical aspects of PBL in the form of guidelines, 'how to' guides and evaluations of small-scale practices and case studies as well as larger-scale practices in some cases (O'Grady, Yew, Goh, & Schmidt, 2012). Moreover, much has been written about the impact of PBL on university students' learning and on tertiary teaching practices. Thus, we will not reiterate this material.

Rather, we are interested in *imagining* the future of the universities, through *imagining* ways to leverage the elasticity of PBL and enable Savin-Baden's (2014) liquid learning. In this way, we can respond to future challenges and PBL may be incorporated into practices that could reshape that future. This is not a book about ready-made solutions nor is this about a toolbox of answers. After all, how can you design ready-made solutions for problems or issues that may not even exist yet? So we *imagine*, rather, the 'person' that we would like our students to become while studying at the university and upon graduation and how we would approach the

education of students in a world that is growing ever fuzzier and more unpredictable with the advances of technology. We agree with Barnett (2013) that the broader contemporary debates about 'the university' are stunted by rigidified and narrow neoliberal thinking and that 'we require, therefore, in the first place, a *proliferation* of ideas of the university, if only to begin to demonstrate that things could be other than they are' (p. 5). This is not simply about 'dreaming' (Barnett, 2013, p. 6). He urges us instead to generate what he calls feasible utopias, which means simultaneously thinking outside the square and carefully considering practical implications and applications. Barnett's discussion concerns the university itself and its position in contemporary contexts, and it is thus rather ambitious. In this book, we take up his challenge to some extent, but we focus it more specifically on approaches to teaching and learning that might be imagined and that might be feasible in yet to be defined future university contexts. More specifically, we explore PBL as an approach to learning and teaching with sufficient potential to be adapted to such futures, and in this sense, our discussion is closely aligned to Savin-Baden's notion of the new constellations of PBL.

This book explores the idea of *imagining* PBL as the catalyst in enabling dispositions, knowledge and skills of students that become habitual, like second nature, to them when they live and work in a world characterised by uncertainties; in other words, an enabler of a *way-of-being* – through minds, hearts and actions, with reference to Barnett and Coate's concept of knowing, acting and being (Barnett & Coate, 2004) and the qualities of being a person (Biesta, 2015). These qualities are deemed important for universities so as to enable them to prosper in the 'age of supercomplexity' (Barnett, 1999), 'in which there are no stable descriptions of the world, no concepts that can be seized upon with any assuredness, and no value systems that can claim one's allegiance with any unrivalled authority' (Barnett, 2004, p. 252). It is a world where multiple paradigms coexist and are co-located, making for a radically interdisciplinary world, in which disciplinary boundaries are increasingly porous.

The idea of enabling a way-of-being aligns closely with the original PBL spirit or essence, which has not always been explicitly stated. Having the necessary knowledge (mind) and abilities to perform (actions) are *not* sufficient in a contemporary context. It is only when students are also equipped with a strong and confident conception of 'self' (heart – the being) that they can be active agents in their environments (Bronfenbrenner & Morris, 1998) without fear or anxiety and that they can prosper in any contexts in which they decide to live and work. This conceptualisation of 'being' includes qualities such as passion, resilience and emotional intelligence, which are the types of qualities that are often considered too intangible to explicitly address as part of tertiary education outcomes. Moreover, the ability to quickly get accustomed to change, as part of a 'way-of-being', might also be seen as adaptive expertise (Hatano & Inagaki, 1984). Adaptive expertise is a term coined by Hatano and Inagaki as a contrast to routine expertise. They posited that both types of expertise comprise knowledge of the subject matter and the ability to perform efficiently and effectively in familiar situations to the same extent. However, when an individual encounters a novel or unfamiliar situation, i.e. when the task,

method or desired results are not known in advance to that individual, the person who can only draw on routine expertise will struggle. By contrast, the person who can access adaptive expertise, which allows for individuals to easily overcome novelty or unfamiliarity, affectively and cognitively, can respond to the situation quickly, effectively and with an appropriate level of flexibility (Schwartz, Bransford, & Sears, 2005). In short, adaptive expertise allows individuals to perform at a high level in the face of supercomplexity and provides them with the ability to adapt, as well as be flexible and agile in their thinking, feeling and doing.

Consistent with the *Gestalt* tradition, as part of which the human ecology development model was developed, the whole is larger than the sum of its parts. In other words, in the age of supercomplexity, human beings function in complex ecosystems that are characterised by various intersecting layers, which impact on each other. To function successfully in such ecosystems requires knowledges, skills, abilities and dispositions, and, as we will argue, a particular way-of-being that allows individuals to deal in productive and creative ways with uncertainty. PBL, in its various adapted forms, is ideally suited to enable and develop a way-of-being in students, partly because of its inherent focus on metacognition.

In this book we propose and outline a human ecology for learning model that we propose is well suited for a supercomplex world and that positions students at the very core. This 'agile PBL ecology for learning'[1] model, as we call it, is adapted from Bronfenbrenner's (1979) pioneering work on ecological systems theory, which has continued to evolve in the last 40 years. Today, though a posthumous publication, it is known as the ecological model of human development (Bronfenbrenner & Morris, 2006). The ecology for learning model places the student squarely at the centre of any university's multiple rings of environments, ranging from the immediate (micro-system) to the distal (macro-system) contexts (Bronfenbrenner, 1979, 2005; Bronfenbrenner & Morris, 2006). The ecological model also reminds us to engage with the university contexts (exo-systems) that are situated outside the students' formal learning and teaching contexts and to seize the opportunity to reposition such contexts as seamlessly connected to formal learning and teaching spaces in a way that would embrace the liquidity and porousness of learning that is characteristic of contemporary global environments (Savin-Baden, 2008, 2014). Furthermore, repositioning PBL within a human ecology for learning model creates affordances and spaces for students to learn to become active agents and creators of change during their university studies and to continue to be habitual agents and creators when they leave university to live and work in an uncertain, supercomplex world. Thus the distinction between formal and informal learning is effectively loosened and watered down to the point where the two flow into each other like a

[1] We are aware of the association of the term 'agile' with 'agile software development' (Dingsoyr, Dyba, & Brede Moe, 2010; Waters, 2012), and we are attracted to the term for similar reasons, i.e. its use as meaning 'the ability to create and respond to change in order to succeed in an uncertain and turbulent environment' (Agile Alliance, 2001). However, we believe that our use of the term as part of the broader concept of 'an agile PBL ecology for learning' distinguishes it sufficiently from agile software development to avoid any confusion.

river system in the wet season. We argue that PBL has the potential to play a central role in this process, and PBL thus has the potential to contribute to awakening some sections of the university and to jolt them into rethinking their role and the meaning of university education. Our imagination of the university is one that can improve 'the course of human life at the levels of both individual and their social world' (Lerner, 2005, p. xix), but to realise this potential requires a catalyst to allow this imagination to 'fly'. PBL can be this catalyst.

As Barnett (2013) argues, 'if the contemporary range of ideas in relation to the university is restricted, then ways should be found to allow as many ideas of the university to flourish. There might even be a kind of imaginative mayhem, in rethinking the university' (p. 40). This works on different levels: on the one hand, it applies to an imaginary of where (and what) the university could (or should) be, while on the other hand it applies to enabling students in a way that recognises and makes full use of the imagination, as a tool for making the world a better place. This, as Barnett contends, 'is precisely the role of the imagination: to open up a gap, a gulf or even a chasm between what is and what might be' (p. 21). We believe that PBL, within an overall learning ecology, has the potential to help us imagine what a university might be in the future and in the process create spaces for 'imaginative mayhem' for students, teachers and administrators. This is an important shift in an age that clearly requires it, but can paradoxically and increasingly be characterised as an 'age of the practical, the calculative and the empirical' (Barnett, 2013, p. 20). This is not to suggest that there is no room for practical skills, but rather that the age of supercomplexity requires more than mere 'technicians of the academic marketplace' (Barnett, 2013, p.37). Imagination and creativity are key to a better tomorrow, and we believe that PBL is ideally suited to help set them free.

This book is divided into three parts. Part I explores the macro-systems that surround universities and the role of PBL from the onset. Starting with Chap. 2, we revisit what PBL is really about. We then move on to imagining PBL as the engine of development by introducing the ecology model for learning and its various concepts. We reposition PBL as the curricular and pedagogical vehicle to qualify, socialise and subjectify students to learn the habits of mind, heart and actions, towards a way-of-being from the first day they arrive at the university. This way-of-being ultimately becomes second nature to them when they navigate, and progress to, a world of super-uncertainty, where the boundaries that would provide stability are arguably more porous than ever before. Chapter 3 looks at a new generation of students and the skills they need to navigate in and manage a supercomplex world. This chapter also suggests imagining the macro-system boundaries as permeable and to reposition the macro-system as not mere 'receivers' of universities in the form of prospective workers or employees, but as a system that is imagined as an interconnected space where all players are engaged as partners in learning and teaching – co-educators, coresearchers, co-entrepreneurs, co-employers and, above all, co-learners.

Part II explores the micro- and meso-systems – the spaces within a university where processes and mechanisms related to education and students (and learning) are commonly situated. Again, the boundaries between these spaces are imagined as

porous, with the distinction between formal and informal learning spaces increasingly fuzzy and with many available opportunities to embrace liquid learning. Chapter 4 discusses the curriculum by repositioning learning outcomes and PBL problems and imagining the roles and the forms they may take. In this chapter, we also discuss the role of teaching and in the context of an interdisciplinary curriculum. In a similar vein, Chap. 5 discusses the rethinking of assessment from assessment of learning to assessment for learning while at the same time aligning assessments with students' future learning needs.

Part III, explores the exo-system in which students are not explicitly situated, but the processes and actions undertaken in these spaces would nevertheless jointly and/or individually impact on their development. Chapter 6 examines the student support environment. It discusses the preparation of students for a curriculum that in many ways will radically depart from what they may currently imagine when they think about studying and learning at university. It thus functions as one step in unlocking their imagination. Chapter 7 examines the professional learning of academic staff and serves a similar function, this time in a staff-facing context. Chapter 8 discusses the concept of quality. It is about sustainability and continuous improvement, and it involves the development of a culture of continuous improvement that should apply to everyone involved in a university. However, improvement is here imagined as applying to all layers of the university, rather than merely to a narrowly defined notion of learning outcomes, because each layer is imagined as a crucial element of the overall ecosystem. Lastly, Chap. 9 deals with the future of PBL by developing a sustainable research and scholarship agenda. It explores the importance of research and scholarship, both as a way of rigorously and continuously questioning our practices in an immediate sense, but also as a way of making educated guesses about the future and developing a longitudinal evidence base. Inevitably, it also imagines the dissemination of research and scholarship and how this may be recast in the future.

This book is our attempt to bring to the surface our ideas and thoughts about the potential of PBL in an imagined 'feasible utopia' of the universities. From an institutional point of view, this may sound like utter madness, because it would require massive and fundamental changes in the way higher education institutions, and particularly universities, operate. However, this is precisely our point. This is our attempt to respond to Barnett's (2013) timely calls for an imaginative university that engages with a breadth and abundance of ideas and provides spaces for self-reflection (conceptual spaciousness) and self-criticality (institutional self-criticality), situated in and within a culture of trust (trust) and mutual respect and humility (conviviality), through open communication and transparency (communicative openness), and that engages with the wider society on mutual terms (societal transactionality). What we present here is our vision of such an imaginative university, and we see this serving as a starting point for dialogue. With Barnett we see this as an instance of "'responsible anarchism' which is a necessary step in unleashing the imagination and letting it soar, without ignoring its feasibility" (p. 43).

Throughout this book, we will take the idea of an agile PBL ecology for learning seriously. In other words, an agile PBL curriculum is not contained in a discipline

or a course, but instead is influenced by and affects the wider society. This, in turn, means that it affects others in various environments of the university and therefore should be the concern of all parts and layers of the university and beyond. All four systems in the agile PBL ecology for learning we are presenting here affect each other, and so they should. Agile PBL then is about reinvigorating university education and blurring rigid siloed boundaries. Our central argument throughout this book is that there is no one person, nor the teacher, who is responsible for educating students. Rather, it is everyone's responsibility, including the students, employers and wider social networks inside and outside the university. Agile PBL is about welding together imagination and experience in potentially every layer of society; it is thus about making connections, rather than erecting barriers.

Overall then, an agile PBL ecology for learning is about recognising, respecting and responding to supercomplexity in a fast-changing environment. It deliberately blurs the boundaries between disciplines, between students and teachers, between students and employers, between employers and teachers, between academics and professional staff, between formal and informal learning and between teaching and researching. It is based on the recognition that all of these elements are interconnected, rather than exist in discrete units. This is not about maintaining comfort zones, but rather about becoming comfortable with discomfort. The actual implementation is of course beyond the scope of this book and we envisage that changing perceptions towards this vision will be a mammoth task. However, we believe that the alternative of leaving things as they are will one day have us look down to a bottom that has suddenly fallen out and, more distressingly, will leave a generation of students fearful to think, feel, act, generate and challenge in a twenty-first-century context.

## References

Agile Alliance. (2001). *Manisfeto for agile software development*. Retrieved June 23, 2016, from https://www.agilealliance.org/agile101/the-agile-manifesto/

Barnett, R. (1999). *Realising the university in an age of supercomplexity*. Buckingham, UK: SRHE and Open University Press.

Barnett, R. (2004). Learning in an unknown future. *Higher Education Research and Development, 23*(3), 247–260.

Barnett, R. (2013). *Imagining the university*. Abingdon, UK: Routledge.

Barnett, R., & Coate, K. (2004). *Engaging the curriculum in higher education*. Berkshire, UK: Mc-Graw Hill Education.

Barrows, H. S., & Tamblyn, R. M. (1980). *Problem-based learning: An approach to medical education*. New York: Springer Publishing Company.

Biesta, G. (2015). What is education for? On good education, teacher judgment, and educational professionalism. *European Journal of Education, 50*(1), 75–87. doi:10.1111/ejed.12109.

Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.

Bronfenbrenner, U. (2005). Ecological systems theory. In U. Brofenbrenner (Ed.), *Making human beings human: Bioecological perspectives on human development* (pp. 106–173). Thousand Oaks, CA: Sage Publications.

Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In R. M. Lerner (Ed.), *Handbook of child psychology* (5th ed., Vol. 1, pp. 993–1028). New York: Wiley.

Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology* (6th ed., pp. 793–828). Hoboken, NJ: Wiley.

Chickering, A. W. (2006). Every student can learn – If …. *About Campus, 11*(2), 9–15.

Dingsoyr, T., Dyba, T., & Brede Moe, N. (2010). *Agile software development: Current research and future directions*. Berlin, Germany: Springer.

Hatano, G., & Inagaki, K. (1984). Two courses of expertise. *Research and Clinical Center for Child Development Annual Report, 6*, 27–36.

Hmelo-Silver, C. E. (2012). International perspectives on problem-based learning: Contexts, cultures, challenges, and adaptations. *Interdisciplinary Journal of Problem-Based Learning, 6*(1), 10–15.

Hung, W. (2011). Theory to reality: A few issues in implementing problem-based learning. *Educational Technology Research & Development, 59*(4), 529–552. doi:10.1007/s11423-011-9198-1.

Hung, W., & Loyens, S. M. M. (2012). Global development of problem-based learning: Adoption, adaption, and advancement. *The Interdisciplinary Journal of Problem-Based Learning, 6*(1), 4–9.

Ito, M., Gutierrez, K., Livingstone, S., Penuel, B., Rhodes, J., Salen, K., Schor, J., Sefton-Green, J., & Watkins, S. C. (2013). *Connected learning: An agenda for research and design*. Irvine, CA: Digital Media and Learning Research Hub. Retrieved from http://www.dmlhub.net/publications

Lerner, R. M. (2005). Foreword: Urie. Bronfenbrenner: Career contributions of the consumate developmental scientist. In U. Bronfenbrenner (Ed.), *Making human beings human: Bioecological perspectives on human development* (Vol. ix–xxvi). Thousand Oaks, CA: Sage Publications.

O'Grady, G., Yew, E. H. J., Goh, K. P. L., & Schmidt, H. G. (Eds.). (2012). *One day, one problem: An approach to problem-based learning*. Singapore, Singapore: Springer.

Savin-Baden, M. (2008). *Learning spaces: Creating opportunities for knowledge creation in academic life*. Buckingham, UK: McGraw-Hill Education.

Savin-Baden, M. (2014). Using problem-based learning: New constellations for the 21st century. *Journal on Excellence in College Teaching, 25*(3&4), 197–219.

Schwartz, D. L., Bransford, J. D., & Sears, D. (2005). Efficiency and innovation in transfer. In J. Mestre (Ed.), *Transfer of learning: Research and perspectives* (pp. 1–52). Greenwich, CT: Information Age Publishing.

Waters, K. (2012). *All about agile*. Retrieved June 23, 2016, from http://lpgupdf.cago.us/all-about-agile-agile-kelly-waters-84110873.pdf