Thinking with *The Doughnut* - Introducing Planetary Boundaries to Enterprise Education

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Topic: Educators at all levels are being challenged to ensure that students know the truth about climate change and are empowered to be agents of change, able to resist despair and propose radical innovation in the face of sustainability challenges (Department for Education, 2022). For Enterprise Educators, this demand is potentially problematic, implicated as we are (through economic preparation activities), in contributing to take-and-consume cultures that relate to the *un*sustainability of development (Frederick, 2018; Hallonsten, 2023), and where limited empirical examples of transformed and sustainable practice exist (Klapper and Fayolle, 2023; Dodd et al, 2022). A question therefore becomes – how do we re-orient ourselves and our practice away from unsustainability? One possibility is to connect with the substantial materials and resources proposing regenerative business design, offered through the Doughnut framework (Raworth, 2017), and the Doughnut Economics Action Lab (DEAL, 2023). To explore this possibility, in this paper we adopt the stance of self-study, an approach used in teaching and teacher education where educators purposefully study themselves in order to bring about change in thinking and practice (Bullough and Pinnegar, 2001).

Applicability to the conference theme – 'Sustainable Growth in Unexpected Places':
As the conference call makes clear, business and enterprise needs to be socially and environmentally sustainable and centred on the challenges posed by the climate emergency. The Doughnut (Raworth, 2017) is a visualisation which communicates that society's businesses and institutions must aim to meet *the needs of citizens* without *exceeding Planetary Boundaries*, articulating a *'safe and just space'* in which humans can exist without destroying the various eco systems which support life on earth (such as climate, biodiversity, oceans, etc). But how do Enterprise Educators not engaged in sustainable practice or familiar with the Doughnut get into this space? By taking readers to the Doughnut and exploring Planetary Boundaries through the lens of self-study, this paper shows how those not involved in sustainability and sustainable Enterprise Education can *get started* by purposefully seeking out colleagues and literature that help make a case for changing thinking and practice.

Aim: Rather than focussing on what students do, this paper has the educator in its sights, illuminating how they can develop themselves to move away from unsustainable practice. Whilst the authors focus on the Doughnut, a process of educator development is elaborated involving: a collaboration between an Enterprise Educator and a sustainability-advanced scholar; a narrow but purposeful literature search and ongoing professional dialogue which generates insights for personal development and the field. This process could be applied to introducing any sustainability practice into Enterprise and Entrepreneurship Education, or developing any enterprise and entrepreneurship practice to be more sustainable.

Methodology: Self-study is an approach which involves inquiry into the researcher's professional experiences and interests to improve or change the practice of teaching or teacher education (Pithouse Morgan, 2022). Self-study has no template for inquiry, rather researchers borrow and blend methods in order to pursue and present research in ways that are appropriate

to their context and questions (Bullough and Pinnegar, 2001). The broad question underpinning this study is: how can Enterprise Educators re-orient themselves and their practice away from Business as Usual? The approaches we borrow and blend are twofold. First, we take seriously the proposition that self-study *is a stance* (Bullough and Pinnegar, 2001), where researcher/educators aim to balance personal growth with public discourse, showing how an issue confronted *by the self* has a relationship with the *context and ethos of the time* (Bullough and Pinnegar, 2001). Second, we use writing and reading, shaped by professional dialogue, as a mode of inquiry (St Pierre, 2017), to create a research product and narrative (this paper) which reflects our experiences and development (Gibb, 2015; Menary, 2007; Hamilton et al, 2008).

Contribution: This paper makes three distinct contributions. First, related to demands for transformed education in light of climate change, this paper shows how Enterprise Educators can re-orient their thinking and practice away from Business as Usual through collaboration with sustainability-advanced colleagues. Second, introducing Planetary Boundaries (and signposting myriad resources that support teaching), connects Enterprise Educators to an existing, but little used framework, which could be adopted in the classroom. Finally, a review of literature in leading 4* entrepreneurship journals shows that concerns about Planetary Boundaries and demands for action regarding Climate Change have been expressed for some time. Thus, this paper might prompt educators, managers and senior leaders in enterprise and entrepreneurship education to ask: if they are not taking clearly-defined action to change the thinking, practice and orientation of the next generation of entrepreneurs, *why is this*? Overall, this paper illuminates the potential of interactions – between the self, colleagues and with literature – to break silences which exist in Enterprise Education around unsustainability and to help identify what might come after (and take steps away from) Business as Usual.

Implications for policy: The UK government's Department for Education has stated it aims to be the world leading education sector in sustainability and climate change (Department for Education, 2022). Identifying how educators can go about changing their thinking and practice (in this case, via exploring the Doughnut/Planetary Boundaries through a self-study process), provides knowledge (for managers and educator developers in universities, and for decision makers and policy developments in this area) to be in service of this goal. The process in this paper shows how educator development could influence broader movements towards sustainability in Enterprise Education and beyond.

Implications for practice: Guidance for Enterprise and Entrepreneurship Education (QAA, 2018), for Higher Education highlights the importance of green and eco-entrepreneurship and signposts its requirements regarding Education for Sustainable Development (QAA, 2018). This latter document calls on Enterprise and Entrepreneurship Education (and all academic disciplines) to act in the face of *existential threats to humanity*, including global climate change, bio-diversity loss, depletion of natural resources, deforestation, air quality and access to water, hunger, gender inequality and widening inequalities of wealth, health and wellbeing (QAA, 2021). In this paper, we connect Enterprise and Entrepreneurship Education to Education for Sustainable Development by introducing a framework – the Doughnut (Raworth, 2017) – which could address practice and scholarly demands to understand and adapt in light of social/community depletion and climate and ecological breakdown.

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Introduction

In this paper we (at time of our collaboration, a Curriculum Lead for Enterprise Education and a Reader in Sustainable and Resilient Communities), draw on the experience of exploring the Doughnut (Raworth, 2017) to illuminate why Enterprise Educators might use this framework in light of unsustainability challenges. We use the word *un*sustainability purposefully, in light of increasingly desperate warnings about the catastrophic development pathway society is on (United Nations University, 2023). Despite a wealth of research and evidence on these catastrophes, the role of power and political-economic vested interests and ideologies, means that carbon emissions have continued to rise (Stoddard et al, 2021). Continuing with 'Business as Usual' is predicted to lead to 4 degrees of global heating by the end of the century, which will be ecologically, socially and economically devastating (IPCC, 2021, 2022a). Re-orienting society requires every institution and organisation to unsettle unsustainable values which support Business as Usual, and seed new values and practice (IPCC, 2022b). For Enterprise Educators, this demand is potentially problematic, implicated as we are (through economic preparation activities), in contributing to take-and-consume cultures that are related to the unsustainability of development (Frederick, 2018; Hallonsten, 2023), and where limited empirical examples of transformed practice exist (Klapper and Fayolle, 2023; Dodd et al, 2022). Given this, the broad topic this paper addresses is: how do Enterprise Educators change their practice to re-orient themselves, and their practice, away from unsustainability? To explore this question, we adopt the stance of self-study, an approach used in teaching and teacher education where educators purposefully study themselves in order to bring about change (Bullough and Pinnegar, 2001). Specifically, we aim to illuminate that productive interactions between the self, other and literature (which are sought after in self-study), were purposefully generated through exploring the Doughnut (Raworth, 2017), and Planetary Boundaries (Rockstrom et al, 2009). Our paper does not follow typical academic conventions, but rather unfolds in the following steps. First, the approach to inquiry and methodological orientation of the paper is introduced. Following this, we set the context for our self-study, including who, where and how we came to collaborate. Next, we introduce the 'what' that has provided the focus for our collaboration, that is, the Planetary Boundaries and the framework set out by Raworth (2017) in Doughnut Economics. Following this, an exploration of literature is presented, which aimed to discover the extent to which highly rated (4*) journals (in our so-called mother-field of entrepreneurship scholarship) included articles expressing concerns about Planetary Boundaries and climate change. Following this, a concern we kept returning to in our on-going professional dialogues (between stated sustainability aims and continued unsustainable practice), is discussed and a call to action for educators (and educator managers and developers), to break silences to help move away from Business as Usual.

Approach to inquiry - Self-Study

Self-study is an approach which emerged from action research and curriculum development inquiry and recognises the distinct connection in teaching between selves, practice and research (Bullough and Pinnegar, 2001). Self-study aims to connect teaching and researching in order to better understand oneself, teaching, learning and the development of knowledge about these things (Loughran, 2004). A review of the Enterprise Education literature in education contexts found that there has been little attention paid to teacher development and teacher education (Devici, 2022). In terms of the use of 'self-study' in enterprise and entrepreneurship literature,

it tends to be discussed as something students do to learn content, for example flipped classroom approaches (Roux and Nagel, 2018) and e-learning (Jones et al, 2007). A couple of exceptions (conducted by educators to change themselves or their practice), include the use of self-study in the development of a method to support entrepreneurship educators to be more reflexive (Huntsley and Brentnall, 2021), the use of 'self' as case in a teach the teacher entrepreneurship education programme (Westerberg, 2022), and a self-study approach exploring the development of social innovation curricula (Yuan, 2016). Beyond 'self-study' there have been repeated calls (and some responses), for Enterprise Educators to study themselves and their practice (Fayolle, 2013; Jones, 2015; Jones, 2016; Hannon, 2018), and to deploy reflexive modes of inquiry that generate better insights for practice as well as theory (Higgins, Jones & McGowan; 2018).

Researchers undertaking self-study are not disinterested, objective scholars, but rather deeply invested in their studies as a route to the development of practice, and through this, the development of social benefits to students. Self-study connects biography and history, the argument being that "private experience can provide insight and solution for public issues and troubles and… public theory can provide insight and solution for private trial[s]…" (Bullough and Pinnegar, 2001, p. 15). There are *no prescribed methods* or theories for self-study, it is described as *stance* rather than a method, and researchers therefore borrow and blend approaches according to their inquiries and goals, which leads to various methodological and theoretical inventiveness (Bullough and Pinnegar, 2002; Pithouse-Morgan, 2022). Rather than a recipe to follow, writing about self-study tends to focus on its purpose, for example, teacher-researchers aiming to examine and develop themselves and their practice in context, researchers having a commitment to positive change and researchers aiming to benefit their community by making their learning public (Pithouse-Morgan, 2022, pp 7-9). These purposes align well with the private concerns underpinning this study - how do Enterprise Educators move on from Business as Usual? From a public theory point of view, this also aligns with the calls made in the literature (Loi et al, 2022; Dodd et al, 2022; Klapper and Fayolle, 2023) for transformed Enterprise and Entrepreneurship Education.

Alongside adopting the stance of self-study, we also take seriously the critique that typical qualitative (and quantitative) inquiry is not serving a world in crisis as it tends to put the human at the centre, whilst diminishing interest in the non-human (St Pierre, 2021). In addition, St Pierre argues that all science, both social and natural, is contaminated by human values and desires and therefore can never be objective: the researcher cannot *not* be there (St Pierre, 2011). As such, writing, reading, talking and thinking are *legitimate modes of inquiry* (St Pierre, 2017, 2021; St Pierre and Jackson, 2014). Thus, in relation to the development of this study, we agree with St Pierre about the *thinking that writing produces* (St Pierre, 2017). Writing is not an "after effect" of research, but rather "forms its very fabric" (Gibbs, 2015, p. 222). So, whilst we had various data (recorded conversations, meeting notes, teaching and training artefacts such as PowerPoint slides), writing was the *vehicle for sense making* (Gibbs, 2015), with sense being made through various drafts, critiques and re-drafts. In terms of style, we use descriptions of experience (writing in the third person) to show how questions and concerns emerged from practice (owning these questions as a 'we' or 'us'). The experience of emergent sense making through collaborative writing confirmed to us the idea that *writing is thinking in action* (Menary, 2007), where the act of representing thoughts on a page (or shared, digital document), *enable* conceptualisation to be developed and challenged (Menary, 2007). Given this, a paper such as this can be considered the final analysis, reached through a collaborative process or writing, editing, discussing, agreeing, removing, finessing, removing. Further to this, conventions regarding the ordering of sections are (purposefully) not followed. But, rather

to reflect the lived experience of self-study, the *flow of professional development* is reflected in the paper's structure. Whilst typical research starts with a literature review, in this paper, engagement with the literature is one of a series of phases in the context of our informal collaboration and shared interest in the Doughnut. We engaged with specific literature (4* entrepreneurship journals), using narrow terms (Planetary Boundaries and climate change), to understand whether concerns were expressed in esteemed journals (they were), which raised further discussion between us. In terms of the validity of the unconventional presentation, the goal of self-study is to balance personal development with public contribution. A self-study should not be about 'navel-gazing', but rather, it should balance ones' own development with a benefit to the field (Feldman, 2005). We contend that illuminating highly practical actions (such as seeking out collaboration with a sustainability-advanced colleagues), with theoretical development (such as conducting a narrow literature search into the area of interest), achieves a balance between public theory and personal concern (about climate change). Now the approach to inquiry has been elaborated, in the next sections we set the context for this self-study.

Part 1a - Setting the context - the where, when and who

In this section we introduce the context for this study, including the where, when, who and what. We started to collaborate informally at the University of Huddersfield, from June 2022 to early September 2023. The 'we' in this paper is Catherine, at the time a Curriculum Lead for Enterprise Education at the University, responsible for developing Enterprise Education across academic schools and developing activities, frameworks and strategies to improve the quantity and quality of practice. And John, a Reader in Sustainable and Resilient Communities and the Director of the University's SURGE (Sustainability, Resilience, Governance and Ethics) Research Centre. John is a long-time scholar of food sustainability; his experience includes having worked as a researcher at OXFAM (exploring food-shortage issues) and advising DEFRA on sustainable agriculture. Since becoming a Reader in Sustainable and Resilient Communities at the University's Business School (in 2014), John has conducted research and become practically involved in local and regional food transformation systems. He has published on place-based food systems (Lever et al, 2019; 2022), circular food economies (Lever and Sonnino, 2022): and sustainable approaches to animal agriculture (Miele and Lever, 2013; Fuseini and Lever, 2021). He is active in regional food/food system practice, including: working with the Kirklees Public Health Directorate looking at how local food partnerships could boost health, the economy and the environment; developing projects on food waste and circular food economies; advocating for the necessity for place-based food systems following Covid-19; and involvement in local and regional climate action partnerships such as Holme Valley Climate Action, Sustainable Huddersfield, Kirklees Climate Commission and the Yorkshire Circular Lab. Connecting his research and practice to teaching, John described that food and food sustainability is a multi-dimensional phenomenon through which students can learn about the complexities, risks and opportunities of sustainable development. He first understood this potential during a project exploring Halal supply chain and recognising the intersection of the social, political and religious, and natural and physical worlds. Catherine worked at the University since 2017, joining a university support service, The Enterprise Team, as a part time Business Advisor whilst running a curriculum and teacher development consultancy in the rest of her time. Outside of the University, she worked with organisations including the OECD, EU and schools, colleagues, universities and regional governments inside and beyond the UK. Inside the University she helped students and graduates start businesses, as well as contributing to Enterprise Education programmes such as the University's Enterprise

Placement Year. During this time, she completed a PhD (Brentnall, 2022), exploring the effects of competitions and competitive activities in Enterprise Education (c.f. Brentnall et al, 2018; Brentnall, 2021), and was interested in taken for granted-ness in practice and research (Brentnall and Higgins, 2022). Connecting her research and practice to teaching, Catherine describes that she has a long-standing concern about inequality and whether enterprise can be harnessed for social good. More recently, she has been concerned about Enterprise Education in relation to climate change. In 2022 Catherine became the University's Curriculum Lead for Enterprise Education, and at the same time secured a research grant (from Enterprise Educator's UK - EEUK) to explore the relationship between Enterprise Education and Planetary Sustainability (Brentnall and Higgins, 2023). Through this project, Catherine became aware of various reviews, policies and strategies that had implications for enterprise and business (c.f, Stern, 2007; Das Gupta, 2021; Skidmore, 2022), or which spoke to educators directly. Specifically, in 2022, the Department for Education (2022) issued a sustainability and climate change strategy, which called for educators at all levels to transform their practice so that students: know the truth about climate change *and* are empowered to be agents of change, able to resist falling into despair and propose radical innovations to address challenges. These demands did not chime with her lived experience in Enterprise Education, where much of the practice, research and general orientation she encountered appeared implicitly geared towards sustaining Business as Usual. It was during this EEUK project that Catherine and John connected, when John provided advice and connections to Catherine when she was recruiting participants for a workshop. In these conversations, John discussed how he used the Doughnut (Raworth, 2017) in his teaching, indeed, he had a large-scale Doughnut, used for Doughnut Mapping activities, on the wall of his office. Whilst Catherine had read about Raworth's work in the book *Less is More* (Hickel, 2020), she had only used the Doughnut in practice as a signpost (a single slide, aiming to re-direct students' thinking), but not providing activities that explored it. Whilst John didn't know it, his generosity in sharing his teaching materials and in inviting Catherine to an event where he facilitated two-Doughnut related activities, made it possible for Catherine to see how this practice could influence her work. In particular, she had two practical concerns related to Enterprise Education where she imagined the Doughnut could make a contribution.

The first concern, from an Enterprise Support angle and informed by the experience of supporting student and graduate start-ups as a Business Advisor, was: how can students and graduates be supported to have ideas more in line with what is being demanded by various organisations aiming to support enterprise activities? For example, opportunities from Innovate UK, Santander, Deutsche Bank, aim to inspire or accelerate ideas that are innovative, disruptive, transformative and make a positive social and environmental impact[1]. A second concern, from a curriculum development and pedagogical point of view, is: how can Enterprise Education move away from unsustainability? Could the Doughnut, and its focus on Planetary Boundaries, help justify or accelerate such a move or provide a new direction? Finally, both John and Catherine were involved in developing academics, whether informally through research groups and events, or formally through training and pedagogic support such as co-teaching and curriculum design support. Thus, another question they discussed was: How can Enterprise Educators develop their thinking and practice to break from, and discover what comes after, Business as Usual? What practical actions can they take? Now the context for this study has been introduced, the shared interest - the what of this study - is elaborated by introducing readers to the Doughnut.

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[1] See for example: Innovate UK Unlocking Potential Award - Innovate UK KTN (ktn-uk.org); Santander X Global Award and 2023 winners | DBACE.

Part 1b – The What – The Doughnut, Planetary Boundaries and Social Foundations

The Doughnut is a visualisation of the safe and socially just space in which humanity can thrive (Raworth, 2017). It combines twelve dimensions of the 'Social Foundations' (derived from the Sustainable Development Goals), below which humans are deprived, and the nine Planetary Boundaries (as set out by the Stockholm Resilience Centre), beyond which the planet is critically degraded ecologically. By combining these two dimensions – a social foundation and an ecological ceiling - in a pair of concentric rings, the Doughnut visualises the space between. As Raworth states: "The essence of the Doughnut: A social foundation of well-being that no-one should fall below, and an ecological ceiling of planetary pressure that we should not go beyond. Between the two lies a safe and just space for all…" (Raworth, 2017, p. 11).
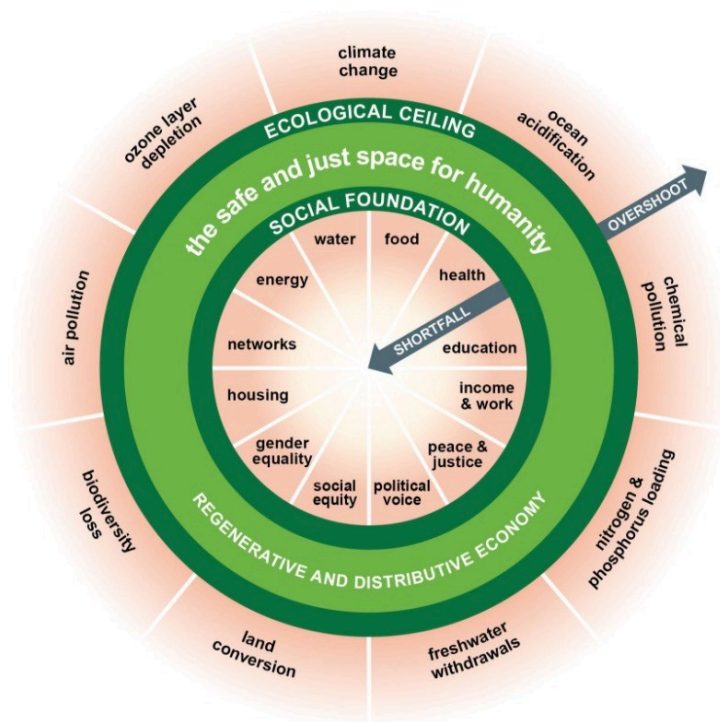

Credit: Raworth (2017), the Doughnut, interactive version available at Doughnut | Kate Raworth

Raworth describes the Doughnut as a "radically new compass for guiding humanity this century" (Raworth, 2017, p. 44). She aims it illuminates the inter-connectedness of our complex socio-ecological system, emphasising the point that "human thriving depends on planetary thriving" (Raworth, 2017, p. 50). She gives an example of the interconnected nature of planet and human by describing knock on effects of a hillside de-forestation. De-forestation accelerates bio-diversity loss, weakens the freshwater cycle and exacerbates climate change, which puts stress on the remaining forest, which breaks down water supplies leaving local communities vulnerable to lower food production and outbreaks of disease, resulting in children dropping out of school and increasing poverty.

When Catherine and John discussed the Doughnut, one conversation involved considering a familiar ambition and staple of student start-up, that of creating a fashion brand (often: hoodies), and the material implications of this. Annually, the fashion industry requires 79

billion cubic meters of water (about 20% of the world's total water consumption), generates 1.7 billion tons of CO2 (almost 10% of the world's total CO2 emissions), and produces 92 million tons of textile waste (Centobelli et al, 2022). Furthermore, outsourcing production to countries where there may be less strict legislation and procedures, and less protection for worker safety, health and rights compounds environmental harms with social harms (Centobelli et al, 2022). Another common business dream they discussed students having is developing an App. Whilst many 'innovative' ideas are assumed to involve a technological component, it has been argued that many tech developments are *empty* and consumption-focussed, void of the real innovation sought out by policy and public discourse (Hallonsten, 2023). Furthermore, the electricity consumption of developments, such as BitCoin and now AI is often not explicitly considered, and therefore the carbon implications of technology is underestimated (Stoll et al, 2019; Truby et al, 2022; Ludvigsen, 2023). Clothing brands and Apps were discussed as staples of university business and enterprise ambitions. The Doughnut (with significant materials provided on *regenerative* business design), provides the possibility for moving students on from these ideas? But how do we, as educators, *move on too*? Catherine discussed the thinking of educational philosopher, Gert Biesta, whose work had influenced a recent chapter about modes of inquiry in enterprise and entrepreneurship scholarship (Brentnall, forthcoming). Biesta says education should help students (but, in a self-study, the focus is on the teacher) to *meet the world*, and encounter its constraints and limitations (Biesta, 2021). He argues that the world is not a shop, where you can walk in and get what you want and walk out with no consequences (Biesta, 2019). But rather, and as a result of the degradation of the environment, the depletion of societies and democracies, students (and, therefore teachers), in Western university's should have the experience of being in, and with the world, *without having to be* at the centre of it (Biesta, 2019). In a literal sense, the Planetary Boundaries, and the visualisation created by Raworth *show* the limitations of the planet, not just to students, but *to us* as Enterprise Educators. John described how he was introduced to Doughnut Economics in 2017, by a student who was concerned about unsustainability. In addition, he saw the framework used when attending the inaugural lecture of a friend (John trained as a sociologist and was involved in urban planning and human geography research). Drawing on the materials provided by the Doughnut Economics Action Lab (DEAL), John collaborated with a sustainability-interested colleague, and created various classroom experiments to bring the Doughnut into his practice.
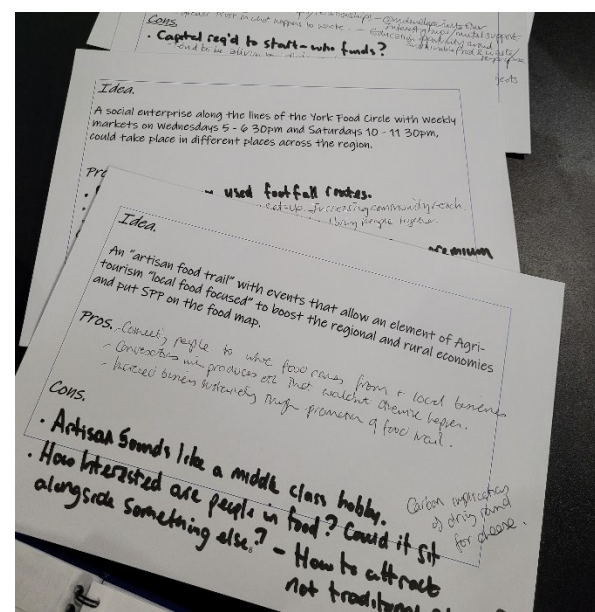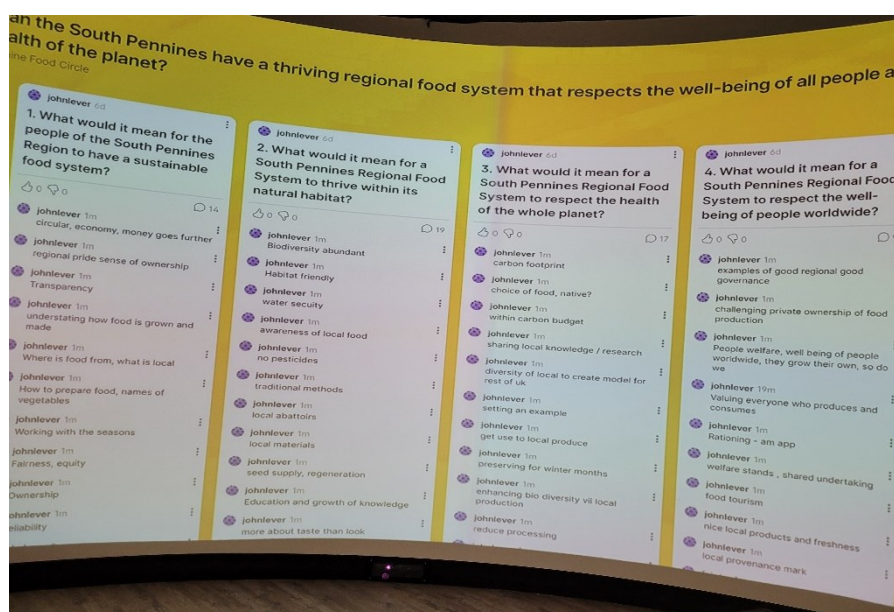
Doughnut Artefacts – Four Lenses and a business idea evaluation activity in a Doughnut session.

John now provides activities using the Doughnut to external groups and organisations including councils, community groups and other regional organisations. He describes that he doesn't necessarily give a comprehensive introduction about the Doughnut, but rather, briefly, introduces the broad framework and then uses some of DEAL's activities. John invited Catherine to an event where he took this approach and then facilitated an activity using an adapted version of DEAL's Thriving Cities portrait (Fanning et al, 2022). In this activity participants are asked to balance local aspirations with global concerns, by using four lenses (global/local/social/ecological). John's adapted activity involved considering the relationship between regional food systems and the well-being of global communities. Participants put responses on post it notes, which were inputted into a Padlet by John and projected onto a large screen. A second activity involved sharing ideas for sustainable food businesses and discussing the pros and cons of each (for example, a central food hub, a delivery service, a regional food mark for private businesses, a food-focussed community enterprise), as seen in the photographs on the previous page. By attending the session Catherine had new resources and confidence to try out the activities and spoke to various colleagues about John (and the Doughnut) to grow the conversation about regenerative business design.

When we met to reflect after the practical session run by John, we considered the (significant) resources provided (through DEAL), in relation to the Doughnut and regenerative business design. We discussed our puzzlement as to why it had not gained more traction in university business and enterprise education. We considered the possibility that disciplinary boundaries (for example related to entrepreneurship), might influence what it is possible to think and teach. In addition, we wondered if performance targets (for example, the necessity or desire to publish in highly rated entrepreneurship journals), might have a similar effect, in terms of limiting what scholars (and as a result educators) could focus on. After all, top tier journals have been criticised for producing irrelevant and highly theoretical – nonsense - research (Tourish, 2020). And Business Schools, and academia more widely, has been discussed as being obsessed with journal rankings, with scholars characterised as selling out with regards to relevance and impact in order to get published (Gruber, 2014). We asked each other - would not the editors of (and scholars contributing to), the most esteemed journals in entrepreneurship also care about sustaining a planet that is habitable for human life? This curiosity prompted the approach to the literature review in this paper: searching top tier entrepreneurship journals to find out whether (or what) concerns had been articulated about Planetary Boundaries or climate change.

Part 2 - Engaging with the Mother Field

Entrepreneurship has been called the *mother field* or *mother discipline* of Enterprise and Entrepreneurship Education (Thrane and Blenker, 2018). Drawing from the mother field and connecting this to the field of education can help to support more robust theoretical and conceptual foundations in how we educate for enterprise and entrepreneurship (Fayolle, 2013; Thrane and Blenker, 2018). In addition, as we noted in the previous section, accusations about irrelevance and selling out have been made (Tourish, 2020; Gruber, 2014), which prompted the focus of this review. The strategy in this literature review was to focus on 'top tier' entrepreneurship journals and discover whether (and how) Planetary Boundaries and climate change are discussed. After all, if these dimensions *are not* a concern in esteemed journals, it helps to explain why enterprise and entrepreneurship educators are not transforming their practice away from unsustainability. Alternatively, if these dimensions *are* a concern, it helps build an argument for, and potentially identify practical actions towards, changing thinking and

practice. Either way, it is important to be able to say with clarity whether leading journals in entrepreneurship are concerned with Planetary Boundaries and climate change (or not).

We used the Chartered Association of Business Schools (2021) journal list, to identify the top-rated (4*) journals in entrepreneurship. The three leading journals were: a) Entrepreneurship, Theory and Practice (ETP); b) Journal of Business Venturing (JBV) and c) Strategic Entrepreneurship Journal (SEJ). An initial exploration of literature was conducted by searching the online journals for the phrases "planetary boundaries" and "climate change". Climate change is taken as a proxy for environmental concern and/or environmental degradation. Initial returns from these searches were hand-sifted to identify papers that were most relevant to our concerns. For example, Sarasvathy et al (2014), was returned from the online ETP search as relating to planetary, but the use of the word in the paper was made in reference to Kepler discovering laws of planetary motion based on elliptical orbits. Through this process, 35 articles of interest were identified as useful to review (Appendix 1). Each article was searched for the terms, and for contextual information from the article to understand in what way these terms were being used or related to. Text chunks were extracted into a long-form word document. Text was drafted and re-drafted in a sense making process. First a narrative under planetary boundaries and climate change was developed, but then material was (re)organised under pragmatic headings which better indicated a relationship between some text and an abstract category (e.g. natural world, entrepreneur, institutions). Text chunks were then (re)arranged chronologically, to illuminate how long concerns have been expressed. We wanted to easily identify and author/idea with a journal, and believed that readers may have a particular interest in one journal or another, thus references have been extended to show journal origin or a code added in brackets to indicate the source. Whilst this search represents an initial and explorative rather than exhaustive and systematic review of literature, the results are significant. We found serious and long-standing concerns, expressed across all three journals, and ideas and demands for ways forward. These are presented in the following sections.

The natural world
In 2010 York and Venkataraman (JBV), described the devastating consequences of environmental degradation as including: unstable planetary weather systems; depletion of natural resources such as clean air; environmental problems such as overfishing; the effects of pervasive toxins on society and species extinction. In 2011, Patzelt and Shepherd (ETP), stated that ozone depletion, climate change and the destruction of biodiversity was having negative and potentially deadly consequences for living species. More recently, George et al (2021, ETP), said that staying within the safe operating space of the Planetary Boundaries is the most pressing issue of our time. They explained that humanity is being pushed into overshooting Planetary Boundaries by carbon intensive industrialisation, over-consumption of nitrogen and phosphorus, whole scale biodiversity loss and runaway global warming. Climate change is the most existential threat humanity faces, and scientists say there is 10 years left to take drastic action to avoid the worst effects, they re-state that the time to act is now (George et al, 2021, ETP). Fernhaber and Zou (2022, JBV) identified that environmental problems (such as the availability of natural resources, climate change and water scarcity) have complicating factors such as inequality and poverty.

Society/Culture
In 2007, Cohen and Winn (JBV), highlighted that the effects of environmental degradation are not distributed equally, negatively affecting geographies in global societies which do not benefit from the resource extraction and rents, but suffer from pollution and toxification. In

addition, they described that effects are temporally distributed, so that climate modifications and species extinction are inflicted on future generations through actions in the present. York and Venkataraman (2010, JBV), identified that increasing resource shortages and increasing societal concerns about climate change are/will drive the trend for environmental entrepreneurship. In the same year Patzelt and Shepherd (2011, ETP) asserted that diminishing environmental conditions threaten relationships with future generations who will consider the destructive exploitation of the natural environment as selfish, ego-centric and harmful. Also in this year, authors concluded that global climate change and accelerating depletion of natural resources indicate the world is not aligned with sustainable development and that there is increasing social awareness that incremental solutions will not be enough to maintain critical levels of natural and social capital (Hockert and Wüstenhagen, 2010, JBV). More recently, there was acknowledgment that social awareness of Planetary Boundaries is a growing trend with business implications that hasn't been paid enough attention to (Moroz et al, 2018, JBV). Furthermore, Salmivaara and Kibler (2020, ETP), said that in policy discourse, the rhetoric mix has tended to characterise the grave danger of climate change as a source of business opportunity, with potential negative outcomes of entrepreneurship not properly discussed. When describing climate change as a grand social challenge, Welter and Baker (2021, ETP) noted that unplanned, unwanted and destructive changes are afoot, and that those hardest hit will likely be those who are already poor and relatively powerless, with fewer options for adaptation. Finally, in relation to climate change, Bacq et al (2022, JBV), asserted that positive societal impact will only be created by involving the communities and having a deep understanding of how societal issues are playing out, interact and might be re-shaped on the ground.

Businesses and Institutions
In 2010, Parrish (JBV) identified companies pioneering new business models, such as Native-American owned NativeEnergy (which is identified in an international study Clean Air Cool Planet). He asserted that businesses need to more directly support, rather than undermine, the ecological and social processes on which society depends. Also writing in JBV, Hall et al (2010), proclaimed that unsustainable business practices required a fundamental transformation to reduce detrimental environmental and societal impacts. Pacheco et al (2010, JBV), stated that institutions must be altered or new ones created; new norms, property rights and legislation are needed which provide different incentives and encourage entrepreneurial activity which is a force for social and ecological sustainability. Indeed, York and Venkataraman (2010, JBV), declared that it is the creative destruction of harmful industries that may remedy environmental degradation. Though, of concern regarding the influence of environment on norms, Kuckertz and Wagner (2010, JBV), found that sustainability orientation *vanishes* with business experience. Meek et al (2010, JBV), discussed that the institutional environment could be influenced by changing social norms as a climate change, ozone depletion and air and water pollution influence these norms and interact with policy to influence change. The phenomenon of B-Corps is discussed by Moroz et al (2018, JBV), and the way that this certification helps consumers know about positive impacts of a business as well as harm they might do to people and planet. Johnson and Schaltegger (2020, ETP), suggested that Planetary Boundaries should be used as a measure to assess the level of systemic degradation caused in sustainable development and to drive change to find corrective measures to bring the value back into safer realms. Furthermore, entrepreneurial ventures must find solutions so powerful that they overcome the lack of urgency manifest in most governments and large parts of civil society (George et al, 2021, ETP). It is predicted by van Gelderen et al (2021, ETP), that institutions including corporations and governments will form partnerships with start-ups to address environmental concerns, and that acute environmental disasters will

lead to entrepreneurs specialised in immediate survival and disaster response. Bradley et al (2021, SEJ), noted that whilst The United Nations declared the 2020s to be a Decade of Action where 200 signatory countries promised to achieve the Sustainable Development Goals on climate change (and reducing inequalities, improving healthcare and education), there is still ongoing geo-political divisions and civil unrest on issues such as climate change and reducing inequalities. Fernhaber and Zou (2022, JBV), pointed out that international business and Multi-National Enterprises have a global reach, and it is vital that these entrepreneurial actors, and actors within MNEs have an understanding of grand challenges, and their global nature. Finally, Juma et al (2023, SEJ), highlighted that research institutions, universities and governmental organisations are eco-system facilitators which can *shape the environment* to better enable ecological venture creation and support ecopreneurs.

Economy
In 2007, Dean and McMullen (JBV), said that global socio-economic systems are causing environmental degradation, where too many actors are depleting or harvesting environmental resources such as forests, air, fishing stocks (which should be a public good), and creating a tragedy of the commons which runs counter to society's interests. Furthermore, Cohen and Winn (2007, JBV), identified four market imperfections – inefficient firms, externalities, flawed pricing mechanisms and information asymmetries – which are sources of environmental degradation and the addressing of which should drive radical and innovative alternatives. These authors asserted that eco-system services that sustain human life (such as carbon sequestration, air purification, fertile soil, freshwater), but which are being diminished through de-forestation, bio-diversity loss and excessive consumption of freshwater *must* be properly considered in all economic endeavours. Hall et al (2010, JBV), stated that resource use and development patterns demand the resources of an additional planet, therefore the pace of economic growth must be reduced dramatically. Finally, these authors assessed that since modern industrial economies appear unable or unwilling to do this (reduce resource use), it appears that sustainability is fundamentally at odds with the prevailing model of capitalism and its emphasis on unbridled growth.

Entrepreneurship
In 2007 Dean and McMullen (JBV), stated that in order to address environmental failures and the tragedy of the commons, different types of entrepreneurship – institutional, political, informational – are needed as well as entrepreneurial action. York and Venkataraman (2010, JBV), considered that entrepreneurship may support environmental sustainability because creating sustainable solutions to the environmental crisis and challenges is a large, unexploited opportunity. However, Hall et al (2010, JBV), asserted that whilst entrepreneurship could be a conduit for more sustainable products and processes, such a *Panacea Hypothesis* is uncertain and overly optimistic. Rather these authors suggested that it must be considered that *Sustainable Development* is an Oxymoron, implying that societies can have their cake and eat it, and assuming firms and nations can utilise resources in the present without sacrificing opportunities for future generations. McGahan et al (2013, SEJ), said that, given public issues and concerns in relation to climate change, the depletion of global petroleum reserves and correlated financial risks, entrepreneurship *in the public interest* must now be at the core of entrepreneurship. Furthermore, Corbett and Wren Montgomery (2017, SEJ), suggested that environmental entrepreneurship could be a strategy for reducing greenhouse gas emissions (Corbett and Wren Montgomery, 2017). Indeed, in light of man-made climate change and the storms, wildfires, hurricanes and other accompanying disasters, Shah and Tripsas (2020, SEJ), forwarded that entrepreneurship could provide innovations that might help adaptation and adjustment. One opportunity is collective and nature-based expeditionary entrepreneurship

(Artic Cruise type businesses), though Wigger and Shepherd (2020, ETP), pointed out that though these opportunities take tourists to Svalbard to see climate change first hand, they also exploit natural resources. In terms of sustainable entrepreneurship, Anand et al (2021, JBV), stated the primary objective should be creating value for the planet and concern about Planetary Boundaries and earth's physical carrying capacity. Indeed, Bradley et al (2021, SEJ), said that climate change *requires* breakthrough solutions and innovations – new products, services, production method and business models – which secure societal well-being. Invoking Schumpeter, Welter and Baker (2021), asserted that climate change is going to force a re-making of entrepreneurship aligned with the field's creative destruction metaphor, where winners and losers amongst nations, regions, cities and towns will be re-sorted. Indeed, in a recent Delphi Study (van Gelderen et al, 2021), it was predicted that by 2030, entrepreneurship – in practice - will be significantly more focused on the *survival of the human species*. In light of grand challenges Fernhaber and Zou (2022, JBV), re-stated that entrepreneurship should focus on the need for bold and innovative solutions in regards to environment, inequality and health. However, and finally, Mansouri and Momtaz (2022, JBV), cautioned that longevity and difficulty measuring environmental goals (e.g., climate change), is associated with non-transparency and green-washing incentives.

Entrepreneurs
In 2010 York and Venkataraman (JBV), described an 'entrepreneur-environment nexus' where entrepreneurs with knowledge of environmental degradation will be able to understand and seize opportunities. However, entrepreneurs find themselves in a Green Prison (Pacheco et al, 2010, JBV), compelled to environmental degrading behaviour due to the divergence of individual rewards and collective goals for sustainable development. Patzelt and Shepherd (2011, ETP), showed that entrepreneurs are more likely to discover sustainable development opportunities the more they perceive that the natural and communal environment in which they live is threatened. Indeed, these authors described that climate change, ozone depletion and declining nature threaten entrepreneurs need for competence; declining nature and communal environments thwart entrepreneurs need for relatedness, environmental breakdown threatens the entrepreneurs need for autonomy, as declining environmental conditions results in a declining number of options for opportunities. More recently, it has been proposed that being entrepreneurial involves upsetting the status quo in critical and inventive ways (Dey and Mason, 2018, JBV), thus entrepreneuring can involve transforming shared interpretative frameworks and the typically accepted facts. Authors asserted that climate change is a crisis of the imagination, and activist Entrepreneuring can change the way that people imagine reality, challenging pervasive ways of thinking through radical truth telling and articulating alternative, possible worlds, which are more conducive to the realization of the common good. Engela at al, (2020, JBV), declared that threats from climate change mean that entrepreneurs should be engaged in *environmental regeneration* and infuse their practice with sustainable decision making. These authors stated that compassion is an important predictor of such decision making. As climate change is transforming the context in which entrepreneurship takes place (Welter and Baker, 2021, ETP), entrepreneurs who view challenges as opportunities will find a rich environment for a diversity of ventures to offer products and services to help people adapt. George et al (2021, ETP), suggested that entrepreneurs could use digital technologies to help address the grand challenge of climate change. Indeed, van Gelderen et al (2021, ETP), found that increasing environmental problems will mean entrepreneurs become more focussed on combating climate change, driving sustainability into the mainstream. Offering a note of caution, Qin et al (2022, ETP), highlighted how entrepreneurs' creative mindsets enables them to justify environment destroying behaviours. They illuminated a dark side in the flexibility of thought and divergent thinking, which is often discussed in terms of positive entrepreneurial

qualities, where entrepreneurs are capable of justifying actions that degrade nature. These authors described nature disengagement and how entrepreneurs can engage in destructive actions and 'pass the buck' by pointing to similar behaviour from other entrepreneurs or governments, dehumanising critics or those suffering from environmental degradation, and even attributing blame to victims. Finally, as Davidsson et al (2023, SEJ) reminded us, entrepreneurs do not make something from nothing. Alongside their agency and social connections, entrepreneurs use various raw materials, which of course have implications for the environment and climate change.

Knowledge

In 2010, Kuckertz and Wagner (JBV), asserted that sustainable orientations should be nourished in Higher Education settings. They advised that sustainability challenges (such as climate change, water resource degradation or depletion of non-renewable resources) as well as the potential opportunities for sustainable entrepreneurship that result from these challenges, should be highlighted in classrooms. Furthermore, they stated that students must learn that entrepreneurship is more than just harvesting entrepreneurial rents but rather, non-monetary benefits such as *existence* and options values from preserving environmental public goods, are more important. Patzelt and Shepherd (2011, ETP), said that sustainability-related knowledge and the promotion of certain values (respect for nature, tolerance and freedom), may be a mechanism contributing the attainment of sustainable development and entrepreneurs who aim to sustain natural and communal environments. Wiklund et al (2019, ETP) noted that climate change is a disruptive trend and a grand challenge that is re-making society, and they called for more impactful and relevant research in entrepreneurship as a result. They identified that the consequences of climate change pose major challenges for economies and governments which mean that new thinking, models and solutions are needed to *simultaneously* ameliorate the causes of climate change while dealing with its devastating effects. In relation to the kinds of qualities entrepreneurs need, Engela et al (2020, JBV), described that pro-social and moral thoughts and actions are required, and that meditative interventions can extend kindness and caring towards all beings, including plants and animals as well as humans. Johnson and Schaltegger (2020, ETP), advised new research directions, stating that entrepreneurship scholars should study at how social movements influence the creation of new opportunities, how entrepreneurship can combat climate change, how entrepreneurs can help contribute to transforming the global economy back to a safe operating space as well as reducing poverty, supporting clean and affordable energy, and protecting life on land and in the oceans. Indeed, there should be systems level research (Anand et al, 2021, JBV), where planetary boundaries are used as a yardstick to evaluate the contribution of sustainable entrepreneurship to sustainable development. Shepherd et al (2021, ETP), advised that scholars can and should use their personal interest in the climate crisis to help close the academic-practice gap in this important topic. In light of the climate crisis, George et al (2021, ETP), stated that entrepreneurship scholars should pursue a research agenda that generates questions for entrepreneurship, business models and eco-systems. Indeed, Welter and Baker (2021, ETP), considered that scholars should recognise that the challenge of climate change is a grand social challenge that entrepreneurs will want to act upon and therefore researchers have a rare opportunity to get ahead of practice and to help map the road forwards. Further to this, George et al (2021, ETP), demanded that entrepreneurship scholars must spur students and colleagues into action. When Fernhaber and Zou (2022, JBV), compared the Literature on 'grand challenges' in Entrepreneurship and International Business Literature they found that scholars in Entrepreneurship focus most on poverty alleviation, environment and health, whilst International Business scholars pay more attention to environment, poverty alleviation, economic development, migration and displacement. However, Mansouri and Momtaz (2022,

JBV), said that the *outcomes* of Sustainable Entrepreneurship, regarding the triple bottom line of people, planet, profit are the least studied and most segmented field in the literature. They advised that decomposing the E, S and G of Environmental, Social Governance is necessary in scholarship; the E is composed in itself of many grand challenges such as climate change, air and water pollution, solar energy and carbon footprints. In light of climate change, Teasdale et al (2022, SEJ), called for a new wave of scholarship which explores radical ideas and potentials for systems change and systems change strategies (Teasdale et al, 2022). Williams et al (2023, SEJ), made a similar call, saying a new wave of scholarship should show how social entrepreneurship might mitigate climate change, alleviate systemic social challenges and sustain collective action for social impact. Finally, Davidsson et al (2023, ETP), declared that environmental changes, including climate change and the ensuing sociocultural demand for sustainability, must now take centre stage and influence how businesses emerge and develop.

As we can see from the preceding sections, even an exploratory, online survey of the 4* journals that are held in high esteem by scholars and education managers illustrates a range of concerns related to planetary boundaries and climate change. These results are from a narrow search ('Planetary Boundaries' and 'climate change'), so it is easy to imagine many more concerns being expressed under broader conceptualisations such as 'environment' and 'sustainability'. Yet even within this initial search we find enough existential concern and calls for new directions; there is certainly no shortage of advocacy in leading entrepreneurship journals. This led us to discuss the inconsistency between this literature and our lived experience of enterprise and entrepreneurship education practice.

Part 3 – The paradox between strategy and silence

In our conversations (which were recorded, so we could listen to them again and re-visit what struck us most), we returned to the idea that there is a gap or inconsistency between the literature reviewed and our lived experience. On the one hand, there are the typically expressed ambitions for social and environmental transformation (for example, of the sort one might read in university sustainability strategies, or in department and team level vision statements). Yet, on the other hand, there is a day-to-day complicity with Business as Usual, where we observe or are involved in reproducing structures, cultures and activities which are detrimental to people and planet. This paradox might help explain why there are, despite the horror of climate change and the multi-crisis environment (Dodd et al, 2022; Heinberg and Miller, 2023), still few empirical examples of education for sustainable entrepreneurship *education* (Fayolle and Klapper, 2023). It might also explain why educators working in the field of Enterprise and Entrepreneurship have been perceived as providing a 'cretin's education', acting as a Trojan Horse for Business Model Ideology, and spreading opportunism and survival of the fittest (c.f Riot in Loi et al, 2022). We discussed the idea of Blue Washing (Berliner and Prakash, 2015), where the deployment and wide promotion of Sustainable Development Goals in Business School environments (c.f. Azmat et al, 2023; Garcia-Feijoo et al, 2020) provides the appearance of sustainably-oriented purpose and strategy whilst there is little change on the ground. In this scenario, *there will be* individuals, informal collaborators, or potentially teams or departments which are sustainability oriented. However, there will also be many individuals, collaborations, teams or departments, that *are not* sustainability focussed, or potentially even working towards unsustainability, even though policy, organisational strategies and marketing etc, suggests otherwise. We searched for explanations for this situation in the literature.

Whilst theory-practice gaps have been described before (Argyris and Schon, 1997; Van de Ven and Johnson, 2006), Anteby (2013) specifically explores the manufacturing of morals in a Business School environment. He identified that open-ended directives in a hierarchy require significant decision making on the part of those expected to make changes, and the lack of overt guidance on *what* should change means that Business as Usual is able to continue. In this process, Anteby discusses how silence plays a crucial role, where staff (not just students) are socialised into a system characterised by a refusal to say if something is right or wrong. Analysing teaching notes for an MBA course, Anteby finds: "Correct and incorrect steps are frequently specified, but right and wrong *outcomes* are rarely articulated… notes remain relatively silent on the overall direction of the path travelled by protagonists [and]…moral relativism easily settles in." (Anteby, 2016). Anteby is very clear that, in a world of profound and dangerous inequality, silence is not the answer. In concluding this study, we frame *the what* we are able to say now, and for whom these sayings might be useful.

Conclusion – break a silence

Self-study is an approach used in teaching and teacher education whereby the personal concerns and professional experiences of the researcher/s are explored in a way that benefits colleagues and a field more broadly. So, what are we able to say now, that wasn't possible at the beginning of this study? First, it is possible to abstract some highly practical actions from the experience. If you are an Enterprise Educator and concerned that your practice (or school, faculty, field), isn't doing enough to change in light of climate and ecological breakdown, there is much to be gained by informally seeking out and learning from and with a sustainability-advanced colleague. Such colleagues have frameworks, practice and *alternative worldviews* that can help Enterprise Educators move on from Business as Usual. In the example of this paper, we illuminate that exploring the Doughnut and the resources available through DEAL opened up space (for ourselves, not just students) to engage with *regenerative* business design (Raworth, 2017), which was highlighted as a way forward in our literature search (Engela et al, 2020, JBV). Second, by interacting with literature in a very narrow and specific way (with 4* journals from our mother field, searching only around *Planetary Boundaries* and *climate change*) we are now able to say (with confidence) that scholars and editors of esteemed entrepreneurship journals *are* calling for change, and have been for some time. Research-focussed colleagues could collaborate with Enterprise Educators and purposefully search for how the various tools, frameworks and paradigms that are taken-for-granted in Enterprise Education are changing (or not). From Business Model Canvas to Lean Start up, to Five Ps, to Blue Ocean, each one of these Enterprise and Business staples could be the subject of an interaction (between self, colleague and literature) to define how to re-orient it away from unsustainability. Either *you will find out how to change*, or *you will be a pioneer* in re-orienting a move away from Business as Usual. Such a strategy would surely help Enterprise Educators respond to the requirements for Education for Sustainable Development in Higher Education (QAA, 2021) as well as green and eco-entrepreneurship highlighted in guidance for Enterprise and Entrepreneurship (QAA, 2018).

It is important to note that the change called for by top tier entrepreneurship journals studied for this paper is not only expected from specialists and sustainability interested colleagues. According to the literature we studied, everything *is already changing* or *needs to* change. The natural world *is* changing to the extent that scholars are *already* discussing species extinction and human survival. This means everything else: society and culture, the economy, institutions, entrepreneurship, entrepreneurs and knowledge, must also change. It is in the last category,

knowledge, that we as educators in universities have a particular opportunity (and responsibility) to break the silences that might help us move away from Business as Usual. This paper shows how educators can go about breaking their own silences through the practice of collaboration and self-study. Through this, we also provide knowledge (for managers and educator developers in universities, and for decision makers and policy developments in this area) about the necessity for professional development interventions between sustainability-advanced scholars and everyone else. Such interventions would also provide a mechanism for the *clear defining* that Anteby says is necessary for scholars to move away from manufactured morals to overt action in regard to the many social and environmental problems faced today.

The silences we are able to break (as individual educators) will of course be dependent on power relations, our status and security in the workplace and the collegiality and openness of our institutions. Silences may exist between colleagues and within teams, subject groups, departments, schools and faculty and entire institutions. In our reading around Blue Washing, we found a poem, in the journal of Accounting, Auditing and Accountability (Othman and Ameer, 2023), where fraud-related research findings and wicked problems were linked to justifying the UN SDGs. The authors of the poem say they were inspired by a quote from Haile Selassie, who said that, throughout history, it has been the inaction, indifference *and silence* of those who could have acted, known better or spoke, that makes it possible for evil to triumph. They write: "Let's stop fraud infesting our communities and becoming a disease. Let's say no to green-washing evolving into blue-washing please", and "If blood is the price of self-pursuit, we have allowed that blood to take root. When justice for one if not justice for all isn't injury to one an injury to all?" Where educators may not have power or security to break silence, we hope those with status, tenure and influence create the necessary space for this to happen.

By interacting with colleagues and literature – two critical friends which can help us encounter the world and its constraints – we (us, as authors), are better equipped to say (out loud in a teaching planning session, at a team meeting or at a conference), why silences must be broken in relation to enterprise and entrepreneurship research and education. This demonstrates why advocates argue that *self*-study is critical feature of social action – better knowing ourselves and our (in)actions can jolt us out of complacency, sometimes in ways that are radical and transformative (Pithouse-Morgan et al, 2009). Thus, as well as looking outwards (towards the world and its Planetary Boundaries), we suggest that it is also the process of looking inwards (to examine one's thinking and practice through self-study), that can better enable Enterprise Educators to critically sense check what they do (or don't do, or shouldn't do), with *what the world is asking.*

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