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**Exploring the symbiosis and tensions between vocational practices
and the aspirations for Vocational Education and Training in
Aotearoa New Zealand**

A thesis

submitted in fulfilment

of the requirements for the degree of

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by

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Abstract

Vocational Education and Training (VET) is recognised as a key to social, ecological and economic transformation, pertinent given the urgency for societies to transition to more socially just and environmentally sustainable forms of human development, what has been termed a “just transition”. As such, a key policy aspiration is to improve the relevance of VET to support individuals and communities and meet the anticipated demands of diverse stakeholder groups through these transitions. In the Aotearoa New Zealand VET context, these principles have been reflected in the recent Reform of Vocational Education (RoVE) and signalled in the Government’s social development and climate response policies. Yet VET research is replete with enduring examples of VET’s failures based on a narrow conception of training people for skills for work rather than how VET contributes to the full range of human capabilities and flourishing. Therefore, a reimagining of VET is required however what this might look like is theoretically under development while the narrow conceptions endure.

Contributing to this reimagining, this investigation argued a practice-theoretical approach to VET research using the Theory of Practice Architectures provides opportunities to explore the conditions of possibility inherent in vocational practices as the sites where transformations occur. To achieve this, a qualitative, ethnographic case study of the vocation of beekeeping in a work- and study-based context was undertaken. Using a hybrid approach to participant observation/observant participation, unstructured interviews and a review of historical materials on beekeeping, a complex array of beekeeping practices was generated and thematised. This provided the empirical resources to explore the rich complexity of beekeeping practices, to identify notions of relevance from these perspectives of practice, and analyse the symbiosis or tensions between them against a review of New Zealand’s current suite of apiculture qualifications and programmes as a part of New Zealand’s recent reforms and aspirations to meet just transitions objectives through a relevant VET system.

The findings located tensions between the strategic industry focuses and projects of production in the qualifications against the affective dimensions and projects of productivity for care that describes the unique beekeeping practice traditions of human-bee relations. This further

implicated how the qualifications and programmes were relevant to the needs of learners and employers and illuminated why disparate experiences between training and work manifest. Further, these tensions highlighted how VET can change the practice landscape of beekeeping practices in ways that consolidate this industry focus. However, by making these tensions visible, transformative possibilities inherent in new meanings of VET and the traditions of vocational practices themselves were identified. This supports the use of a practice-theoretical approach to contribute to a range of theoretical, strategic and practical endeavours in VET research, policy and practice, further backgrounding opportunities for practice-based research to define transformational trajectories for vocational practices and VET moving forward.

Dedication

To my family, who have sustained me through the unfolding practices of life.

Peter and Janny

Debbie, Shelley and Katherine

Miriam, Laria and Logan

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Chapter 1 – Introduction

This research project is framed within the changing context for Vocational Education and Training (VET) as a significant policy priority, globally, and in Aotearoa New Zealand. VET is predominant in contemporary international and national policy settings for human development, the most recent of which aspire a role for VET to support social wellbeing and ecologically sustainable moves towards “just transitions” (United Nations Educational, Scientific and Cultural Organization (UNESCO), 2022) – the notion that necessary and urgent transitions to low carbon societies should also support equal and fair opportunities for social development (McGrath & Deneulin, 2021; Stevis et al., 2019; Wilgosh et al., 2022).

A key aspiration of this policy agenda is for VET systems at the strategic level and its provision at the tactical and operational level to be contextually relevant and responsive to support individuals and communities during periods of job uncertainty and change, through offering re-training, re-skilling or up-skilling programmes (UNESCO, 2022). This requires agile and nimble VET systems that adjust and evolve to anticipated skills needs and for providers of VET to deliver contextually relevant education and training of skills for the labour market (He Pou a Rangi Climate Change Commission, 2021; Marope et al., 2015). It also requires greater collaboration between diverse stakeholder groups including government, employers/enterprises, industry, unions, and learners to synergise the supply side of education and training offered by investments in the public provision of VET with the demand side required by the labour market (UNESCO, 2022).

Yet there are arguments in VET research and policy that the traditional economic imperatives from which many contemporary VET systems evolved are no longer adequate to respond to the unprecedented scales of social and environmental crises, or worse, may be complicit in promulgating them (Anderson, 2009a; Langthaler et al., 2021; McGrath, 2023; McGrath & Yamada, 2023). Central in this critique is the view that VET continues to reinforce an outdated philosophy of “productivism” that rationalises education and training on concepts of efficiency and profit (Anderson, 2008, 2009a), materialising a narrow focus on training people for work with the expectation that individuals contribute to national productivity through their personal wealth

embodied in their labour, skills and knowledge (Allais, 2012; Avis, 2014, 2017; Langthaler et al., 2021; McGrath, 2012; Wheelahan et al., 2022).

This limited vision for VET contributes to what Marope et al. (2015) have called a “vicious cycle” in VET provision, where poor VET outcomes result in and are amplified by ongoing but poorly designed and unresponsive policy reforms, generative of a “permanent revolution” (Keep, 2006) of “policy hysteria” characterised by “shortening cycles of reform, multiple innovation, frequent policy switches, shifting meanings within reforms and untested success claims” (Stronach & Morris, 1994, p. 5). These deficiencies in VET have contributed to, among other things, the ongoing poor standing and status of VET in the consciousness of policy makers and the general public (Billett, 2014, 2020; Hyland, 2014).

Emerging as a response are calls to reconceptualise VET to “unleash its potential” (Marope et al., 2015), to “support development that is sustainable for individuals, communities and the planet, and which promotes social justice and poverty reduction” (McGrath & Powell, 2016b, p. 13). This position conceives of a much broader role for VET that harnesses the full range of human potential to lead a “virtuous cycle” of effective VET (Marope et al., 2015), focused on notions of human capabilities and flourishing (McGrath, 2012; McGrath et al., 2018; McGrath & Powell, 2016a; McGrath et al., 2020; Powell & McGrath, 2019; Tikly, 2013, 2015; Wheelahan et al., 2022).

Aligning with these global developments, the New Zealand Government recently initiated its own Reform of Vocational Education (RoVE), representing a generational shift in how VET intended to create a stronger, more unified and sustainable education system (Ministry of Education (MOE), 2019). Among the reforms was a need to improve stakeholder engagement in the rationalisation and delivery of VET throughout the regions, to be more operationally sustainable, and improve outcomes for learners, employers and those traditionally underserved by the system (TEC, 2023a). This has been captured metaphorically through the “korowai” system or Māori cloak representing the holistic enveloping of the system to meet numerous stakeholders’ needs (TEC, 2023c). Yet these reforms follow a history of reform of New Zealand’s VET system that have been inextricably shaped by the “interwoven histories” of New Zealand’s social and economic development and the tensions between the interests of industry, workers and employers

on the one hand, and the “historical, political, social, cultural and economic contexts and the role and control of the state” on the other (Maurice-Takerei, 2016, p. 4).

While there are indications of a commitment to and expectation for New Zealand’s VET system to respond to just transition objectives as a part of the New Zealand Government’s broader climate change responses and social development policies, it remains unclear whether the perennial problems associated with existing conceptions of VET will be resolved or how aspirations for a transformation agenda for VET might unfold on the ground where VET interventions are expected to have the most effect – vocational practices. Compounding this is the fact vocations are the sites of complex historical arrangements of practice prefigured and shaped by their particular and unique histories and interactions between the social and material world (Billett, 2003, 2011; Chan, 2020), with limited research that critically engages with the history of VET in New Zealand (Maurice-Takerei, 2016), or grounded in the practices of particular workplace contexts (Vaughan, 2008).

VET and vocational practice architectures

Developments in VET research under way (Lotz-Sisitka & Ramsarup, 2019; McGrath et al., 2023; McGrath et al., 2020; McGrath & Yamada, 2023; Ramsarup et al., 2023) suggest addressing the perennial deficiencies with VET in the context of just transitions requires reimagining VET. McGrath (2023) proposes this can be achieved through four approaches; the normative, epistemic, social, and ontological. Summarised, these are that normatively, there is a need to move beyond narrow economic imperatives of VET; epistemically, there is a need to understand that knowledge production is arranged in dynamic and evolving ways; socially, there is a need to understand how “new configurations of social relationships” (p. 180) can realise inclusive democratic deliberations on just transitions; and ontologically, there is the need to recognise how “the existential nature of environmental crises calls us to think ontologically about how work contributes to the wellbeing of people, other species and the planet” (p. 180).

Conceptually located near the last of these approaches, this investigation argues that enduring challenges but transformative possibilities for VET can be understood through a practice-theoretical lens generally and the use of the Theory of Practice Architectures (TPA) (Kemmis, 2019, 2022b, 2023; Kemmis & Grootenboer, 2008; Kemmis et al., 2014; Mahon, Francisco, et al., 2017) specifically, to explore and account for the “conditions of possibility” (Kemmis et al., 2014,

p. 37) inherent in vocational practices as the sites where transformations for just transitions are enabled and constrained.

That is, practices – observed in how practitioners talk and think about their practices (e.g. sayings), enact their practices with and within the material world (e.g. doings), and relate with one another through their practices (e.g. relatings) – provides the analytical resources (e.g. practice architectures) to understand how practices change or remain the same, to then analyse the symbiosis between the aspirations of VET and the types of learning arrangements through practices that might realise aspirations for just transitions.

Prior and recent research using the TPA in VET research has explored the tensions between the practice architectures of contemporary VET systems and how these shape VET teachers' experiences drawn from examples of Australia's VET context (Brennan Kemmis & Green, 2013; Choy et al., 2016; Choy & Hodge, 2017; Francisco, 2022; Green et al., 2017). Pertinent in this investigation was to trace genealogies of vocational practices, to ascertain not only what substantive practices are learned and how that informs important dimensions of “workplace” (Avis, 2014), “work-based” (Billett, 2001a, 2001b, 2004) and “practice-based” learning (Billett, 2010; Chan, 2020; Vaughan, 2018) in VET research, but also to explore the conditions that describe why these substantive practices are resilient and resistant to change or otherwise adapt and are adaptable and evolve, to then explore the symbiosis between vocational practices as “living things” (Kemmis, 2022b; Kemmis, Wilkinson, et al., 2017) and how they come into and shape (and are shaped by) VET vis-à-vis VET shapes (and is shaped by) vocational practices in this process of transformation through changing (or unchanging) practices.

In this way the investigation was inspired by recent scholarship developing the TPA in relation to how social practices change (Kemmis, 2022b), in the context of the climate emergency (Kemmis, 2022a) and the role of education in transitions and social justice (Kemmis, 2023; Kemmis & Mahon, 2023), building on the rich and collaborative scholarship using the TPA more widely to understand the conditions of possibility (Kemmis et al., 2014) that enable and constrain the types of collective action to address contradictory logics of irrationality, injustice and suffering (Kemmis & Grootenboer, 2008) and the realisation of praxis as morally-committed action for “living in a world worth living in” (Kemmis, 2019, 2022b, 2023).

Research aims, approach and guiding questions

With this in mind, the aim of the research was to produce a robust empirical account of a vocational practice and analyse the symbiosis between rhetorical and aspirational policy settings for a transformation agenda for VET and the efficacy of this agenda unfolding in the sites of vocational practices. To explore this empirically and ground the scope and site of research, New Zealand's VET context and its policy settings for just transitions was selected – specifically, the role of New Zealand's recent reforms entailed in RoVE and the aspirations to provide a relevant VET system to meet New Zealand's social development and climate change response strategies for just transitions.

To achieve these ends, an ethnographic case study in a work- and study-based context of the vocation of beekeeping in New Zealand was conducted over a one-year period. Through a hybrid approach to participant observation/observant participation, unstructured interviews and a review of historical materials on beekeeping, a complex array of beekeeping practices was generated and thematised. This provided the empirical resources I then used to analyse the practice architectures that hold beekeeping practices in their course, to identify notions of relevance from these perspectives of practice, to then analyse the symbiosis of these against a review of New Zealand's current suite of apiculture qualifications and programmes. The research questions guiding the investigation were:

Main research question:

- How can understanding the practices and practice architectures of beekeeping contribute to the development of relevant VET for just transitions?

Supporting questions:

- What is relevant to learn and why according to the practices and practice architectures of beekeeping practices?
- What is the symbiosis between the apiculture qualifications and programmes and practice perspectives of beekeeping?

Genesis of the inquiry

My interest in vocational education and the genesis of this dissertation has two points of origin. First, the sense of having a vocation has always interested me. At a young age, my vocational

calling of becoming a pilot was extinguished due to a colour-blindness impairment. This had a profound effect on my attitude to education and I never regained a sense of purpose in my educational journey of what I wanted to “be” and where I wanted to “go”. Later I developed an empathetic and social justice lens and I took a keen interest in global and local issues such as the contradictions of economic growth and unfettered consumption in a finite world, the impact of colonialism on the social and cultural fabric of colonised populations and their lands, and the impuissance of global institutions in resolving enduring conflicts and alleviating poverty.

After undergraduate studies and teaching English as a second language in East Asia, I took up opportunities to live and work with refugees and communities on the Thai-Myanmar boarder and in Kenya and Palestine to understand these dynamic issues. These experiences compelled me to complete a Graduate Diploma in International Relations in Wellington, New Zealand, and later a Master of Arts in Peace and Conflict Studies at Makerere University in Kampala, Uganda. Through my masters research on electoral violence in Uganda’s multi-party electoral process, I came to understand that social injustices, unequal development, and direct and structural forms of violence were caused by deep-set and complex social, historical and political forces of oppression, subjugation, exploitation and control that individuals and communities navigated in dynamic, forceful and resilient ways.

A persistent encounter in these diverse contexts was the tenacity of collaborative personal and communal traditions that stood as an affront to these insurmountable challenges and unfolded as uniquely located and culturally rich interactions within the social and material world. These included intergenerational practice traditions such as the “knafeh” pastry maker in Nablus in the West Bank or the forms of community farming in Gulu in the Northern Region of Uganda; the integrated and locally sourced material use and construction techniques using limited resources in the refugee camps of Thailand and in homesteads across East Africa; and the collective solidarity to accomplish productive tasks for communal wellbeing in the face of challenging social, political and economic conditions caused by direct, cultural and structural forms of violence (Galtung, 1996).

Second, remaining in Uganda after completing my masters, I began a position as a quality assurance advisor, curriculum developer and teacher for a private higher education institute offering international vocational and higher education qualifications. This initiation into VET

appealed because of its “real world” possibilities for delivering “hands-on” learning experiences, thereby linking my concerns for social justice and sustainability with a personal conviction this approach to education most aptly and concretely facilitated learners with their personal, vocational and possibly transformational social and cultural journeys. However, I was quickly attentive to the inherent contradictions and disconnects between the possibilities VET afforded and how it interacted with the practices and traditions I observed and experienced on the ground. This included tensions between the curricular I was responsible to manage against a variety of pedagogical adaptations I was required to control. At a broader national policy level, I recognised the disparities between international donor rhetoric for VET prevalent in Uganda at the time against the institutional realities and challenges in the local and national contexts where it was provisioned. More critically, I became concerned about the limited transformational potential VET availed to my learners and conscious the quality of education I was supposedly administering could have adverse effects on local practice traditions and contribute further to the social, political and economic complexities I otherwise observed individuals and communities tenaciously navigating. The seed was planted to understand how VET might exacerbate the types of oppression, subjugation, exploitation and control I understood were causes of conflict and social injustice and also to understand how the diversity of learning evident in the unfolding of everyday encounters in vocational practices could be transformational for people and communities and to the institutions of VET as well.

Coming into the inquiry from no particular paradigmatic lens or disciplinary tradition, my reading and approaches were eclectic. Influenced by the richness of African philosophies and traditions, and resistances of post-colonial and decolonial discourses (e.g. Dei, 2000; Nakata, 2007; Odora Hoppers, 2002; Smith, 2012), I embarked on doctoral research at Makerere University to explore the resilience of vocational traditions using Welsche’s (2016) notion of “transculturality” – the idea that cultures are not distinct spheres of homogeneity but rather mixtures and permeations that traverse social-political and intersubjective boundaries, to understand how learning was defined by the ongoing production of cultural artefacts and the evolution and transfer of these artefacts over time (Horsthemke, 2017). To my mind, answers to the questions of why traditions were resilient and resistant and understanding their emancipatory and transformational potential could only be informed through understanding the traditions themselves in the locations where they unfolded. Socio-cultural theories of learning such as Lave and Wenger’s (1991) Communities

of Practice and Engeström's (2001) developments with Cultural Historical Activity Theory provided some initial conceptual resources and through my initial preparation for doctoral research I was advised to use grounded theory as a means to saturate a theoretical understanding of the social, historical, political and material aspects of the vocational traditions I wished to explore. Due to the Covid-19 pandemic and life circumstances, the progression of this dissertation was discontinued.

Returning to New Zealand with my young family and continuing doctoral research afresh, it was in the development of the proposal for this doctoral research that I came across Kemmis' and colleagues' developments of the "Theory of Practice Architectures" (Kemmis, 2022b; Kemmis & Grootenboer, 2008; Kemmis et al., 2014; Mahon, Kemmis, et al., 2017) while reviewing Billett's (2011) scholarship on the purposes, traditions and prospects of VET and Chan's (2020) research on learning in craft and trades work in the New Zealand VET context. The Theory of Practice Architectures (TPA) resonated due to its heuristic potential for interpreting a wide historical arc of the substantive practices that are entangled up and unfold as niches within the boundaries of vocational practices. Through analysing the situated sayings, doings and relating that shape and are shaped by the cultural-discursive, material-economic and social-political arrangements of practices (Kemmis, 2022b), I found it was possible to empirically explore the "conditions of possibility" (Kemmis et al., 2014, p. 37) that described trajectories of vocational practices by zooming in and out (Nicolini, 2013) on practices from the past, coming into the present, to then reflect upon what understandings of these practices might mean for the future.

The theory therefore provided a conceptual apparatus to investigate linkages between the personal, social and brute worlds of vocational education and learning as a pursuit of human endeavour described by Billett (2011, p. 229) with my interests in understanding the resilience of substantive vocational practice traditions observed and experienced in my diverse global encounters with different communities in their practices. This enabled me to ask the broad questions: in a world increasingly impacted by unprecedented scales of ecological change and social injustice, what factors contribute to the resilience and adaptability of practices that gave meaning and hope to people and communities I observed in different places? What is the role of VET, if any, in this change or unchanging? How might VET perpetuate trajectories of practices that are unsustainable, unequal or untoward moving into an uncertain future or otherwise be a

catalyst for positive social and ecologically sustainable transformation? From what empirical basis can the intersection between the aspirations for VET and the experiences and cultural framings of practitioners and their interactions with the material world in their practices be analysed? Later these questions came together in a single frame: what is the symbiosis between VET aspirations and vocational practices? This question offered the broad stroke of inquiry that has been formalised in this investigation.

This brings me to beekeeping and this study. Since the introduction of European honey bees (*Apis mellifera*) into New Zealand in the 19th century, beekeeping supports the livelihoods of many commercial beekeepers of various sizes and a flourishing network of hobbyists around the country. Beekeeping is also crucial to many of New Zealand's horticulture industries and producers of unique bee products for primary export. To empirically explore the broad questions stated above I wanted to locate my research in a "hands-on" practice, preferably while working, becoming and belonging as a part of this practice. Beekeeping was both available as a site of research and attractive as a hobby or vocational pursuit; I had always been interested to learn more about bees and beekeeping and had the opportunities to do so. For this reason, beekeeping and how it is positioned in New Zealand's VET context was selected as the site of research and presents the analytical terrain to explore the symbiosis between policy aspirations for political, social, and economic moves towards just transitions and how these aspirations unfold in vocational practices.

In a way, the discussions, theories and ideas presented in this autobiographical account and developed throughout this investigation are continually being realised through my ongoing learning journey of being inculcated into, becoming and belonging in a community of practices and practitioners – as a researcher and in becoming a beekeeper. This dissertation, one I have been immensely privileged to pursue, is the result of decades of interest and concern in the sense of vocational calling I felt I lost at a young age while in later life striving to understand the value and meaning of education in the uncertainty of a changing and often unjust world, with plausible hopes for a better future for my children.

Overview of the dissertation

The dissertation is structured to be read like an hourglass: beginning with a wide arc of inquiry narrowing to a central focus to manage the scope of the empirical work and analysis, then expanding to return to some of these broader inquiries. Metaphorically it might also be read as if

inspecting a beehive – where each chapter represents an individual frame that can be taken out of the hive, inspected, and returned to the hive, representing how each frame or chapter holds its own story, meaning and value to the rest of the hive and investigation.

This chapter provides the introduction and personal genesis of the investigation to set the scene for the research and establish the premise, aims and research questions guiding the investigation. Chapter 2 backgrounds the current policy settings and context of VET research, policy and practice to appraise VET's enduring challenges and presents the thesis that practice theory provides a complementary approach for defining a new vision for VET that is necessary to realise VET's aspirations to meet just transitions. Chapter 3 grounds the investigation in New Zealand's VET context, overviewing key aspects of New Zealand's historical and contemporary VET system and presenting the case study that defines the scope of the investigation. Chapter 4 introduces the rationale for and then overviews practice theory and the Theory of Practice Architectures as the conceptual resources used in the investigation. Chapter 5 details methodological considerations for practice-based research of vocational practices before outlining the research design and methods used to generate the empirical evidence. Chapter 6 details my ethnographic encounters with the practices of beekeeping to then identify the practice architectures, projects, practice traditions, and changing practice landscape of beekeeping practices. This provides the analytical resources I then use in Chapter 7 to explore what is relevant to learn and why according to these practice perspectives. These findings are then used to analyse notions of relevance as they are positioned in the apiculture qualifications and programmes in Chapter 8, to explore the symbiosis and tensions between VET aspirations and vocational practices. Chapter 9 presents a synthesis of these analyses through key discussion points that address the main research question and conclude the case study. Chapter 10 concludes the investigation and provides a summary of the key ideas and contributions for further research.

Chapter 2 – Background

In a recent publication, Simon McGrath (2023) states “there is a powerful sense of VET not working” (p. 158). This concern is well documented in a plethora of enduring debates in VET research, policy and practice across a diversity of discourses and spaces – international, regional, national and in the locations of work and classrooms of VET institutions. At the broadest level this investigation is framed within the changing context of VET as a significant global policy priority to respond to numerous global challenges affecting human development within the confines of ecological limits. In this sense it has been inspired by my global experiences with VET and influenced by a human development lens (e.g. Marope et al., 2015). However, more practically it is informed by how VET comes to be reproduced at the “coalface” (Maurice-Takerei & Anderson, 2022) in the vocational practices where VET is expected to have the most effect and the national contexts in which particular VET systems have evolved.

The first of three chapters reviewing the literature, this chapter backgrounds the challenges and opportunities for VET identified in VET research, policy and practice. I first overview VET’s enduring deficiencies and the rationale and objectives of a “transformation agenda”. I then outline the contemporary research and policy aspirations of VET for just transitions (UNESCO, 2022) as the most recent iteration of this transformation agenda. I then frame the premise of the investigation by presenting two visions for VET; the first is the normative vision and transformation aspirations of VET that are challenged for remaining embedded within legacies of productivism (Anderson, 2008, 2009a) promulgated in the present through a socio-technical imaginary (Avis, 2021). I conclude the chapter by reviewing some counterpoints to this vision in current VET discourse before positing the thesis that practice theory and practice-based approaches provide a means to explore an alternative vision for VET through deeper engagements with and understandings of vocational practices. Cumulatively, these discussions frame the investigation that is pursued in New Zealand’s VET context detailed in Chapter 3 through the conceptual resources of practice-theoretical approaches and the Theory of Practice Architectures elaborated in Chapter 4.

Transformation agendas for VET

As a means to nourish a livelihood, personal identity and social and cultural sense of belonging, being initiated into and learning a vocation forms an important element in many peoples' life trajectories and has done so in different ways across the diversity of human histories (Agrawal, 2009; Billett, 2010, 2011, 2021; Hager & Hyland, 2002). In this way the use of the term "vocation" here and throughout the dissertation is understood as both a personally derived "calling" or being "called into" a particular life pursuit (Hansen, 1994) as well as the societal imperative and cultural conception of having an "occupation" that may or may not be subjectively held as a life pursuit but is nonetheless commonly associated with and transpires vocationally as a form of paid and often unpaid work (Billett, 2011, 2021). Linked to these notions of "vocation" and "vocational", Vocational Education and Training (VET), as a diverse field of education and sector found in many national education systems (Billett, 2011), is widely considered a key to improving individual and social wellbeing and mobility through linking education with a vocation and providing the types of learning experiences that support pathways into a continuous means to a livelihood at various stages of an individual's life (Marope et al., 2015; McGrath & Powell, 2016a).

As such, after a period of policy obsolescence in the early 1990s due to erroneous divestments in the public provision of VET rationalised on poor rates of returns and a predominant focus on compulsory education at the time (Maclean & Wilson, 2009), VET has since re-emerged as an important international policy pursuit contributing to regional and national educational policy reforms (Maclean & Wilson, 2009; Marope et al., 2015; McGrath, 2012). Underlying this re-emergence is consensus in VET research and policy that the dominant "VET orthodoxy" (McGrath, 2012) of economic development from which modern VET systems evolved is no longer adequate to respond to the scales of unprecedented change of environmental degradation and crises, increasing disparities between rich and poor, and the types of education and training required to meet these challenges in the context of inevitable yet uncertain changes in the future of work (Marope et al., 2015). Central to this critique of the VET orthodoxy is the continuing influence human capital theory has on contemporary frameworks of VET.

Influenced by rational economic discourse since the 1960s (Marginson, 2019), the premise of human capital theory presumes education and training ensures individuals maximise their self-interests to become productive entities embodied in their labour, skills and knowledge to

accumulate wealth and social mobility that is linked to broader economic imperatives to contribute to national economic productivity (Langthaler et al., 2021; Marginson, 2019; Oliver et al., 2019; Tan, 2014). This economic imperative informs a wider critique of VET's role in the political economy of skills literature. "Political economy is the production, distribution and exchange of goods and services in society" (Oliver et al., 2019, p. 115) and in VET is informed by three contemporary schools: human capital theory, institutional approaches, and capabilities approaches. All posit a rationale, albeit from different theoretical and philosophical traditions, that the purposes and functions of VET systems are to improve social and economic outcomes for individuals and society through the provision of education and training that leads to gainful and meaningful employment or capabilities for life (Oliver et al., 2019).

While variations of institutional approaches in the political economy of skills tradition have given rich accounts of the evolution of nationally specific system imperatives for VET (Oliver et al., 2019), with examples of VET's success in some global regions (McGrath, 2012), economic rationales based on human capital theory continue to materialise globally as a normative theory (Wheelahan et al., 2022) in contemporary policy reform contexts through a "toolkit" approach to VET (McGrath, 2012), shaped by neoliberal concepts of efficiency and new public management paradigms of control (Allais, 2014; McGrath, 2012; McGrath et al., 2020; Strathdee, 2003, 2011). Paraphrased from McGrath (2012), the principles of this toolkit approach include:

- systemic reforms to improve VET outcomes that are relevant and responsive to employers and the labour market;
- the intensification of the use of qualification frameworks and credentials to improve learner mobility within learning systems and the accreditation of informal and non-formal learning;
- quality assurance systems to measure the efficacy of qualification systems;
- outcomes-oriented funding; and,
- the managed autonomy for public providers with a larger share of industry input in decisions to meet national policy directions and targets tied to funding, reporting and quality assurance regimes (p. 625).

The effect of a toolkit approach is an impoverished account of VET both in terms of its theoretical power and practical efficacy (McGrath, 2012, p. 625). This includes the reification and

commodification of skills through qualifications frameworks and credentials (Wheelahan et al., 2022), as proxies of expertise (Guile & Unwin, 2019), where learning is acquired, possessed and transferred as products (Hager & Beckett, 2019; Hager et al., 2012), through markets for education based on the demand and supply of client relationships between stakeholders, namely learners, employers and providers (Allais, 2012, 2014). Further, there is little evidence to support claims that innovations such as qualifications frameworks have contributed to solving the problems they purport to address (Allais, 2014). It is worth quoting McGrath (2012) at length as his concerns echo many identified in the literature and remain current today. Accordingly, this toolkit approach to VET reform is:

...too individualistic in its assumptions regarding its chief goal of employability; too short-term in its focus on immediate employability rather than lifelong processes; too focused on a particular model of work as paid employment, with very serious gender implications. In spite of the influences of neoliberalism, it is still too focused on delivery by public institutions, ignoring the complexity of forms of delivery and acquisition of vocational learning. It remains too centred on formal learning in educational institutions, largely heedless of the wealth of literature on informal learning. It is too uninterested in wider questions of preparation for the good life, ignoring the capabilities turn in particular. It is unsustainable in the face of major global challenges regarding environmental degradation and climate change, which it domesticates as “skills for green jobs”. Moreover, there is insufficient evidence that the reforms have had significant positive impacts on either economic competitiveness or social inclusion (McGrath, 2012, p. 625).

These debates and concerns underline a number of enduring core challenges for the aspirations of VET. Operationally these challenges include what Marope et al. (2015) call a “vicious cycle” in VET provision, where poor VET outcomes result in and are amplified by ongoing but poorly designed and unresponsive policy reforms. Strategically at the international level, criticism is aimed at the “policy borrowing” and “one size fits all” transfer of VET policies and practices into countries where they are contextually and culturally irrelevant (Tikly, 2013; Wheelahan, 2019). Tactically at the national level, contextually irrelevant VET policy and provision generates ongoing cycles of VET reform, creating a “permanent revolution” (Keep, 2006) of “policy hysteria” characterised by “shortening cycles of reform, multiple innovations,

frequent policy switches, shifting meaning within reforms and untested success claims” (Stronach & Morris, 1994, p. 5). The result is a dearth of critical theoretical engagements with the project of VET in the history of humanity, the planet and in our lives (McGrath, 2012), with little attention given to the cultural significance of forms of vocational learning (Heikkinen, 2021), nor deep comparative histories of VET systems as narratives of gradual change that look beyond the period of modernity (Gonon & Deissinger, 2021). These perennial problems (Hyland, 2014) further contribute to ongoing misconceptions and debates about the purposes and definitions of VET (Billett, 2011; Moodie, 2002), the poor standing and status of VET (Billett, 2020), and its lack of “parity of esteem” with other sectors of education in the consciousness of researchers, policy makers and the general public (Billett, 2014, 2020; Hyland, 2014), that further limits theoretical developments to define meaningful and transformational approaches to VET reform (McGrath et al., 2018).

Emerging as a response to these deficiencies are calls to transform VET to “unleash its potential” (Marope et al., 2015) and to “support development that is sustainable for individuals, communities and the planet and which promotes social justice and poverty reduction” (McGrath & Powell, 2016a, p. 13). This “transformation agenda” (McGrath, 2012) conceives of a much broader role for VET to harness the full range of human potential that leads to a “virtuous cycle” of effective VET (Marope et al., 2015; Tikly, 2013), to be prioritised within different threads of international and regional development policies (Heikkinen & Lassnigg, 2015; Marope et al., 2015; McGrath & Powell, 2016a; OECD, 2018; Tikly, 2013; UNESCO, 2012, 2022), and generative of increased policy attention by national governments towards their VET system reforms (Caves et al., 2021; Clayton & Harris, 2018). Indicative of this broader social equity and sustainability vision for VET are recent policy initiatives and strategic plans for VET to drive responses for “just transitions” (UNESCO, 2022).

VET aspirations for just transitions

Within the context of escalating global environmental crises and necessary transitions to low carbon futures informed by growing scientific consensus and captured in recent global commitments to low-carbon transitions, “just transitions” has emerged as the most recent iteration of this transformation agenda guiding VET policy (International Labour Office, 2018; International Labour Organization, 2022; Just Transition Centre, 2017; UNESCO, 2022). The term

originates in labour movement advocacy since the 1970s that aimed to “protect workers in polluting industries whose livelihoods were jeopardised by environmental policy” (Wilgosh et al., 2022, p. 2), what has been termed the “jobs versus environment” dilemma (Wilgosh et al., 2022). From this perspective, the term has two primary usages; first, that any transitions caused by policy changes “should be fair (just) to the most vulnerable populations” (Eisenberg, 2019, p. 275) and to counteract and not repeat or exacerbate the inequitable distribution of historical injustices of environmental hazards; second, that transitions should protect the livelihoods of people and communities disproportionately affected by the processes of transitioning to low carbon societies (Eisenberg, 2019).

More recently, the notion of just transitions has been broadened through appropriation into political and policy settings to “unite future visions of economic and climate action” in response to the “conflicting demands of economic production and ecosystem protection” (Wilgosh et al., 2022, p. 2), underpinned by attention to wider equity and social justice issues (Newell & Mulvaney, 2013). As such, the notion has been arrogated to the plethora of interests, voices and concerns of multiple actors such as researchers, governments, unions, advocacy groups and the private sector towards addressing the climate crises (Stavis et al., 2019; Wilgosh et al., 2022). Swilling (2019) identifies these discourses under two schools. These are on the one hand, “sustainability transitions” that are “concerned with the dynamics of structural change in light of socio-technical advances and ecological limits” (p. 5); and on the other hand, those that envisage a “post-development, non-neoliberal, post/non-capitalist, biocentric and post-extractivist future” (p. 5). Thus, while international aspirations and commitments to just transitions are shared, the meanings and approaches to just transitions are diverse and contested, informed by multi-dimensional and multi-scalar phenomena that cut across climate, energy and environmental justice literatures (Heffron, 2021), each with their respective ontological positions and influenced by different political persuasions and powers of resistance (Geels, 2014). Capturing these complexities, McGrath and Deneulin (2021) provide a more formative description of just transitions understood as:

...the multiple and cross-sectoral processes of systemic change that are needed to transform current socio-economic and cultural systems into ones which achieve greater balance

between social and earth systems while promoting the flourishing of all, rather than merely a few at the expense of others (pp. 639-640).

These debates reflect the emergent nature of just transitions as a “living concept” (Stavis et al., 2019) and ongoing yet historical multi-actor struggles over interrelated social and environmental concerns.

In VET policy, just transitions principles have been included in the recently conferred UNESCO TVET¹ strategy 2022-2029 (UNESCO, 2022). While the language positioning just transitions is explicit, specific policy responses are implied through the wider strategic vision of transforming VET aligned with UNESCO’s previous policy commitments for transformative economic, social and sustainable imperatives (UNESCO, 2012). This is evident, for example, in the preamble of the strategy that states: “to transform TVET for successful and just transitions [...] by promoting skills development for empowerment, productive employment and decent work, and facilitate[ing] the transition to more digital, green and inclusive economies and societies” (p. 4).

A synthesis of this document with the literature outlined above locates a vision for just transitions in the “sustainability transitions” school (Swilling, 2019) with a focus on assumed socio-technical advances and the green skills and green jobs nexus. Less evident is a clear post-development or “post-productivist” vision for VET, due in part because such skills cannot be predicted and will emerge over time (Langthaler et al., 2021; McGrath, 2023) but also because a critical literature is still emerging (McGrath et al., 2018; McGrath et al., 2020; Ramsarup et al., 2023). As a response to this emerging interest, coupled with the aspirations of VET for just transitions, a key question elaborated in the next section is how VET systems and associated policy aspirations for transformation are expected to contribute to the realisation of different just transitions principles. Answering this question is necessary because at a minimum VET can be ineffectual in realising these principles, or worse, complicit in unjust transitions (Langthaler et al., 2021).

¹ “Technical Vocational Educational and Training” (TVET) is the commonly used designation for VET in international policy contexts.

Two visions for VET

The premise of this investigation posits that two visions for a transformative VET exist. The first is the normative yet aspirational and perennially problematic vision for VET firmly entrenched in economic imperatives reproduced within a “productivist logic” (Anderson, 2008, 2009a). As will be elaborated in this section, this contributes to projects of aspirational human development and VET coalescing within its own socio-technical imaginary (Avis, 2018, 2021), however with consequences for VET that shape particular anticipated trajectories for the realisation of just transitions. The second is a vision for VET that defines the thesis introduced in the final section of this chapter. Here, the first vision is discussed.

The perennial challenges and deficit orientations for VET discussed above are, drawing on Damon Anderson’s (Anderson, 2008, 2009a) argument, the outcome of discourses and discursive practices underpinned by VET’s genealogies in “productivism” (Anderson, 2009a; Giddens, 1994). According to this argument, VET “emerged as a distinct educational form in response to the radically new social, economic, technological and cultural conditions created by the industrial revolutions of the late 18th and 19th centuries in Britain, Western Europe and North America” (Anderson, 2009a, p. 38; Billett, 2011; Maclean & Wilson, 2009). Small, de-centralised and family-based pre-industrial systems of production characterised by work as a social activity were “gradually overshadowed by larger scale industries dominated by entrepreneurial owners of capital” where the “...quest for efficiency and profit was the principle dynamic of the new industrial mode of production” (Anderson, 2009a). This in turn was catalysed by a new work ideology and ethos of productivism (Giddens, 1994).

Tracing this history and evoking Foucault (1980), Anderson (2009a) suggests that through various stages of its institutional development, “TVET is discursively constituted within a regime of truth, an ensemble of universal truths whose status as ‘truth’ is considered self-evident and beyond doubt, despite their arbitrary and contingent nature” (p. 42). Foucault contends that “each society has its regime of truth, its ‘general politics’ of truth; that is, the types of discourse which it accepts and makes function as true” (Reyna & Schiller, 1998, p. 337). Further, this true knowledge “...is produced and transmitted under the control, dominant if not exclusive, of a few great political and economic apparatuses” (Reyna & Schiller, 1998, p. 337). “Truth”, Foucault suggests, “is linked in circular relation with systems of power which produce and sustain it, and to effects of

power which it induces and which extend it; a ‘regime of truth’” (Foucault, 1980, p. 132). Thus, VET is implicated as “both a product and (re)producer of productivism as a regime of truth, enmeshed in the networks of power-knowledge relations that form productivism and construct human reality as a limited field of possibilities, in the process negating, displacing or obscuring alternative readings of reality” (Anderson, 2009a, p. 42).

Accordingly, VET has been implicit in reproducing two key productivist assumptions. These are the idea that that training leads to productivity that leads to economic growth (training for growth) and that skills lead to employability that leads to jobs (skills for work) (Anderson, 2009a; McGrath, 2012). This “training for growth and skills for work” logic and the assumptions that underpin it are further “implicit in the policy framework, organisation, management and culture of TVET institutions and in the structure, content and delivery of TVET programmes” that “...routinely shape and direct the formation of learner subjectivities (p. 43). Anderson (2009a) continues:

Thus, as a principal site of subjectivity formation, TVET performs a critical role in the production and legitimation of the universal truths of productivism and their imminent power-knowledge relations. It does so by leaving unstated and unquestioned the truth claims, assumptions and interests that are inscribed in its policies, pedagogies and practices and which shape what is taught and learned in its classrooms and workshops (p. 45).

This is further confirmed in “productivist discourse, constantly circulated through the disciplinary power-knowledge network of science, technology, and economics, [and] normalised through the everyday practices and procedures of industry, government, research and education” (Anderson, 2009, p. 46).

Written over a decade and a half ago, Anderson’s arguments remain poignant given the trajectories of VET’s continued failures (Ramsarup et al., 2022) and the urgency of VET’s aspired role for just transitions. Updating Anderson’s argument and linking it to the current policy context for just transitions, James Avis (Avis, 2012, 2018, 2021) sees the promulgation of a productivist discourse through rhetorical scientific and technical notions such as the “fourth industrial revolution”, establishing a socio-technical imaginary; “constructing and reconstituting a particular understanding of the future and the way it is conceived and understood” (Avis, 2021, p. 20). Taylor (2004) uses the notion of the modern social imaginary to refer to the way in which people imagine

their social existence through the infiltrating of theories by elites that are then transmitted to wider society (Avis, 2021). In educational research, the concept serves “as a heuristic to examine the material relationships between educational ideas or ideals and educational policies and practices as they operate within an educational system and its host culture” (O’Neill, 2016, p. 1).

Extending this line of argument, Avis’s (2018, 2021) concern is how ideological and normative discourses of a socio-technological imaginary retain capitalist relations and modes of accumulation as attempts to control or tame the contradictions and tensions inherent within capitalism. Accordingly, the socio-technical imaginary promulgates the notion of VET’s role in developing the enterprising individual as the means through which socio-technical solutions to global ills will be realised through a “techno-utopia” (Trauth-Goik, 2021) however without recourse to the prefigured, anti-capitalist struggles that stand as alternative organisational forms to those of capital (Avis, 2012, 2021). Indeed the fragility of the assumptions underpinning socio-technical change are supported by projected climate models that show substantial precarity about the pace of technological innovation and socio-technical transitions abating the effects of climate change below agreed upon thresholds (Kanger et al., 2023; Luderer et al., 2018; McLaren & Markusson, 2020). Thus, Avis’s argument supports the notion that policy moves for just transitions within the extractivist, productivist and consumerist capitalist doctrine of economic growth, aptly framed by Moore (2017, 2018) in this period of human history as the “Capitalocene”, shall amount to an “unjust transition” serving the interests of elites (Swilling, 2019), that “belies the reality that inequality, environmental degradation and injustice remain rampant within the current system in which technologies are constructed” (Trauth-Goik, 2021, p. 62).

In summary, both Anderson’s historical framing of VET’s implicit role in productivism and Avis’s contemporary critique of VET in promulgating a socio-technical imaginary reflect the notion that since its inception during the evolving social, political, economic, technological and cultural changes over two centuries ago, VET remains positioned to serve the interests of privileged societal elites (Billett, 2011, 2014).

Some developing counterpoints

As counterpoints to the productivist visions for VET described above, the authors cited offer some alternative conceptions for VET and education in general in response to necessary and just transitions. Through his “critical examination of productivism and its negative environmental

effects” (Anderson, 2009b, p. 159), Anderson suggests sustainable livelihoods “framed within the ethos of ecologism” through “...ecological stewardship adopted as the new meta-vocation could provide an integrative framework for transforming TVET into learning for ecological sustainability” (Anderson, 2009a, p. 52). Comparatively, Swilling (2019) explores an “evolutionary pedagogy of the present” through an “emergent transdisciplinary research practice” with a focus on “place-based experiential” and “interdisciplinary learning” (pp. 295-316). An evolutionary pedagogy of the present recognises the value of location and experience in “perturbing the system” and “exaptation” – or organic adaptation to local and global problems. Emphasis is placed on self-organising and emergent innovation relative to the (public) commons rather than “finding the most effective and efficient means to achieve normative ends” (Swilling, 2019, p. 309). This places greater anticipation and provision for emergence and the absorption of complex systems in methodological frameworks that explore transformational learning.

It is with Simon McGrath and colleagues’ (McGrath, 2012, 2023; McGrath & Deneulin, 2021; McGrath et al., 2018; McGrath & Powell, 2016a; McGrath et al., 2020; McGrath & Yamada, 2023; Powell & McGrath, 2019; Ramsarup et al., 2022; Ramsarup et al., 2023) research on VET for human development that resonates and forms the basis for theoretical entry points into the thesis. This is due in part because of my previous experiences in some of the geographic locations where this literature has emerged but also because it is equally applicable in many if not all national VET contexts. Predominant in McGrath and colleagues’ research is advancing the “capability approach” in VET research, policy and practice. Drawing on Western philosophies and liberal traditions of human freedoms and flourishing, the capability approach reconceptualises notions of human development (McGrath et al., 2020; Tikly, 2013) as a departure from human capital theory to understand the link between structure and agency in the formation of educational objectives. Pertinent in VET research and practices is the understanding that “capabilities link individuals, education and work by identifying the individual, social, economic, and cultural resources and arrangements that individuals need to develop as autonomous and innovative workers within a broad set of related occupations” (McGrath et al., 2018, p. 128). More recently, the capability approach for VET has been viewed through the lens of critical realism (McGrath et al., 2020; Powell & McGrath, 2019; Ramsarup et al., 2023) that aims to analyse the structural constraints and enablements that affect the lives of learners, while acknowledging and emancipating their

voices and experiences and the manner in which they “understand, mediate and respond to these constraints and enablements” (Powell & McGrath, 2019, p. 21).

In addition, and evolving more recently in this field of research, an elaboration of Finegold’s (1999) skills ecosystem has been used to understand constraints and enablements within a “sectoral-spatial” or meso-level (Brown, 2022; McGrath, 2023) while incorporating an expansion of political ecology to describe a political-economy-ecology of skills (Lotz-Sisitka, 2023). Challenging the conventional dichotomy on skills development between the centralised supply of skills and marketisation model of adjusting training systems to industry demand, Finegold stresses “high level” skills ecosystems emerge autonomously as geographically bound clusters within contexts of dysfunctionality and distrust (Brown, 2022; McGrath, 2023). Political ecology on the other hand challenges political economy traditions that ignore the ecological dimension of “carbon-centric development and capitalist accumulation” (Lotz-Sisitka, 2023, p. 41). In the main, these approaches are attempts to ground VET research, policy and practice in the social-spatial contexts where VET unfolds and has meaning and coherence to those involved in its reproduction.

Synthesising these developments in VET literature over the past decade or so, McGrath and Yamada (2023) suggest a “theoretical hybridity” is under way that includes political economy traditions with perspectives from other social theories (e.g. human development, political ecology, critical realism), “to offer multiscale accounts of skills and development in which public VET colleges and formal firms are important but alongside a wider range of actors, and where the social purpose of VET is asserted alongside the economic, with a growing concern too with the environmental dimension” (McGrath & Yamada, 2023, p. 77). They suggest these approaches will lead to continued tensions over matters such “as the interplay between structure and agency, questions of scale, and the degree to which analysis should move beyond the formal frames of both education and industry” however sharing “in common with the constructivist account a strong sense of the importance of context and the need to eschew either simplistic structuralist or agentic accounts” (McGrath & Yamada, 2023, p. 77). Revealing in this synthesis is the key message that within the traditions of research on VET and human development, continuing dialogue across them remains a major challenge moving forward (McGrath & Yamada, 2023, p. 77).

Accordingly, four levels have been proposed for reimagining VET: the normative, epistemic, social and ontological. According to McGrath (2023, pp. 179-180); the normative requires thinking “beyond the narrow, unquestioning belief in VET for employability and interrogat[ing] what VET should be for” (p. 179); the epistemic requires understanding how “new forms of work bring with them new knowledge and new knowledge requirements” that will be “shaped by technological, environmental and societal change that will impact [on their] knowledge content” (p. 179); the social recognises the “importance of new configurations of social actors and new relationalities” and that “to achieve just transitions, it will be crucial that socially inclusive and democratic deliberation and practice spaces are opened up and defended” (p. 179); and the ontological requires understanding how “the existential nature of environmental crises calls us to think ontologically about how work contributes to the wellbeing of people, other species and the planet” (p. 180). Therefore, “[i]n this view, VET is fundamentally about becoming fully human, about creating ways to live, work and learn in harmony with other humans, other species and the planet. Reimagining VET in this light is the single biggest challenge for the field [of VET] today” (McGrath, 2023).

Recognising these important developments in the field of VET research and the possibilities they open up for further inquiry and reimagining VET, as an additional point of departure of the orthodoxy they critique and alternative approaches they propose, the central thesis made in this investigation is that constraints and enablements for socially just and ecologically sustainable systems of vocational learning aligned with just transition principles are evident in understanding the practice architectures or “conditions of possibility” (Kemmis et al., 2014, p. 37) afforded by vocational practices themselves, as sites where social activities unfold and transform human relationships between each other and the material world. Thus, to summarise this section and link it to the next; while the dominant vision for VET maintains an ethos of productivism promulgated through a socio-technical imaginary, work in the field is generating discourse of alternative visions for VET inspired by the aspirations and current policy context of necessary and just transitions. The purpose of this investigation and its central thesis is that new meanings and the valuing of VET’s role for just transitions can be explored through a deeper engagement and understanding of the vocational practices it targets, the topic of the next and final section of this chapter.

Exploring VET through vocational practice architectures

This investigation explored alternative conceptions and possible transformations of VET through a “practice” lens. “Practice theory”, practice-based, practice-theoretical or praxeological approaches to the study of social life and the “practice turn” is an interdisciplinary and theoretical movement or social network of theories beginning in the 1970s and growing collaboratively in social research since the 2000s (Reckwitz et al., 2023). In the main, practice theory approaches theoretical conceptions and empirical analysis of social life as open, emergent, performative, relational and mediated within an unfolding social-cultural and social-material milieu of practices, shifting the focus of embedded philosophical and empirical accounts of social phenomena from epistemological standpoints as ways of knowing in the world to ontological possibilities of ways of being in the world. The strength of a practice-theoretical approach is that it provides both a socio-ontological perspective to the study of social phenomena that resolves some enduring conflicts in social research and a socio-theoretical toolkit to heuristically guide interpretations and experiences of empirical insights, opening eclectic and innovative possibilities for exploring and understanding social life (Nicolini, 2013; Reckwitz et al., 2023).

Pertinent in this investigation was tracing genealogies of vocational practices to ascertain not only what substantive practices are learned and how that informs important dimensions of “workplace” (Avis, 2014), “work-based” (Billett, 2001a, 2001b, 2004) or “practice-based” learning (Billett, 2010; Chan, 2020; Vaughan, 2018) in VET research but to also explore the conditions that describe why these substantive practices are resilient and resistant to change or otherwise adapt and are adaptable and evolve, to then explore the symbiosis between vocational practices as “living things” (Kemmis, 2022b) and how they come into and shape (and are shaped by) VET vis-à-vis VET shapes (and is shaped by) vocational practices in this process of transformation through changing (or unchanging) practices. As Kemmis (2021) notes:

Practice theory allows us to give accounts of such transformations, to show not only *that* knowledge is acquired in this process but also *how* the transformation of practices happens, and what else is in the site – like practitioner’s identities and subjectivities, and communities of practices, and the sites themselves – might be transformed by the learning that has taken place (p. 291).

This makes it possible to ascertain VET's role in the process of change, either in facilitating transformation or as a conduit of learned practices that may be untoward and perpetuate undesirable, vicious cycles that are counterproductive to such an agenda (Kemmis, 2022b; Kemmis, Wilkinson, et al., 2017), or dangerous across a range of social and environmental parameters (Anderson, 2009a).

For this reason, the use of the word “symbiosis” in the title and throughout the dissertation coordinates a number of different intentions practice theory aims to address in social research. Metaphorically it draws attention to the idea that the “happeningness” (Kemmis, 2022b; Kemmis et al., 2014) of practices can be analysed according to the symbiotic relationships of practices as “living things” (Kemmis, 2022b), to illuminate the symbiosis or tensions within practices under investigation, for example beekeeping, but also how practices are entangled and entwined with other practices, for example VET, that analytically correspond to an “ecologies of practices” (Kemmis, 2022b; Kemmis et al., 2014). By extension, there is a more literal use of the term denoting the sociomaterial symbiosis of vocational practices with(in) the material world (Fenwick, 2010, 2015), important because human practices that manifest through vocations and occupations have material implications in the world and because there is an urgent need to balance imperatives for social justice that supports human work, productivity and livelihoods with imperatives of ecological and environmental sustainability (e.g. jobs versus environment) (Lotz-Sisitka, 2023; Stevis et al., 2019). To explore and understand this symbiosis and as an additional theoretical lens to conceptualise a transformative vision for VET, the ongoing and collaborative developments of the Theory of Practice Architectures (TPA) (Kemmis, 2022b; Kemmis & Grootenboer, 2008; Kemmis, Wilkinson, et al., 2017; Kemmis et al., 2014; Mahon, Kemmis, et al., 2017) was utilised, elaborated in Chapter 4.

Therefore, to conclude this section and position the development of the research focus, considering the range of debates and aspirations for VET in relation to just transitions, the following research question provided an initial and broad guide for the investigation:

- How can understanding the practices and practice architectures of vocational practices contribute to the development of an efficacious VET system for just transitions?

To situate and explore this question empirically and define the scope of analysis, the investigation was grounded in New Zealand's current VET policy context for just transitions against an

ethnographic case study of the practices of beekeeping. The next chapter extends the literature review to introduce and detail New Zealand's VET context including its historical developments and recent reforms, and its challenges and opportunities in the policy settings for just transitions. This then provides the background to introduce and explore the case study of beekeeping and respective education and training of beekeeping as it is positioned in New Zealand's VET context as the site of the research activities and analysis.

Chapter summary and conclusion

The purpose of this chapter was to provide the general and encompassing background to the investigation. First, I reviewed the perennial challenges with VET and aspirations for a transformation agenda guided by current policy moves for just transitions. Next, I proposed as the premise of investigation that two visions for VET exist. The first vision of a transformation agenda for VET remains embedded in a historical and contradictory logic of "productivism" (Anderson, 2009a) promulgated in a current "socio-technical imaginary" (Avis, 2021) that could lend itself to an unjust transition moving forward. Building on the work of some emerging counterpoints to this productivist logic, a second vision for the transformation of VET was proposed premised on using practice theory generally and the Theory of Practice Architectures specifically as a lens to explore the symbiosis between policy aspirations for VET and just transitions and the unfolding of these aspirations on the ground in vocational practices. This established the initial and broad guide for the investigation, prefacing the discussions in the next chapter that locate the investigation specifically in New Zealand's VET context.

Chapter 3 – New Zealand’s VET context

The previous chapter backgrounded the challenges and opportunities in VET policy, research and practice, and outlined the premise of the research. This chapter extends the literature review to ground the investigation in New Zealand’s VET context and aspirations for just transitions, providing the scope and focus of analysis. While the investigation was inspired by my global experiences with VET, in particular Uganda, New Zealand’s VET context was selected due to the uncertainties of international travel during the Covid-19 pandemic and because of the connections I have to the land of my birth and current place of residence.

In this chapter I first highlight significant developments and stakeholders in New Zealand’s historical VET context before overviewing the recent reform context of RoVE. I then present a synthesis of New Zealand’s VET aspirations for just transitions as they are identified in current national policy settings and aligned with international norms for VET. I then elaborate the specific policy aspirations of improving the relevance of VET as one national policy lever for just transitions, juxtaposing two analogies of what this system looks like in the reforms; the holistic, learner-centred but aspirational “korowai” system and what I term “the wheels” or “cogs in the system” that reflects the legacy of the more mechanically functional aspects of New Zealand’s VET system. Finally, New Zealand’s beekeeping context and its relationship to VET is introduced, providing the context and site of the research.

Historical developments

New Zealand’s VET system has been inextricably shaped by the interwoven histories of the country’s colonial past, social and economic transformations, and the tensions between the interests of industry, workers and employers on the one hand and the “historical, political, social, cultural and economic contexts and the role and control of the state” (Maurice-Takerei, 2016, p. 4) on the other. Accordingly, “[t]he shape, role and goals of vocational education and training in New Zealand are often in flux, influenced by global, national and local conditions” (Maurice-Takerei, 2016, p. 7). To summarise, these conditions include; New Zealand’s geographic isolation, relatively small population and history of colonial settlement and emigration from Europe which

means it has, and continues, to rely on immigrant labour and skills to support the growth of national and regional economic and industrial activity (Maurice-Takerei, 2016), a point of contention driving linkages between industry, education and immigration settings today (NZPC, 2022). In addition, New Zealand's economy is also comparatively small, reliant on productivity off the land and sea or small scale, innovative and niche enterprises, and dependent upon and sensitive to global conditions such as trade dynamics, consumer preferences and economic shocks (Pells, 2022). Finally, New Zealand's governance systems, political ideologies and cultural identity is shaped by its colonial legacies and enduring tensions with tangata whenua or people of the land through the unrealised principles enshrined in Te Tiriti o Waitangi (Came & Zander, 2015). These factors have placed different pressures on the evolution of New Zealand's VET system. This whakapapa or genealogy of New Zealand's VET system has been comprehensively summarised elsewhere (e.g. Chan & Huntington, 2022b; Maurice-Takerei, 2016). In the following section I highlight those important features of development and reform that have given rise to New Zealand's "hybrid system" of VET.

New Zealand's "hybrid VET system", to borrow a term to describe the German VET system (Kappert, 1997, p. 60; Maurice-Takerei, 2016), refers to two spheres of VET provision (Alkema, 2022). "Work-based" or "employer-led" VET provision evolved from New Zealand's earliest informal apprenticeship system inherited from the United Kingdom. Progressive legislative changes to labour laws and gradually increasing central and local government administration helped formalise and link different aspects of this system to national industries, and social and educational systems. Important developments that shaped this system included the regulation of working and wage conditions, changes to the terms and quality of training, greater administrative oversight of apprenticeships to appease industry and business stakeholder interests, and the evolution of assessment and certification regimes through various government entities (Abbott, 2000).

"Institutional", "provider-based" or "provider-led" VET provision on the other hand emerged out of distinct government initiatives to fill gaps in VET provision not already covered by the apprenticeship nor existing education system. Evolving first from informal and self-funded technical training arrangements mobilised by district education boards and community groups in the 19th century (Dougherty, 1999), the integration of technical classes in schools and then

establishment of technical high schools and colleges throughout the country in the early 20th century helped formalise an independent yet integrated centrally administered system of VET providers eventuating in regionally administered technical institutes and then polytechnics by the 1980s (Abbott, 2000; Amundsen, 2020; Dougherty, 1999; Doyle et al., 2022). Each sphere in this hybrid system evolved and interacted in New Zealand’s education system differently through their respective functions, purposes and integration within the wider education system, however reflecting and in response to political ideologies and socio-economic perceptions and concerns of the times (Maurice-Takerei, 2016; Strathdee, 2012).

These political and socio-economic factors became pronounced with the advent of neo-liberal market-based reforms and deregulation beginning in the 1980s and accelerated in the 1990s that crystallised political attitudes that VET (among other public institutions) should be based on an open and competitive system to improve efficiency and promote enterprise (Strathdee, 2011, 2012; Williams, 2020, 2022). This included the establishment of an industry training model through private Industry Training Organisations (ITOs) as aggregators of work-based provision with administrative oversight and direct linkages with industry, and the conversion of polytechnics into semi-autonomous market oriented Institutes of Technology and Polytechnics (ITPs) that extended their offerings beyond “non-academic education” to degree level qualifications integrated on the newly established National Qualifications Framework (recently the New Zealand Qualifications Framework (NZQF) and now the New Zealand Qualifications and Credentials Framework (NZQCF)² (New Zealand Qualifications Authority (NZQA), 2023a). These reforms were successful in increasing participation in post-school study however at the detriment of the apprenticeship system (Huntington, 2022a). They were also seen to proliferate low-quality courses, the duplication of programmes, and the transfer of public funding into competitive activities to increase enrolments as the basis of funding at the expense of improving educational outcomes and realising expected productivity gains (Huntington, 2022a).

As a result, reform reviews in the 2000s led to a more strategic approach aligning tertiary education objectives with economic and social priorities (Huntington, 2022a) through, for example, the establishment of five-year Tertiary Education Strategies overseen by the Tertiary

² For continuity, NZQF is used throughout the dissertation.

Education Advisory Commission (now Tertiary Education Commission, TEC), with “funding allocations determined via investment plans negotiated with education providers” (Chan & Huntington, 2022a, p. 10). This approach however “did not fundamentally alter the nature” (Huntington, 2022a, p. 59) of the market-based model. Indicative of these continuing policy dynamics and change, the recent reforms entailed in RoVE shifted the VET landscape once more.

Recent reforms

Initiated soon after the newly elected, left-leaning Labour-led Government in 2017, RoVE represented the most significant government intervention in New Zealand’s recent VET history as a response to internal deficiencies and external challenges. Internal deficiencies included inconsistent VET provision across the country, counterproductive competition between service providers, financially unsustainable ITPs, and a recent history of policy incentives that rewarded “perverse behaviours rather than meeting the needs of learners, employers, and society” (Huntington & Chan, 2022, p. 44). External challenges on the other hand included dynamic demographic changes, recognition of the unjust historical legacies of colonialism and effects of neoliberal economic reforms in the 1980s and 1990s, and the “challenges posed by rapid technological transformation, shifting global markets and trade patterns, and the disruptions caused by pandemics and climate change” (Huntington & Chan, 2022, pp. 4-5).

To address these internal deficiencies and external challenges, seven key changes were proposed. These were; the unification of ITPs and ITOs into a single institution – Te Pūkenga, New Zealand Institute of Skills and Technology; the establishment of Workforce Development Councils (WDCs), Regional Skills Leadership Groups (RSLGs), and Centres of Vocational Excellence (CoVEs), as three semi-autonomous organisations influencing the VET landscape; the establishment of Te Taumata Aronui as an independent body representing Māori-Crown relations and promoting kaupapa Māori or Māori initiatives for Māori in tertiary education; shifting the role of workplace learning from ITOs to providers; and unifying the vocational education funding mechanism (MOE, 2019).

The most significant changes posed by the reforms were to vocational provision through the unification of ITP and ITO roles and functions into the single Te Pūkenga organisation and to the strategic environment and industry voice through greater powers given to the WDCs. Concerning the former, Huntington (2022b) noted the reforms potentially remedied the issue of

financial unsustainability afflicting the ITP sector while improving educational outcomes through greater synergy across the unified network including, for example, providing flexibility for learners between workplace (i.e. employer-led) and campus based (i.e. provider-led) provision with improved access to pastoral care and support. However, Huntington (2022b) also noted the risks entailed in the scale of the national organisation, including the potential for the organisation to be overwhelmed in its ability to adequately respond to regional needs and proclivity to subsume within its fundamentally provider-based lineage the traditions and culture of industry-owned work-based provision formally established under the ITOs (Williams, 2022).

Concerning the latter, the major change in strategic focus, from an “industry-owned” model linked to the history of apprenticeships and work-based training to an “industry-led” model strategically managed through the WDCs, placed the upmost importance on the newly established WDC’s governing councils to navigate the intricacies of a multitude of stakeholders to develop “legitimacy and trust with the sectors they serve” (Huntington, 2022b, p. 84). This is because despite WDCs assuming greater and unprecedented powers in shaping the direction of VET, the control over delivery and direct feedback loops with employers and employees in industry had been removed. This further highlighted the importance of all RoVE entities – RSLGs, CoVEs and Te Taumata Aronui as well as Tertiary Education Organisations (TEOs), employers, learners and industry organisations, to “work collaboratively to align their strategies and direction” (Chan & Huntington, 2022a, p. 388).

While progress was being made through the ongoing establishment and transitions in RoVE, internal disputes and public discontent with RoVE had been notable (Davis, 2023; Tertiary Education Union, 2023), contributing to, at the time of writing, the newly elected, right-leaning National-led Coalition Government being committed to disestablishing Te Pūkenga (Gerritsen, 2023c), citing poor public service delivery during its transition period, however without providing any clear indication with what it might be replaced with. There is also uncertainty whether other RoVE initiatives will be affected, such as repeals to the unified funding system or the disestablishment of WDCs and RSLGs (Gerritsen, 2023a, 2023b). There is also no indication nor guidance by the new Government on how ITOs shall operate when Te Pūkenga is disestablished (Schwanecke, 2023), assuming these shall revert back to operating separately within the hybrid system of work- and provider-based provision.

In concluding this very abridged review of New Zealand's history of VET development up to its current context, it is worth highlighting the dynamic and enduring role a quadripartite of significant stakeholders continue to play in its evolution; social movements and unions, business and industry, government, and the societal perceptions of VET as an educational pathway by prospective learners and their whānau or families. New Zealand's VET system has been shaped by the divergent and competing voices of workers, learners, industry and the business community. Social movements and unions have been formative in shaping legislation to secure the rights and conditions to quality and supported training to ensure individual and social prosperity regardless of existing socio-economic conditions. This is evidenced, for example, in the early reforms to the apprenticeship system and initial mobilisation of technical training that was formalised into the education system (Abbott, 2000). This contrasts the general disinclination from the business community to invest in or advocate for VET outside the imperative for targeted skills and training to develop workforces that supported immediate productivity gains while minimising the financial and time-based burden on organisational productivity (Abbott, 2000).

As the most significant stakeholder guiding legislative direction and executive support and funding, the Government has operated in a perpetual balancing act between these competing interests while navigating its public obligations and budgeting constraints, ideological constituencies, and broader social and economic objectives through short electoral cycles. This in turn has generated frequent periodic reviews, perpetual policy shifts, and institutional reforms formative in the changing directions of New Zealand's VET system (Abbott, 2000; Maurice-Takerei, 2016). The push and pull, ebb and flow of political, social, and economic factors and frequent policy interventions in VET has also shaped and been shaped by societal perceptions about the value, quality and status of VET (Maurice-Takerei, 2016). As with the experience in other countries (Billett, 2020; Winch, 2013), the poor or low social standing of VET in New Zealand has enhanced perceived social and theoretical divisions between academic/practical education, contributing to associated class divisions and, during different periods, limiting the number of learners participating in VET (Jordan & Strathdee, 2001; Maurice-Takerei, 2016). Despite these challenges, similar to the broader international contexts overviewed in Chapter 2, there is an identified role for New Zealand's VET system in meeting the country's just transitions policy aspirations.

New Zealand’s VET aspirations for just transitions

The New Zealand Government’s commitment to just transitions is enshrined in its international obligations to the Paris Agreement 2015 that “take into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs” (United Nations Framework Convention on Climate Change (UNFCCC), 2016, p. 9). The government is also a signatory to the “Supporting the Conditions for a Just Transitions Internationally” declaration at the 26th UN Climate Change Conference of Parties held in 2021 (Ministry for the Environment, 2022). Through these international obligations, the government has incorporated just transitions concepts into a range of domestic legislation and policy levers, including those with a direct or indirect relationship with VET. A review of the literature identifies a complex yet evolving mix of such levers led by two ministries; the Ministry of Business, Innovation and Enterprise, and the Ministry for the Environment, with collaboration, insight and integration with other ministries and government entities.

The Ministry of Business, Innovation and Enterprise’s (MBIE) focus on transitions relates to the effect future changes to work practices shall have on economic and social wellbeing. In addition to MBIE’s wider remit for employment and economic planning (MBIE, n.d.-a, n.d.-b), initiatives on just transitions that include a focus on education include:

- the establishment of the Future of Work Tripartite Forum bringing government, business and union coordination on employment and skills issues as they relate to the future of work, including a work programme on just transitions (MBIE, 2019);
- the recently formed RSLGs as advisory groups identifying and supporting better ways of meeting future regional skills and workforce needs in collaboration with other MBIE initiatives including Industry Transformation Plans and RoVE (MBIE, 2022; TEC, 2023e);
- an active industry policy approach that includes industry transformation planning in partnership between government, business, workers and Māori to envision the future state of each industry sector and actions required to realise industry visions including investments, innovation, and skills development (MBIE, 2021); and,
- a centrally administered “Just Transition Unit” with a Just Transition Partnership team that supports regional partners, including regional educational providers, to understand, plan and navigate their transition (MBIE, 2023b).

Also pending publication from MBIE and the Ministry for Social Development (MSD) is an “Equitable Transition Strategy” that explores challenges and opportunities posed by a just transition to jobs, household costs, rural communities, new industries, and fairness and accessibility of public services (MBIE, 2023a). Complementing MBIE’s work are two reports from the New Zealand Productivity Commission (2018) and the New Zealand Council of Trade Unions (NZCTU) (2017) that explored the impact transitions are likely to have on business productivity and workers respectively. The Productivity Commission’s *Low Emissions Economy report* (2018) cites a role for skills and training in harnessing innovation (p. 157-158) through public support for education and training services (p. 276); while the NZCTU’s *Just Transitions report* (2017) highlights the role for “[f]ormal education, training, retraining and life-long learning for working people, their families, and their communities” (p. 8).

Similarly, however through a different purview, the Ministry for the Environment’s (MFE) focus on just transitions outlines how the country will meet its emissions reduction commitments through its climate change response policies. As a part of its obligations to the Paris Agreement 2015 and through the amendment to the Climate Change Response Act 2022, the Emissions Reduction Plan (ERP) (MFE, 2022) highlights the role of RoVE to “create an accessible, responsive and flexible tertiary education and training system” and to “provide education and skills relevant to work today and in the future” (p. 63). In addition, through its stated equitable transition strategy, the ERP outlines the objective to support strong and equitable learning pathways in the education system with a focus on skills needs for a low-emissions future (p. 67). The ERP’s objectives consider advice from the Climate Change Commission’s report (2021) that, among other things, assessed the needs for the education system and future workforce as a part of its “policy direction for a fair, inclusive and equitable transition” (p. 340). Recommendations from that report include:

- an agile education system able to adjust and evolve as skills needs change;
- nimble education and training provision to offer transferable skills and the ability to adapt, upskill and learn as work evolves;
- support the targeted development of specific skills in key growth areas;
- lifelong learning;
- removing barriers that restrict participation in education and training;

- education and training by Māori for Māori; and,
- collaborative, strategic foresight towards workforce and skillset needs as they relate to economic as well as social wellbeing (He Pou a Rangi Climate Change Commission, 2021, p. 342).

Considering the range of policy initiatives above linked to New Zealand’s VET system, it would be incorrect to assume that just transitions principles are the driving rationale behind the recent reforms; the rationale for RoVE was to overcome identified internal deficiencies in the previous VET system in response to a range of changing external dynamics (Huntington, 2022a; MOE, 2019). Nonetheless, aligned with international perspectives, a logical contribution of the VET system in meeting just transition principles is recognised as being clearly integrated. Accordingly, three key policy aspirations for VET and just transitions in the literature were identified. These are: improving the contextual relevance and responsiveness of the VET system; improving the inclusiveness and equality of provision of VET; and broadening VET to encompass lifelong learning (MBIE, 2019; MOE, 2019). To narrow the scope of the investigation, the policy aspiration that forms the basis of analysis in this investigation were imperatives to improve the contextual relevance and responsiveness of VET to learners and employers, the topic of the next section.

The korowai and the cogs in the system

The notion of relevance is foundational in discourses about the purposes and traditions of VET; it frames debates on the ways VET is understood to be valuable to society and in the shaping of individual subjectivities (Billett, 2011). It has also been influential in the periodical histories of educational reform (Allais, 2014). In the contemporary New Zealand VET context, policy language and statutory changes included in the recent reforms point to a clear objective to improve the relevance and responsiveness of New Zealand’s VET system that broadly align with the strategic directions of international policy movements. These are evident, for example, in the language establishing the functions and duties of the different WDCs to respond to “New Zealand’s current and future workforce needs including: the transition to low-emissions and climate-resilience, global challenges, emerging technologies, global sustainability goals, the changing nature of work, and the skills, knowledge and qualifications learners need in the future for personal and community success” (WDC Consultation Team, n.d., p. 2). Cumulatively, the

aspirations of the recent reforms in RoVE have been expressed in the “korowai” framework (TEC, 2023c), visualised in Figure 3.1.

Figure 3.1

The korowai framework

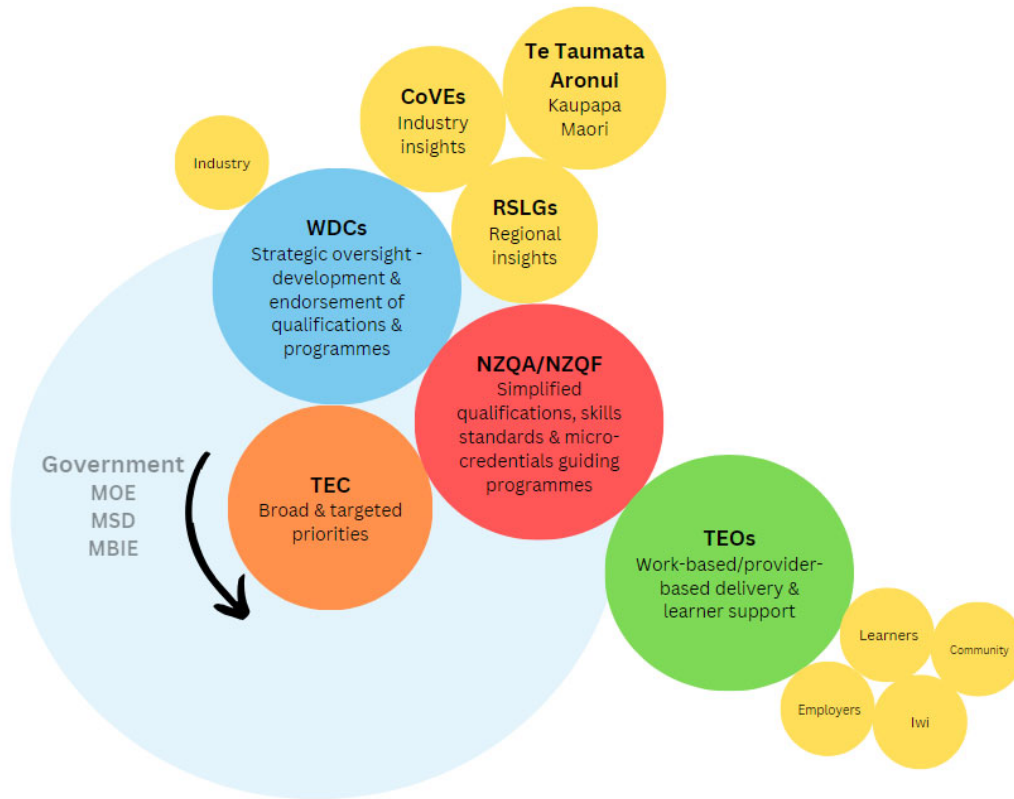


Note. Tertiary Education Commission, 2023. Copyright 2023 Tertiary Education Commission.

The korowai is a traditional handwoven Māori cloak representing how the different parts of the VET system are woven together and aspire to “wrap around the learner, their whānau, iwi and industry to deliver the skills that learners, employers and communities need to thrive in New Zealand” (TEC, 2023c). The korowai is a useful metaphor to describe the holistic aspirations to envelop the needs of learners and employers as an imperative of New Zealand’s VET system. Yet this new system is superimposed over and remains dependent upon and steered by a number of moving parts integrated into an existing and problematic VET architecture. I use the analogy “wheels” or “cogs in the system” to describe this architecture, visualised in Figure 3.2.

Figure 3.2

The cogs moving New Zealand's VET system



Note. Visualisation of different entities moving New Zealand's VET. Colours represent different or complementary purposes, functions and outputs. Own work.

In this more mechanical view of the VET system, the overarching strategic direction for VET is held with TEC and WDCs through the New Zealand Qualifications Authority (NZQA) guiding the expected outcomes of TEOs. Through the unified funding system, TEC provides funding based on its strategic focus to improve learner success and address equity issues in tertiary education however also guides VET through annual “priorities for investment” (TEC, 2023d). The priorities are both “broad”, bringing together the Tertiary Education Strategy (TES), areas of government focus and advice from WDCs and RSLGs, and “targeted priorities” that guide specific areas of annual funding for growth (TEC, 2023d, p. 28) based on periodic insights generated from WDCs and RSLGs. Therefore, WDCs have a dual role of generating key strategic insights informing investment priorities for TEC and bridging these with the provision of VET through TEOs. For TEOs however, investment planning is linked to their provision of programmes and

learning support as they are endorsed by WDCs and approved on the NZQF. Therefore, as the statutorily appointed body that approves qualifications for delivery, the NZQA's management of the NZQF is a key "cog" in this system. In other words, the efficacy of New Zealand's aspirations for a relevant VET system to learners and employers turns on a number of cogs moving different entities with expected outputs to a range of stakeholders of which the NZQA and NZQF remains of vital importance.

Established during the reforms in the early 1990s, the NZQF is globally recognised as unique in embracing the entire education and training system that includes VET and university qualifications and programmes (Allais, 2014; Strathdee, 2011). The guiding principles of the NZQF are to be outcomes-based and flexible in how qualifications can be delivered and quality assured through collaboration with a range of stakeholders (NZQA, 2016). The backbone of the NZQF are the seven levels corresponding to different levels of achievement that cuts across post-compulsory education sectors, where VET qualifications are developed for levels 1 to 6. In the reformed architecture, WDCs decide between using a single "national curriculum" or endorsing unique industry-led programmes developed by providers (i.e. TEOs). The former are justified to lead to greater consistency of graduate skills, knowledge and attributes in line with stakeholder needs through a national curricular, while the latter allows NZQA to be responsive and adaptable to unique and changing training needs of industry. In addition to qualifications, the output of the simplified NZQF is the development of skills standards, replacing the former and more prescriptive and detailed unit standards to allow for greater consistency and portability of credentials through the inclusion of learning outcomes in standards, and micro-credentials as smaller units of a programme intended to provide flexibility for learners and more targeted and relevant training (NZQA, n.d.-b). Cumulatively, the collaborative engagement with relevant stakeholders, and flexibility and adaptability afforded by the new qualifications and credentials scheme, represents how the NZQA intends the qualification system to complement other reform functions and purposes that align with a relevant and responsive VET moving forward. Naturally, the efficacy of these aspirations is yet to be tested.

This juxtaposition of metaphors – the holistic korowai and the mechanical cogs – represent the thesis that there are two visions for VET; the normative and aspirational, and the system that is grounded, messy, cumbersome, not always working and frequently changing due to the

entanglement with numerous stakeholders, navigating their respective practices and practice architectures in the face of challenges and opportunities for their ongoing transformation. To ground the investigation and define the scope of analysis, a case study of beekeeping in New Zealand against a review of the respective apiculture qualifications and programmes was conducted.

Relevant VET: a case study of the New Zealand beekeeping context

Beekeeping is an ancient vocational activity. Evidence shows that bees have been domesticated for honey and wax for medicines and food and are a part of human culture and folklore for millennia (Burnside, 2015; Crane, 1999). Whilst some indigenous bee populations exist in Aotearoa New Zealand, the honey bees (*Apis mellifera*) used in the industry today were first introduced during European colonisation in 1839 (Crane, 1999; Matheson & Reid, 2018). It was Māori who collected honey from wild honey bee colonies that established in the favourable native bush conditions who became New Zealand's first commercial beekeepers (Crane, 1999). Throughout its history to the present day, beekeeping has been classified as an important agricultural activity, contributing to a growing honey and bee product industry as well as providing critical pollination services to New Zealand's important horticulture crops (Matheson & Reid, 2018).

In the history of learning to become a beekeeper in New Zealand, there are no formal requirements. Newton (1999) notes that many beekeepers and beekeeping operations are intergenerational family-owned businesses, where beekeepers “have acquired their skills through participating in the family business as employees” (p. 42), taking over the business or settling in the area where they are located. There is also a history of government endorsed training activities to support the growth of the industry and as a means of encouraging beekeeping as a livelihood, for example in efforts to support returned servicemen after both World Wars (Matheson & Reid, 2018). Other ways into learning beekeeping include joining and participating with the vibrant community of regional beekeeping clubs that offer casual meet ups with members or through introductory courses they may offer. In addition, iterations of a National Beekeeping Association (currently Apiculture New Zealand or shortened as ApiNZ), marketing boards to market and sell New Zealand bee products internationally, and regulatory boards to control the spread of pests and diseases, have also been formative in guiding the development of the industry, including

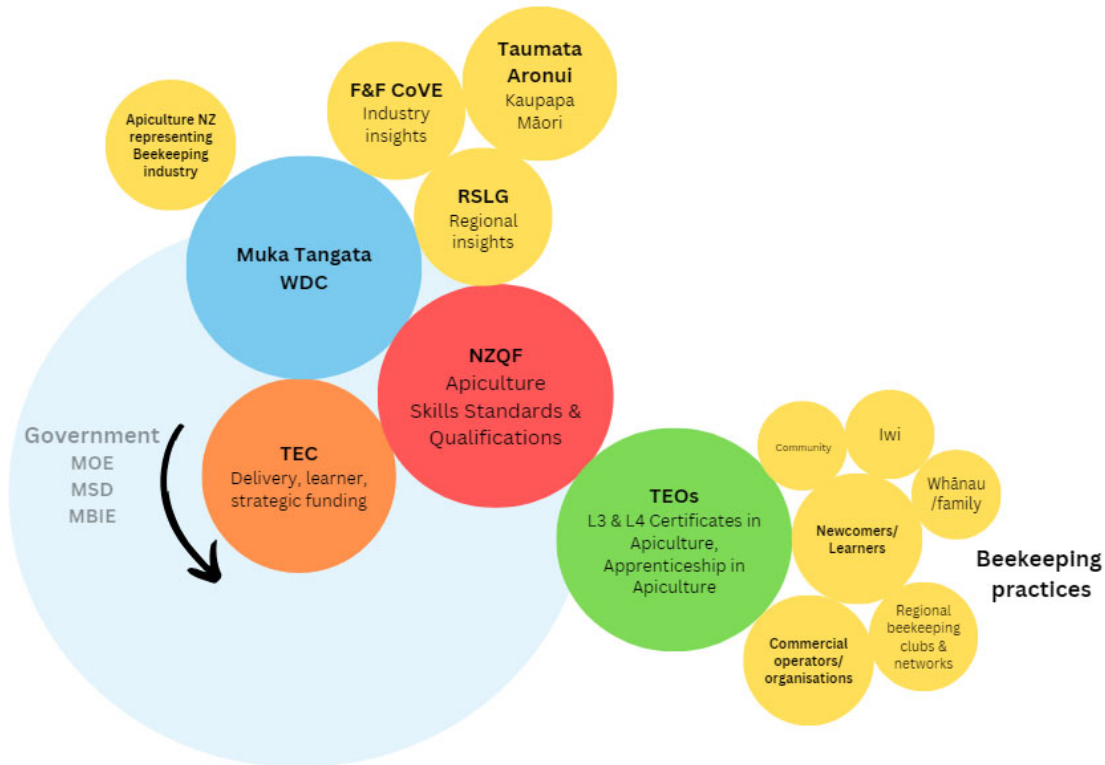
advocating for the provision of training (Apiculture New Zealand, n.d.-b). While no formal training is required to become a beekeeper, formal qualifications and education pathways are possible.

On the NZQF, there are a number of skills standards (or credentials and also known as “unit” or “assessment” standards) and qualifications and two “mixes of provision” for apiculture. Credentials on the NZQF include a number of Level 2 to 4 skills standards (NZQA, n.d.-a), three apiculture qualifications – one Level 3 programme and two Level 4 programmes, one of which is for Queen Rearing, and a two year Apprenticeship in Apiculture (Apiculture New Zealand, n.d.-d). The two provider-based Certificates in Apiculture represent 650 notional hours of learning, practice and assessment time. The two-year work-based Apprenticeship in Apiculture on the other hand is a more recent programme, developed in 2018 between ApiNZ and the Primary Industry Training Organisation (Primary ITO), to assist new beekeepers to gain qualifications while working in the apiculture industry. The apprenticeship requires completing “skills” or “unit” standards through work-based provision and assessment with an additional block course component that cumulatively lead to the awards of the Level 3 and 4 Certificate in Apiculture qualifications (Apiculture New Zealand, n.d.-d).

The ongoing development and oversight of these credentials is undertaken by Muka Tangata – the Workforce Development Council responsible for Primary Industries, with industry representation through collaboration with ApiNZ as the industry representative of beekeepers in New Zealand. The Food and Fibre CoVE (F&FCoVE) provides insights for Muka Tangata while RSLGs provide periodic insights on regional needs. The collective advice of these bodies influence decision making through the WDCs to TEC on targeted or broad funding arrangements to TEOs. Apiculture skills standards and qualifications are also developed for and delivered through work-based or provider-based programmes, such as work-based provision through the Primary ITO, providers such as the business divisions (e.g. ITPs) of Te Pūkenga, and other regionally registered Private Training Establishments (PTEs). The VET system for beekeeping, represented in the “cogs in the system” presented earlier, is visualised in Figure 3.3.

Figure 3.3

The cogs moving New Zealand’s apiculture education and training



Note. Visulisation of different entities for VET moving apiculture education and training in New Zealand. Colours represent different or complementary purposes, functions and outputs. Own work.

A review of current workforce information for education and training for apiculture identifies a need for experienced beekeepers (Careers New Zealand, 2023), however operating in a challenging market environment that is causing a reduction in the numbers of hives managed by beekeepers. There is also recent reporting that there has been an oversubscription in course-based provision of training, likely reflecting hobbyist beekeepers taking up training (Muka Tangata, 2023b). The most recent funding advice from Muka Tangata to TEC is for “mode change” from provider-based to work-based provision (Muka Tangata, 2023a). In addition, a review of some recent articles on training for beekeeping identifies dissatisfaction by beekeepers with the output from provider-based training not meeting their employment needs (“Fees Free Failings”, 2021),

with programmes overly theoretical and unaligned with the practical requirements of commercial beekeepers (Muka Tangata, 2023b). On the contrary, another article identifies the successes with bringing more beekeepers into formal training through the more recently established Apprenticeship in Apiculture (“Apprenticeship Scheme”, 2021). These contrasting opinions towards the education and training of beekeepers in New Zealand are indicative of both the challenges and opportunities afforded by VET in relation to the vocations and occupations they serve.

For the purpose of analysis, the details of the qualification specifications of the Level 3 and 4 Apiculture Qualifications registered on the NZQF and the programme structures of the provider-based Level 3 Certificate and work-based Apprenticeship in Apiculture programme will be explored in Chapter 8. Important information in the qualification specifications reviewed included the Strategic Purpose Statements and Outcome Statements. Important information in the programme structures reviewed included how the programmes were structured to deliver the learning outcomes and indicative content linked to credit values and notional hours of the programmes.

Chapter summary and conclusion

The purpose of this chapter was to frame the specific policy context used to undertake the analysis and define the scope of the study. I first outlined key developments in New Zealand’s VET history cumulating in the recent reforms entailed in RoVE, pointing to the importance of some influential groups of stakeholders shaping this history. I then synthesised a review of the policies pertaining to New Zealand’s commitments and contributions to just transitions and VET’s anticipated role in this policy agenda. I then identified and elaborated the central aspiration of improving the relevance of VET, linking this to the analogies of the korowai framework as an aspirational policy setting with the cogs in the system as the way New Zealand’s recent reforms superimpose over an existing and more mechanical architecture. Finally, the New Zealand beekeeping context was introduced, detailing how the VET system expects to respond to the education and training of this vocational practice. Extending the literature review, the next chapter overviews the conceptual resources used in the study – practice theory and the Theory of Practice Architectures – to elaborate the rationale of their use in this investigation and VET research broadly.

Chapter 4 – Coming to practice theory

The previous chapter overviewed New Zealand’s VET context and synthesised one policy setting of New Zealand’s VET aspirations for just transitions: improving the relevance of VET. To progress the investigation and conclude the literature review, this chapter frames the conceptual and theoretical resources that underpin the use of practice theory and the Theory of Practice Architecture (TPA) in this investigation and for VET research more widely.

In this chapter I first sketch the antecedents and progression of different but contested theorisations of learning and change that predicate the use of practice theory in VET research. I then outline developments and contributions of practice theory in the field of social research to orientate the key principles that justify its use in this investigation. The TPA and its key features are then introduced before I elaborate why its use was pertinent in this investigation.

VET, learning and change

Attempts to define learning in the context of VET are complex, multifaceted and contested due to VET’s dynamic relationship with the world of work, the subsequent diversity of contexts where learning occurs, and how this learning can be understood from a diversity of human understandings and lifeworlds (Agrawal, 2009; Billett, 2003; Dall’Alba & Sandberg, 2010). Conceptions of learning have also evolved over time “to reflect changes in theoretical approaches to workplace learning” (Lizier et al., 2023, p. 3). Paul Hager (2011) and colleagues (Hager & Beckett, 2019; Hager et al., 2012) have summarised these changes across “three tranches of workplace learning theories: psychological, socio-cultural, and socio-material approaches” (Lizier et al., 2023, p. 3).

The first, “common sense” and taken for granted view of learning (Hager & Beckett, 2019, p. 83) is that learning is something that is formal; that happens in schools or institutions following prescribed curricular and using established methods. This view emerged during the social, political and economic changes in 18th and 19th century Europe when social progress was understood to depend “on making social practices and institutions less dependent on custom, habit, dogma and tradition” from an archaic past “and more firmly based on knowledge that met universal standards of objectivity and conformed to impersonal criteria of rationality and truth” (Carr, 2006, p. 138). In the absence of “discovering” any singular or grand theory of learning however, hierarchies of

knowledge based on propositional or deductive reasoning and progressed through scientific methods of investigation became entrenched in educational philosophy and theory, establishing the rationale for the types of learning found in formal education systems today (Hager & Beckett, 2019). The impact on educational philosophy is that learning has become a metaphorical product to be acquired, possessed and transferred and “accumulated in the knowledge and skills that will create a well-furnished individual mind and a capable body” (Hager & Beckett, 2019, p. 97) and to serve particular societal imperatives (Billett, 2011). “Good learning” then was understood to be stable, familiar, enduring and widely understood and independent of context, expected to be taught in one place (e.g. a formal setting), using prescribed methods to reproduce replicable outcomes in different contexts (Hager, 2005).

Challenging this common sense view of learning and change, developments in sociology and social anthropology in the 20th century have refocused analytical and theoretical lenses to understand learning as an ongoing process of social participation in highly contextualised social spaces (Hager & Beckett, 2019). This second view of learning and change therefore can be understood from socio-cultural theories that describe processes of “social learning” (Salomon & Perkins, 1998) as the “active social mediation of individual learning” (p. 3) and “participatory knowledge construction” (p. 4) with others. Social learning processes involve a learner (or learners) and an “other” through which mediation between the two enhances opportunities for learning. Further, because learning happens through participation between agents, there is a participatory construction of knowledge that is highly situated and distributed in and across contexts of production, what Hager and Beckett (2019) call a “complex relational web” (p. 98). Thus, while socio-cultural theories consider some aspects of individual learning, these are expanded to include notions of learning as embodied, integrating many human attributes beyond those only located in the mind.

By extension, the third view of learning and change considers how social learning includes socio-material dimensions as the ways humans are shaped by “tools” or cultural artefacts in processes of learning. These can mean more than only physical implements, and include technical procedures and symbolic resources (Salomon & Perkins, 1998). Through the use of tools, humans learn new capabilities and construct new relations with the material world. For conceptions of learning and change, this approach offers new ways of understanding how people both learn to

transform (and are transformed) through their material relationships with the world as well as how the use of tools or cultural artefacts transform people and society (Hager & Beckett, 2019). The final aspect of social learning considers that collective entities also learn; it is not just individuals who learn but also groups and entire organisations that learn in quite distinctive ways and whose account of learning can only be understood within this collective context (Hager & Beckett, 2019). Taken together, socio-cultural and socio-material theories challenge the idea that learning is a unified concept, that individuals and their minds should be the locus of learning, and that learning is a relatively stable and enduring product independent of context. It also debunks the idea that the best forms of learning are those founded on propositional knowledge, learned in schools or institutions, to be replicated un-reflexively in different locations.

To these three tranches (Lizier et al., 2023) of theorisations of learning and change I add contemporary approaches that see learning and change from the perspective of new-materialist and post-human approaches (Bodén et al., 2021). The former is concerned with the material workings of power to understand social production, “shifting the focus of social inquiry from an approach predicated upon humans and their bodies, examining instead how relational networks or assemblages of animate and inanimate affect and are affected” (Fox & Alldred, 2015, p. 399). Extending this conceptual shift, the latter, post-human approach reconfigures the “purity” of human and humanist ideals in ways that disrupt and rethink the anthropocentric project of understanding change from a focus on the individual subject or groups of subjects. Thus perspectives on agency expand beyond the agency of the human subject – to other “things” “which are entangled, relational, and messy [...] which emerge from the relationality of myriad agents [...] – both human as well as nonhuman” (Bodén et al., 2021, p. 3). Post-human approaches therefore acknowledge “the already open-ended processes of differentiation, variation, becoming and diffraction in which the world [has] the power to change us, to ‘force’ our thinking” (Stengers, 2008, p. 57 as cited by Bodén et al., 2021).

The range of theorisations presented above impress the notion that learning and change is complex; “there is no one level or type of explanation that is *the* explanation” (Hager & Beckett, 2019, p. 120). An additional wrinkle is that this complexity traces the progression of views held by the academy, or more specifically, the privileged traditions and histories of the “Western academy” (Nakata, 2007), the scholarship of which has been argued to trivialise social agents of

research without reflecting upon its own logic of procedure, establishing epistemic biases of representation and fallacious notions of reality (Bourdieu, 2000; Schmidt, 2017). This raises issues not only of representation in social research but also the ethics of representation of research of “Others” (Smith, 2012) and ethical human relations with the material world (Barad & Alice, 2007). Therefore adding to this complexity, an even more forceful argument is that notions of learning and change can be understood from a multiplicity of perspectives, including those, such as Indigenous knowledges and voices, that have been subjugated throughout history and that form as resistances to the histories and hegemonies of colonialism and imperialism and exist as multiple ways of being and knowing in the world (Dei, 2000; Nakata, 2007; Odora Hoppers, 2021).

Whether learning is to be understood from the individual, the social, the material and nonhuman, or from a complexity of these arrangements from multiple perspectives and contestable entry points, issues of the efficacy of VET background very real and everyday concerns for employers, learners and their families, and educators and educational policy makers in VET. These include the “gap” between theory and practice (Hager & Hyland, 2002; Oliver et al., 2019); the value of learning different knowledges and skills in different contexts across jobs and working life (Evans, 2019; Fettes et al., 2020; Hordern, 2018); and attaining progressively higher “thresholds” of learning (Vaughan, 2017) or expertise (Billett, 2001a; Guile & Unwin, 2019; Winch, 2012); or as issues of being initiated into a particular personally derived but socially contextualised occupational or vocational becoming (Billett, 2011; Chan, 2020; Colley et al., 2003) or belonging (Filstad et al., 2019); and contributing to social expectations of family, community and nation in its various social, political, economic and cultural framings (Billett, 2003, 2006; Billett et al., 2016; Billett & Seddon, 2004). These challenges are amplified given the urgent role for VET in realising necessary and just transitions.

In this investigation these complexities and multiplicities linking questions of VET, learning and change are approached through understanding the learning of substantive practices, such as beekeeping practices, as “learning practice” (Kemmis, Edwards-Groves, et al., 2017; Kemmis et al., 2014). Learning practice does not refer to learning as a distinct practice (Kemmis, 2021). Rather it refers to the ways that learning transforms practices vis-à-vis practices shape particular forms of learning that make sense to “carry on” or “do” in practice – in other words, how learning is “stirred into practices” (Kemmis, Edwards-Groves, et al., 2017). In researching

VET, this approach provides conceptual and empirical resources to pursue understanding learning and change through exploring not just what learning is taking place in vocational contexts, how and by whom (e.g. what do I need to learn to become a beekeeper and how?), but also why it is taking place in those sites through the projects and meaning making – the “teleoaffective structure” (Schatzki, 1996, p. 89; 2002), and the “history-making” (Kemmis, 2022b, p. 138) actions of practices (e.g. why is beekeeping practised this way and how will it likely be practised moving forward?). This makes explicit the reasons why practices come to be “practised differently” (Kemmis, 2021, p. 282) and what this means for notions of learning and change that are required for necessary and just transitions. To elaborate, the next section outlines the use of practice theory and practice-based approaches to understanding VET, learning and change in this way.

Coming to practice theory

This investigation is conceptually located in developments in “practice theory”, “practice-theoretical” or “practice-based” approaches in the study of education, learning and change specifically and as they have developed in theorisations of social life more generally (Hager & Beckett, 2019; Hager et al., 2012; Nicolini, 2013; Reckwitz et al., 2023; Schatzki, 2002, 2010, 2019; Shove, 2020, 2022; Shove et al., 2012). A practice-theoretical approach does not denote a unified body of work nor distinct family or category of social thinking (Spaargaren et al., 2016). Rather, it “constitute[s] a rather broad family of theoretical approaches connected by a web of historical and conceptual similarities” (Nicolini, 2013, p. 1) all of which make the concept of practices central to their account of social life and social phenomena (Schatzki, 2019). The appeal of a practice-theoretical approach is in debasing some of the durable problems left un-resolved by the traditions highlighted above and as a compelling, alternative way of understanding social affairs in debates about learning and change and their applicability in researching VET. Those pertinent to this investigation are outlined below.

Since the mid- to late-20th century, contemporary theorisations of practice and practice-based approaches to research have shifted conceptualising and researching how social life is organised in the fields of social theory, social sciences and philosophy (Kemmis, 2022b, pp. 53-56; Nicolini, 2013; Reckwitz, 2002; Rouse, 2007). Analytically, practice theories challenge conventional approaches to the study of social life by “shifting the research focus away from studying individuals, their motives and their background features primarily, towards a more in-

depth investigation of the ‘context’, or the activities, the social practices [people] engage in” (Spaargaren et al., 2016, p. 4). As such, practice theory appeals to those researchers’ intuitions, sensitivities and preferences who approach the social world as open, contingent, transitory, and horizontal, and wish to avoid the “pitfalls” of scientific reductionism (Spaargaren et al., 2016, pp. 4-5). In addition, practice theories of learning are useful theoretical and conceptual resources to make visible the “complex assemblages and power relations on everyday work and learning practices” (Hager et al., 2012, p. 5), challenging theorisations of learning, practice, and change so that learning is, “brought into a new and more complex relationship among the elements, each raising critical questions of how learning might be understood as patterned, embodied, networked and emergent” (p. 8).

Similarly, some practice theories are also sensitive to the moral-ethical character of practices through notions of praxis and praxiological accounts of learning and change (Edwards-Groves et al., 2018; Kemmis, 2022b; Kemmis & Grootenboer, 2008). Green (2009a), for example, defines practice scholarship within neo-Aristotelian and post-Cartesian “meta-traditions” (pp. 4-5). The former refers to Aristotle’s original formulation of the disposition of phronesis (e.g. practical wisdom) and praxis as the “prudent understanding of what should be done in practical situations” (Carr & Kemmis, 1986, p. 132; Kemmis, 2022b; Kemmis & Smith, 2008), that was lost to technical and idealist notions of praxis as “simply the practical application of a-practical, purely theoretical insights” (Nicolini, 2013, p. 28), a position that formed the root of subsequent Western and Christian philosophical and scientific traditions (Nicolini, 2013, pp. 24-29). The post-Cartesian meta-tradition on the other hand refers to theorists who embrace the critique of Descartes’ influence on representation in Western philosophy and culture “defined in terms of knowledge, theory, experience, reason (rationalism), ‘mind’, etc., privileging ‘cognitivism’ or its cognate ‘mentalism’” (Green & Hopwood, 2015, p. 24). In this way, praxis and praxiological research recognises the primacy of practices (Green, 2009b) as morally-committed, corporeal and performed in contrast to the less central but all-encompassing and unproblematic semantic use in which the term “practice” is conjoined with a preceding classifier that takes precedence, for example the commonly understood meaning of the word “*professional practice*” (Hager & Beckett, 2019, p. 32).

Pertinent in this investigation was exploring the situated, relational and mediated, socio-material and socio-historical aspects (Hager & Beckett, 2019) of substantive practices sustained and reproduced in the sites of vocational practices that are the target of VET system interventions. In this way, the investigation is connected with MacIntyre's (2013/1983) account of the tensions between the internal goods of practice traditions being affected by the external goods (e.g. prestige, status and money) of institutional influence and power (Kemmis, 2022b). It is also influenced by Lave and Wagner's (1991) notion of practices being sustained by newcomers coming into and progressing within a community of practices. It was also informed by Schatzki's (Schatzki, 1996, 2002, 2010, 2019) developments of a "site ontological theory" of practices as the nexus of "doings" and "sayings" that describes the teleoaffective dimensions of practices as what makes sense to go on in practices.

Of particular importance was identifying an ontological basis for describing technical, practical and critical understandings of learning and change (Kemmis, 2022b) from the field of a vocational practice (e.g. beekeeping) and confirming these interpretations through the commensurability or agreement found in the intersubjective or "extra-individual" (Kemmis & Grootenboer, 2008) dimensions in the sites of these practices. To achieve this, the investigation drew on developments of the Theory of Practice Architectures in the field of education and beyond.

The Theory of Practice Architectures

The Theory of Practice Architectures (TPA) originates in Kemmis and Grootenboer's (2008) chapter "Situating Praxis in Practice" in the book *Enabling Praxis: Challenges for Education*. The theory has subsequently been collaboratively developed and elaborated (Kemmis, 2019, 2022b; Kemmis et al., 2014; Mahon, Francisco, et al., 2017) through a global network of scholarship (Kemmis, Wilkinson, et al., 2017; Petrie et al., 2020). The TPA theorises practices as "sayings, doings and relatings" happening in three dimensions of intersubjective spaces; language and discourses, activity time-space, and social spaces. The first two practices signal Schatzki's (Schatzki, 1996, 2002) interpretation of practices as the nexus of "doings" and "sayings" based on his developments of Wittgenstein's theory of social meaning through language games grounded in the forms of life (e.g. sayings), materialised through Heidegger's phenomenological view of being in the world through everyday experiences (e.g. doings) (Kemmis, 2022b, pp. 54-60). To these, Kemmis (2022b) adds "relatings" – "the fact that practices always already take place in the

dimension of *social space* that reflects the social relationships between people in the [practice] setting” (p. 61). Thus, practices are:

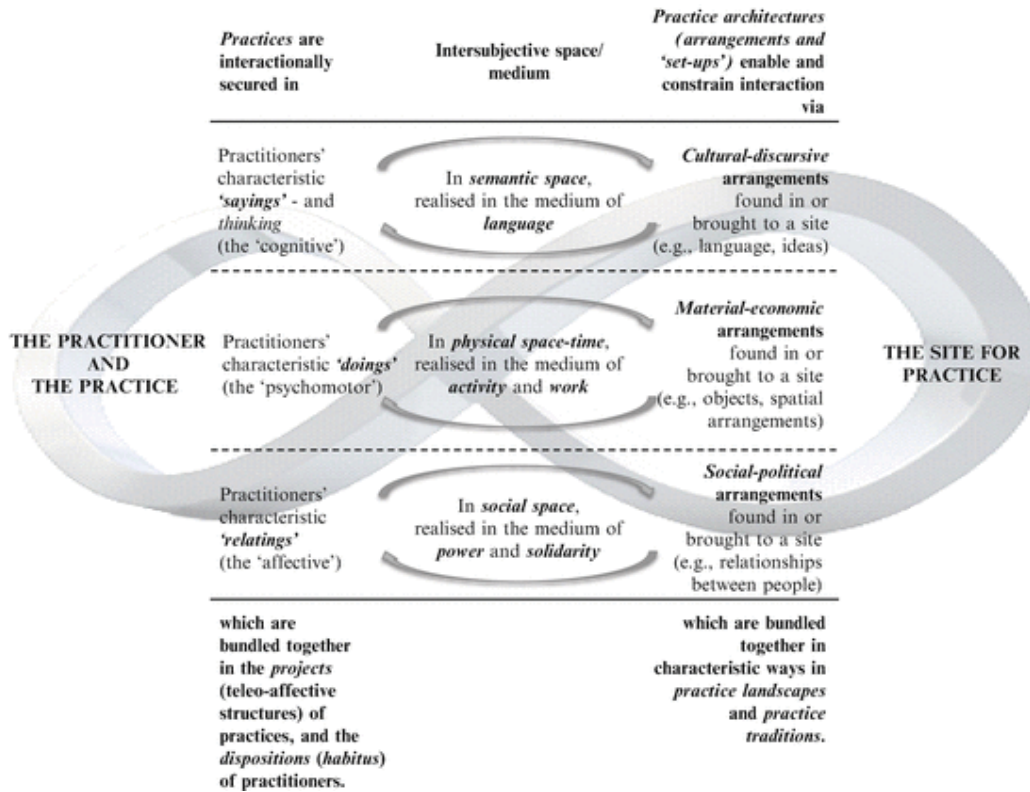
...a form of human action in history, in which particular activities (doings) are comprehensible in terms of particular ideas and talk (sayings), and when the people involved are distributed in particular kinds of relationships (relatings), and when this combination of sayings, doings and relatings ‘hangs together’ in the project of the practice (the ends and purposes that motivate the practice) (Kemmis, 2022b, p. 61).

However, the TPA also attempts to understand the conditions that enable and constrain the transformation of practices. In other words, it aims to understand what holds practices in their course aware that practices shape (and are shaped by) people and things in the intersubjective spaces where practices are encountered and unfold – practices do not ethereally appear nor are they mechanically transferred. These conditions – what are termed the “cultural-discursive, material-economic and social-political” arrangements (e.g. Kemmis, 2022b, pp. 75-98) coordinate and “prefigure, but do not predetermine the sayings, doings and relatings” (Kaukko et al., 2020, p. 5) that unfold in sites of practice. In this way, those using the TPA can empirically observe practices actually unfolding in intersubjective spaces to identify the conditions that make them possible – their practice architectures – and if possible, understand how practice architectures can be collectively and critically transformed that further enables and constrains the transformation of those practices under review (Kemmis, 2022b). The TPA is expressed in Figure 4.1 superimposed over an infinity symbol reflecting its infinite and interdependent characteristics.

Since its original formulation situating the conditions that sustain educational praxis (Kemmis & Grootenboer, 2008), the theory has expanded to consider a practical, moral-ethical and critical “...account of practice that allow[s] examination of how global phenomena are impacting on and produced by everyday practices” (Kemmis & Mahon, 2017, p. 221). The theory is unpacked in summary below, detailing some key points and connecting their applicability to this investigation.

Figure 4.1

The Theory of Practice Architectures



Note. From Mahon, Kemmis, Francisco & Lloyd, 2017, Introduction: Practice Theory and the Theory of Practice Architectures. In K. Mahon, S. Francisco, & S. Kemmis (Eds.), *Exploring education and professional practice through the lens of practice architectures* (pp. 1-30). Copyright Springer Nature, 2017. Reprinted with permission.

“Sayings” refers to the ways that people “think” and “talk” through the medium of language and discourse in intersubjective semantic space that forms the cultural-discursive arrangements of practice. “Semantic space” here refers to the site-specific and appropriate ways language and discourse come into practice and the “cultural-discursive arrangements” describe how these site-specific uses of language and discourse enable and constrain the “sayings” that are characteristic of practices. These arrangements form “patterns of distributed talk-in-interaction that are appropriate for different kinds of communication” (Kemmis, 2022b, p. 78) or as “phatic communication” (Kemmis, 2022b, p. 78) common in day-to-day talk. In this way, “sites are pre-

patterned, prefigured, to be sites of a certain kind, where particular kinds of language and discourses are used, where particular kinds of things are talked about” (Kemmis, 2022b, p. 78).

Therefore, these sites or locations can be understood as having “specialised (or general) ‘talkscapes’ or ‘thoughtscapes’ or (vis-à-vis listening), ‘soundscapes’” (Kemmis, 2022b, p. 78) [...] a ‘say-scape’” (p. 80). Captured empirically, the sayings found in vocational practices provide a resource to interpret the symbolic, discursive and practical meaning-making of talk and thinking in interactions (Gherardi, 2019), identifying the cultural-discursive arrangements that describe what makes sense to say and think in that site of practice. This is relevant in VET research because the sayings found in vocational practices draw upon various specialised or technical and non-specialised and general discourses as well as everyday social forms of communication coalescing in site-specific cultural-discursive arrangements of sayings. This further shapes curricular and pedagogical approaches to learning in vocational contexts, for example in forms of verbal “feedback” between novices/learners and masters/trainers about their tasks at hand (Chan, 2020; Lucas et al., 2012).

“Doings” on the other hand are those activities and actions that form as materially mediated and embodied compositions of social life. Activities are not understood as or reduced to singular events. Rather they form as a “temporalspatial event” in the “happeningness” of life (Kemmis et al., 2014, p. 29) in that temporally, “they occur only in the present, although they are oriented towards the future and in response to the past”, and spatially because they are “also spatial events in the sense that they occur somewhere – in particular places or sites, and of course this is also symbiotically related to their temporal nature” (Kemmis et al., 2014, p. 29). “Doings” – “in the medium of activity and work, in the dimension of physical space-time” (Kemmis et al., 2014, p. 32) establish the “material-economic arrangements” of practices. These arrangements describe the “set-ups” of material resources and patterned behaviour in practices that enable and constrain what is possible as the activities undertaken in the course of the practice (Kemmis et al., 2014, p. 32).

Thus, these patterns can be understood in terms of “a more or less specialised ‘landscape’ or ‘workscape’ or ‘activity-scape’ and some of the material objects found there may be tools developed for particular specialised work done there [...] so the place might also be described as a ‘toolscape’” (Kemmis, 2022b, p. 78) or a “do-scape” (Kemmis, 2022b, p. 80). Captured

empirically, the doings found in vocational practices provide a resource to interpret the embodied, sociomaterial interactions found there, where the term “economic” signals the history of human encounters and interactions with the material world (Kemmis & Mahon, 2017). In this sense sociomaterial interactions are described by the social relations to productivity and the way forms of economic activity transpire. Together these describe the material-economic arrangements that hold these practices in their course and transform them according to what makes sense to do characteristic of the practice. In VET research this is relevant as many if not all vocational practices manifest as embodied interactions with the material world (Chan, 2020; Hyland, 2019), and in doing so modify the world (many of which are unsustainable) that also transform human relations with the world. Tracing these sociomaterial relations highlights their importance both to the continuity of substantive practices as well as how and why these substantive practices are learned, and the possibilities afforded to change or transition from one form (e.g. unsustainable practices) to another (e.g. sustainable practices) (Fenwick, 2010; Fenwick et al., 2011; Hyland, 2019).

Finally, “relatings” refers to how people “enter relationships with other people and objects characteristic of those practices” (Kemmis et al., 2014, p. 32). These relationships form the social-political arrangements through “the medium of power and solidarity in the dimension of social space” (Kemmis et al., 2014, p. 32) that enable and constrain the relatings of practice through, for example, “the organisational functions, rules and roles in organisation, or by the communicative requirements of the lifeworld processes of reaching shared understanding, practical agreements about what to do, and social solidarities” (Kemmis et al., 2014, p. 32). In this way, social-political arrangements describe “relationships of power and authority alongside lifeworld relationships of collaboration, solidarity, and friendship” (Kemmis, 2022b, p. 79).

Therefore, these arrangements can be understood in terms of a “moodscape” or a “powerscape” or a “relate-scape” (Kemmis, 2022b, p. 80). Captured empirically, these relationships inform the notions of solidarity that shape personally derived yet collective and situated occupational or vocational identities (Billet, 2011) as learning to become and belong in practices (Chan, 2020; Filstad et al., 2019). In this way, these relationships highlight those arrangements that shape (and are shaped by) the collective continuity of practices through the adaptability or resistance to or for change that is inherent in those practices.

At this point it is important to elaborate some additional features of the TPA as they originate within the development of the theory and draw on influences of other practice theorists. The influence of Theodor Schatzki's (1996, 2002, 2010, 2019) site ontologies remains a predominant feature through the development of the TPA (Kemmis & Mahon, 2017). Schatzki's ontological theory of practices "insists on the reality of practices as things that are always situated in time and space, and that unfold and happen in *site ontologies*" (Kemmis et al., 2014, p. 33). Accordingly, "the notion of site ontologies and activity timespace lead us to the insight that practices are not merely set in but always already shaped by the particular historical and material conditions that exist in particular localities or sites of particular moments" (Kemmis et al., 2014, p. 33). This shifts the focus from an epistemological conception of practices in timespace as container-like "contexts", to an ontological conception of the historically-given contents and conditions pertaining to the "happeningness" of practices (Kemmis, 2022b). It also describes conceptions of social life as "flat", dispersing the need for multi-scalar and multi-level attempts to explain social life to explore the "site of the social" (Schatzki, 2002) as a "slice of the practice plenum" (Schatzki, 2010, 2016, 2019). This is useful in entering the complex sites of vocational practices to understand the multitude of social and material phenomena coming into and by extension dispersing out of these sites.

Further, the accumulation of practice architectures shape and are shaped by practice traditions that "encapsulate the history of the happenings of the practice, allow it to be reproduced and act as a kind of collective 'memory' of the practices" (Kemmis et al., 2014, p. 31). Memory here does not refer to individual memories stored in participants' minds, nor a "collective memory that hypostasises some version of 'collective mind'" (Kemmis et al., 2014, p. 32). Rather, practice memories are "sedimented" (Salamon et al., 2016) into the cultural-discursive, material-economic and social-political arrangements of practice as "traces or residues left not only in participants' memories and interactional capacities but also in the practice itself as a site for sociality" (Kemmis et al., 2014, p. 34). Therefore, practice architectures are the "sedimented mediating preconditions that frame, enable and constrain practices" (Salamon et al., 2016, p. 432). This notion talks back to my personal encounters stated in the genesis of the inquiry in Chapter 1 that it was peoples' and communities' traditions navigating the (insurmountable) challenges of their personal and collective social-political circumstances that give meaning and purpose to the continuity of these

practice traditions. The signal to tradition therefore connects to the history-making dimensions of practices (Kemmis & Mahon, 2017).

Further, in ways that expand the scope of the TPA, an ecology analogy is used to describe the different ways that practices represent “living things” (Kemmis et al., 2012; Kemmis et al., 2014), either in forming an ecologies of practices that describes the interconnectedness and interdependences between practices or in forming ecological niches that describes the specificity and resilience of certain practices entangled with others. Therefore, “[e]cologies of practices” (Kemmis, 2022b; Kemmis et al., 2012; Kemmis et al., 2014) “consider how practices coexist and are connected with one another in complexes of practices in which each adapts and evolves in relation to the others, with local and regional variations, both on the large scale of historical time and smaller scales of day-to-day and moment-to-moment interactions [...] like different species in an ecosystem” (Kemmis et al., 2012, p. 36). Therefore, practices are influenced by conditions and arrangements that go beyond the boundaries of that practice but nonetheless enable and constrain what goes on within them (p. 37). Further, practices cannot be understood as singularities but only through their interrelations with other practices. Thus, as Kemmis (2022b) suggests, “when we think of the emergence, persistence and demise of practices, we can begin to understand how they exist in ecologies, and that their sustainability is dependent on particular conditions for their existence – the conditions found in or brought to the real, concrete, particular *sites* where practices happen” (pp. 92-93).

Finally, Kemmis’ approach to a “practice sensibility” (Kemmis, 2019) through the evolution of the TPA illuminates a sensitivity to “lifeworld” perspectives of the world in response to “system imperatives” and concern for social justice, inclusiveness and sustainability, and reflections on an approach that can be mobilised for “living in a world worth living in” (Kemmis, 2022b). Therefore, the TPA is informed through an eclectic mix of theoretical influences, each pointing to emancipatory efforts of making and remaking practitioners’ “critical dispositions” that progress through communicative action and respond to pressing issues of irrationality, injustice and suffering (Kemmis & Grootenboer, 2008). This talks back to Kemmis’s history of scholarship influenced by Habermas’s (Habermas, 1984, 1987) Theory of Communicative Action and the notion of knowledge constitutive interests that provides explanatory power to understand critical and emancipatory possibilities of change (Carr & Kemmis, 1986; Kemmis &

Grootenboer, 2008; Kemmis & Mahon, 2017; Kemmis & Smith, 2008). As a poignant summary to this overview, Kemmis writes (2019):

The change in world practices is underway. The urgent task now is not only to spread knowledge about sustainability and sustainable practices around the globe, but to spread the practices and practice architectures of sustainable living around the globe. And those practices and practice architectures are being created, forming and evolving at an increasing pace. There is still a good chance that humanity can be pulled back from the brink, back from the vanishing point for Homo sapiens and many other species. Knowledge about the crisis and alternative possibilities may help us and the planet, but it is not enough; we need to live differently, to live our lives through many other, alternative practices (p. 168).

This investigation shares this sentiment, linking it closely to the role of VET in how learning as “coming to practice differently” (Kemmis, 2021) can also be a catalyst for “living in a world worth living in” (Kemmis, 2019, 2022b, 2023). In the final two sections I elaborate why the use of the TPA was pertinent in this investigation.

Heuristics for use in researching VET

According to Riley et al. (2021), “heuristics are broad tendencies in sets of methodological rules telling researchers what paths of research to avoid and what paths to pursue” (p. 316). In this investigation, heuristics were understood as the broad strokes of sense-making that practically and conceptually organised and guided the fieldwork, analysis and interpretation (Kemmis, 2022b, p. 168) of the practical, theoretical and analytical aspects of the research without necessary conforming to one particular ontological or epistemological position.

Therefore, a key objective of this investigation was to harness the heuristic value of practice-based approaches (Gherardi, 2009, 2012) in research on VET with the extended “aim to dispel entrenched and problematic notions of learning” (Hopwood, 2014, p. 351) and disrupt existing knowledge hierarchies (Harman, 2018) that have shaped and continue to shape VET, such as those described above and outlined in Chapter 2. The appeal of the use of the TPA is that it explores practices as emergent and “living systems” (Kemmis, 2022b) that are validated through empirically observing the sayings, doings and relatings unfolding in intersubjective spaces that further identify and describe the practice arrangements or conditions that hold them in their course.

This entails not conforming to a particular or privileged position; rather it signposts possible pathways into the research as an exploratory endeavour. Thus, as will be elaborated in Chapter 5, the heuristic value of a practice-theoretical approach was in its contribution as a form of philosophical-empirical enquiry (Kemmis, 2022b) in the exploration of vocational practices and VET generative of its own ontological position with explanatory power (Lizier et al., 2023).

Used practically as a heuristic device or tool of analysis, the TPA offered a novel and promising (Chan, 2020) way to explore existing and possible trajectories for VET by understanding the practice architectures that come through the practice traditions of vocations. In this way, vocational practices formed the boundaries of analysis, not as an abstract notion or classification such as an “occupation” nor as only visible in occupational settings, such as the “workplace” (Billett, 2011). Rather, the analysis focused on how vocational practices are formed and informed through the history of their practices and practice architectures and empirically located in and as sites of practice. Therefore, as backward-facing but also “history-making action” in the present (Kemmis et al., 2014), practice-based approaches and the TPA makes visible “the relations among practice, learning, and change” (Hager et al., 2012, p. 9) through accounts of how practices “are stabilised, maintained and sustained; and how they change” (Hager et al., 2012, p. 9).

In addition, through “zooming in” (Nicolini, 2009b) on specific phenomena to explain learning for “something in particular” (Vaughan, 2008), but also “zooming out” to capture the complexities of particular practices (Billett, 2003; Hager & Beckett, 2019; Hopwood, 2016), it was possible to aggregate on multiple “slices” and “horizons” (Schatzki, 2019) how vocational practices were entangled in wider or narrower ecologies of practices (Kemmis, Edwards-Groves, et al., 2017). Further, by stimulating the idea that the past continues to influence the present and vice versa, a practice-based account of vocational practices made it possible to reinterpret current readings of history (Garland, 2014) that account for different knowledge systems through their respective ontologies and “to speak to the diversity of histories, events, experiences and ideas that have shaped human growth and development” (Dei, 2000, p. 113).

Finally, considering the forward-looking and future aspects of the projectivity of practices, the TPA draws attention to how practices “entwine people, technologies, spaces, and artefacts; through embedded structures and material arrangements they frame future action possibilities for

individuals and the organisation” (Price et al., 2012, p. 235). Through a critical and agitative, possibly uncomfortable, but nonetheless necessary investigation that historicises and problematises traditionally held and dominant conceptions of VET, the “muddiness, uncertainty and vulnerability” (Heikkinen, 2016) that is concealed or ignored in sanitised and quick fix research programmes that appease particular agendas for VET are revealed and included as important aspects within any frameworks of learning in vocational contexts moving forward. Therefore, being grounded in the living projects of practices presented a veritable and authentic engagement with the types of information required to improve contextual knowledge of effective VET interventions (Marope et al., 2015). It also provided an impetus to reposition the meaning of vocational learning with other valuable threads of VET research and debate. These include those in New Zealand’s VET context, (Chan, 2013, 2020; Chan & Huntington, 2022b; Maurice-Takerei, 2016; Vaughan, 2008, 2012), as well as important contributions of the use of the TPA exploring VET teaching practices (Brennan Kemmis & Green, 2013; Chan & Huntington, 2022b; Choy et al., 2016; Choy et al., 2018; Francisco, 2022; Francisco & Henning Loeb, 2020; Green et al., 2017) and education and educational research in general (Kemmis & Edwards-Groves, 2018, pp. 239-254).

This concludes the literature review. Therefore, the guiding research questions are framed through the accumulation of the wider background to the investigation, the specific research focus in New Zealand’s VET context, and the conceptual resources using practice theory generally and the Theory of Practice Architectures specifically to ascertain how learning is what makes sense to “go on” in practice (Kemmis, Edwards-Groves, et al., 2017). To reiterate, the research questions are as follows:

Main research question:

- How can understanding the practices and practice architectures of beekeeping contribute to the development of relevant VET for just transitions?

Supporting questions:

- What is relevant to learn and why according to the practices and practice architectures of beekeeping practices?

- What is the symbiosis between the apiculture qualifications and programmes and practice perspectives of beekeeping?

Chapter summary and conclusion

The purpose of this chapter was to position practice theory as a conceptual resource to explore the symbiosis between vocational practices and VET. I first reviewed some theoretical conceptions of VET, learning and change before introducing and elaborating practice theory in general and the Theory of Practice Architectures specifically as the conceptual resources used in the investigation before stating the research questions. To summarise: as a site ontological theory, the heuristic value of the TPA provides opportunities to explore the conditions of possibility (Kemmis et al., 2014) that hold vocational practices in their course, contributing to an analysis of the role VET has in shaping vocational practices vis-à-vis vocational practices shape VET. As a heuristic device, the TPA can be used to empirically explore the symbiosis between VET aspirations and vocational practices as they unfold on the ground and to ascertain what this means for the realisation of “transformational” VET aspirations for just transitions. This concludes the literature review of the investigation. The remaining chapters present the research approach, methodology and methods utilised in the investigation leading into the presentation of the analysis, findings and discussions.

Chapter 5 – Methods

The central aim of this research was to explore the symbiosis between VET aspirations for just transitions and an analysis of beekeeping practices and practice architectures in the New Zealand context. To achieve this a qualitative, exploratory study using an ethnographic research methodology in two primary sites of beekeeping practice was undertaken: working at a commercial beekeeping operation in a casually employed capacity and completing a vocational training programme on apiculture at a local training institution as an enrolled student. In addition to these fieldwork activities, a review of texts related to beekeeping supported these observations and experiences from the field. This helped to ascertain the discursive/historical aspects of practice otherwise absent or unintelligible from the fieldwork that required further inquiry. Through an iterative process of reflexive thematic analysis, a complex array of beekeeping practices was generated and thematised. This subsequently delineated the scope of empirical evidence to address the main research question:

- How can understanding the practices and practice architectures of beekeeping contribute to the development of relevant VET for just transitions?

The approaches used to achieve the aims of the research and address this question form the basis of this chapter. I first frame the general, exploratory research approach as a “philosophical-empirical” inquiry. Next, I introduce a “workshop” logic that was a useful way to select and use appropriate methodologies and methods in entering practice-based research of vocational practices generally and for this particular investigation. I then outline the methodological approaches, the research settings, ethical considerations and methods that were used to capture and analyse the empirical evidence. Finally, themes of beekeeping practices are presented that informed the analyses, findings and discussions in Chapters 6 to 9.

A philosophical-empirical enquiry

The first two sections of this chapter outline the general approach to the research and methodological sensitivity employed that is generative of new theoretical conversations about practices. Kemmis (2022b) describes this approach to research using the TPA as a “philosophical-empirical enquiry, in which ideas in practice theory and philosophy are investigated in empirical

work, generally through fieldwork (using observation, interviews, document analysis, and the like), and findings from the field are interpreted through the theoretical and philosophical resources of practice theory and philosophy” (p. 168). In other words, it is a way for empirical material to speak back to the theory (of practice architectures), prompting new insights and questions to evolve the theory and to generate new insights of different practical situations (Kemmis & Mahon, 2017). Hence the TPA provides a heuristic (detailed in Chapter 4) of the fields of analytical potential to understand new meanings of practices that contribute to the development of new theoretical insights.

This was pertinent in this investigation because in postulating an alternative vision for VET informed by the unfolding of practices – as the past carried into the present generative of empirical insights to consider for the future – it stood that the practices under investigation also inform theoretical insights generative of new understandings of notions of learning and change from the perspectives of those practices. Thus, a philosophical-empirical inquiry can be understood as a “conversation between the topics and issues in practice theory and philosophy, on the one hand, and topics and issues concerning the [educational] practices we have observed” (Kemmis, 2022b, p. 149). Recognising this dialectic approach required a degree of reflexivity to take care and interrogate the range of possible methodological choices that in turn shape (and are shaped by) empirical insights. To assist with this approach to fieldwork, a useful framework was to expand on Nicolini’s (2013) “toolkit” approach to develop a “workshop” logic as a theory-method spectrum generative of new theoretical terrain from which to analyse ongoing questions about VET.

A workshop logic for researching vocational practices

Located in organisational studies, Nicolini (2009b, 2013) proposes that the multiplicity of practice theories can be brought together as a programmatic eclecticism or “toolkit” of practice approaches as a strategy based on deliberately switching between theoretical activities and lenses (Nicolini, 2013, p. 213). This can be achieved through movements that “zoom in” by selectively introducing a variety of conceptual tools and perspectives that capture day-to-day and specific practices as a discursive material accomplishment (Nicolini, 2009a); and “zoom out” to capture how “trans-local phenomena come into being and persist in time as effects of the mutual relationship between the

local real-time accomplishments of practices and how they make a difference in the local processes of organising” (Nicolini, 2009b, p. 1392).

The double movement of zooming and switching theoretical lenses provides conceptual frameworks and methodological dispositions, “to understand both the conditions of the local accomplishment of practice and the ways in which practices are associated into broad textures to form the landscape of our daily (organisational) li[ves]” (Nicolini, 2009b, p. 1392). Tactically then, the multifaceted and multidimensional phenomena of practices are approached through a toolkit logic (Nicolini, 2013). Strategically, as a means of articulating sound empirical evidence, a toolkit logic embraces generative rather than eliminative inquiry, “to increase our capacity to make connections among phenomena and to not eradicate features [of practice] in the name of generalisations” (Nicolini, 2013, p. 216). In other words, a toolkit logic helps to expand and contract the boundaries of analysis so that the most appropriate and selective means of capturing practice can be made.

Nicolini (2013) proposes a theory-method package that has three objectives. First, because practice-based approaches help to build or slice the social world in terms of practices, proximal research methods that are sensitive to and get close enough to the material and embodied nature of activities in practices is needed. Second, how practices are presented as texts needs to be considered. Practices “speak for themselves” and do not necessarily need to be verbalised to be understood. A theory-method package must therefore consider how the multidimensional and dynamic aspects of practices are re-presented, requiring more than singular methods and “objects” of study. Third, to remain authentic to these preceding criteria, a discursive repertoire is necessary that is open to constructing local stories, explanations and further theories that avoids being eliminativist and builds narratives of interpretation rather than entrenches presumptions about what is claimed as authentic and concrete. Therefore, a theory-method package presents a “dispositive to be used to investigate the world, not a fully formed theory of how the world is” (Nicolini, 2013, p. 218). Importantly, such an approach “emphasises that for studying practices, one needs to employ an internally coherent approach where ontological assumptions (the basic assumption about how the world is) and methodological choices (how to study things so that a particular ontology materialises) work together” (Nicolini, 2013, p. 217). This corresponds to the types of “philosophical-empirical” enquiry referred to by Kemmis (2022b) and the strength of

practice theory as an approach to researching social life (Reckwitz, 2002; Reckwitz et al., 2023; Spaargaren et al., 2016).

Commensurate with Nicolini's toolkit logic, the selection of methods for exploring vocational practices using the TPA in this investigation required "zooming in" on the manifestation of practices occurring in the sites of activity as well as "zooming out" to consider the broader "texture" of these practices (Nicolini, 2013, pp. 230-235). This was necessary to trace both the temporal dimensions of practices as "history-making action" (Kemmis, 2022b, p. 138) or action with moral and political consequences linked to how practices prefigure but do not predetermine these actions into the future; and the spatial dimensions of practices happening everywhere however "travelling" over horizons from one site to another that in turn co-produce those practices in the site (Kemmis, 2022b, pp. 140-142).

Therefore, in justifying tools to take into the field I was concerned with selecting research approaches, tools and techniques that made it possible on the one hand to (spatially) survey the topographies or horizons in which practices unfolded, but also travelled in and out of the site and were inevitably returned to and approximated in the everyday activity and sites of these practices, and on other hand, those that (temporally) allowed for a discursive interpretation of the artefacts of practices to trace genealogies of practices from the past that make sense (or might not make sense) to "carry on" and "be stirred into" the present, that foreground considerations of these practices into the future.

Finally, in thinking about a more strategic approach to researching vocational practices in the future, I came to understand this approach less as a "toolkit" approach but rather a "workshop" or "toolshed" approach where tools are arranged, maintained and retrieved in more publicly available and collaborative workspaces as opposed to the metaphorical and literal confines of a toolkit. That is – a toolkit, despite containing a range of tools, is nonetheless constrained by the number of tools it can carry, implying that tools, once selected, remain the purview of the individual to make sense of and deploy. A workshop on the other hand represents a site where the organisation and range of tools practitioners select for their toolkit to deploy in research are both publicly arranged and set up for collaborative use. This subtle shift in analogy was useful for me personally in coming to understand and make sense of what methods to use in this particular investigation that could also be deployed to explore other vocational practices in future research,

however recognising that no two practices are the same and likely require different tools and approaches to select. In other words, I imagined that the tools researchers may use in practice-based research were not confined or hidden in a toolkit but rather arranged along a wall of visible tools – similar to how tools are arranged in a beekeeper’s work shed and workshop, and that each has a different application and function that can be used to explore particular challenges (and opportunities) in dynamic ways.

Therefore, what I might term a “workshop logic” is informed by an intuition that future studies of vocational practices for necessary social inquiry in the frame of “just transitions” would likely require very different tools to be used due to the nature of those practices and sites under investigation, that in turn would yield very different results informing ongoing inquiry into these practices – and possibly new tools or methods. A “workshop logic” therefore signals that tool selection is public and therefore rationalised through the interpretations of a wider network of practitioners than is possible within an “internally coherent” toolkit approach, and that through this public endeavour, tool selection or even the modification of tools for different uses becomes a collaborative activity. Further, where tool selection is a collaborative activity, the spectrum in which these tools are arranged (e.g. the workshop wall) is also commensurate with and to those practices and by extension practitioners whose practices are under review. In other words, tools can be used in collaborative and unintended yet ingenious ways befitting of the unique challenges (and opportunities) practice informed inquiry opens up (Spaargaren et al., 2016) in the particular sites of investigation. Arguably, this is required if new ontological positions are to have any bearing on the types of changing practices that may inform just transitions. Collectively, the philosophical-empirical approach to inquiry and logic of tool selection through a workshop analogy coordinated the steps taken and tools utilised in this investigation that also informs and aims to contribute to future practice-based research on vocational practices and VET.

The research setting

Empirical evidence was collected through two fieldwork activities cumulatively spanning a period of one year. One fieldwork activity consisted of working for a commercial beekeeping operation during the New Zealand summer honey harvest season from December 2021 through to February 2022. The other fieldwork activity consisted of completing a one-year part-time Level 3 Certificate

in Apiculture programme at a local training institute from June 2021 through to April 2022. A description of the site selection process and details of the fieldwork activities are described below.

Site selection

Gaining access to ethnographic research sites, establishing relationships and collecting empirical evidence is vitally important to the type and quality of the data (Shenton & Hayter, 2004). The two fieldwork sites were selected due to their close geographical location to my home and having established prior confirmation to undertake research in these sites. Geographical location was important given that I was living, working, studying and conducting research over an extended period of time that required access to these sites throughout the duration of the research (Shenton & Hayter, 2004). In addition, given the physical and emotional commitment and effort expended in these sites through work and study, it was also imperative to maintain the “emotional labour” (Bergman Blix & Wettergren, 2015) necessary to build trust and rapport in these sites that secured personal wellbeing. This was achieved through generally being highly motivated and interested in the work that I was doing, in addition to the enjoyable work and study spaces afforded by my peers in the organisation/institute.

Commercial beekeeping operation/work setting

For this fieldwork activity I was employed as a beekeeping labourer in a casual capacity for the busy New Zealand summer honey harvest season from December through to February. Research opportunities were defined by work activities relevant to the particular seasonal activities I was employed for – the Mānuka honey crop production and harvest, although opportunities for additional activities also occurred. Chapter 6 details how these practices and practice arrangements are held together and carry on in practice. Here, the types of work activities that gave opportunities for research are presented.

Work activities included those for preparatory work for the Mānuka honey crop production and harvest itself. Preparatory work consisted of visiting apiaries to conduct hive inspections and to prepare hives for Mānuka honey crops. Specific work activities included assisting re-queening colonies with mated/caged queens or queen cells; removing or inserting Varroa treatments; manipulating hives by swapping brood and sugar frames between strong and weak colonies, and feeding sugar syrup to build colony strength; harvesting; loading hives onto trucks and trailers for relocation to their Mānuka honey sites; and once in their Mānuka crop locations, preparing empty

honey supers with a combination of “wets” (post-extracted honey frames) and foundation frames and adding supers (boxes containing honey) or “supering up” hives to prepare for Mānuka honey crop production.

Figure 5.1

Map of locations of work and study locations and regions of work



Note: Map data Copyright Google 2024

The locations of activity included meeting and working in the work shed and in the apiaries in various locations around the Bay of Plenty and Taranaki, as identified in Figure 5.1. Considerable time was spent moving as a passenger (because I did not hold a heavy class driver’s licence) during the relocation of hives – generally four- to five-hour one-way trips, with many overnight stays in local accommodation. Relocating hives required late evening pick-ups to load hives on trucks for relocation the following morning and subsequently, early morning starts to shift hives to drop them at or near their Mānuka sites before conditions became too hot for the bees. Some relocations were for “helilifting” hives on pallets, requiring set-up and tying down hives to pallets before being airlifted out to their remote locations. Working hours in general were irregular,

with frequent 5am to 6am starts, early afternoon finishes, to start again in the evening around 7.30pm to 9pm and finishing as late as 11pm to “block up” hives – the activity of closing hive entrances to load and relocate them the following day.

Once the Mānuka crop had been produced in late January/early February, attention shifted to harvesting. Honey harvesting work activities consisted of moving with the team to different apiaries to “strip” (remove) honey supers from the hives and load honey frames and supers on the trucks/trailers for transportation back to the work shed for storage before extraction. Specific work activities included setting up the generator and equipment used for blowing out bees (removing bees from the frames and honey supers), lugging honey-laden supers from the hives/blow stand and loading these onto the truck, sorting empty frames so that all honey supers were full, and ensuring the site was clean from honey spills and that honey supers were covered to prevent bees from “robbing” exposed honey. Post-harvest work activities included picking up and loading hives back onto trucks/trailers to relocate back to their permanent apiaries, including receiving those that had been helilifted.

In addition to harvesting work, I also undertook general work shed activities consisting of scraping or water-blasting beekeeping equipment free of wax, propolis and old comb and debris, and generally organising beekeeping equipment for storage and later use. At a later date, I also arranged an unpaid workday during the pollination season to visit apiaries located in orchards to observe an ordinary working day of pollination activities with the same crew. This work included general colony inspections, removing swarm cells and providing supplementary feed to the colonies.

Apiculture programme /programme setting

For this fieldwork activity I attended a one-year part-time Level 3 Certificate in Apiculture programme at a local training institute. The programme consisted of two full days of training per week on campus, beginning at 8am and ending at 3pm over the duration of what is a regular season for beekeepers beginning in July through to the following April. Practical components of the programme included assembling hives and hive components; transferring a colony from a nuc (smaller nucleus “starter” colony) into a hive; regular hive inspections; Varroa testing and treatment; honey harvesting and extraction; and practical health and safety practices. Work was usually undertaken together as a class with programme colleagues buddied up to assist each other

with hive work in the apiary. The programme also had a robust theoretical component on various aspects of beekeeping including an in-depth understanding of bee physiology, colony management, national regulations and standards, pest and disease management, and different commercial operations and bee products.

The locations of learning included a classroom setting, a work shed for building the hives and keeping some equipment, and a single apiary located on campus. Classwork was punctuated with regular apiary work, however, this was initially constrained by logistical delays in receiving materials for practical work including hive components and nucs caused by Covid-19, and later, by a national lockdown due to Covid-19 itself. The programme required submitting a number of assignments/portfolios of work to the institution's learning management system (LMS-Moodle) covering the learning outcomes of the qualification. Online learning materials were also available on the LMS and the library offered a number of textbooks and resources on beekeeping. At the completion of this programme, I inherited two hives that are now located on my property, contributing to my ongoing development of beekeeping practice, as well as bringing continuing joy to my young family and me.

Discrepancies between proposed sites and implemented sites

In addition to the work and programme-based fieldwork activities, additional sites had been proposed in the research proposal to explore other, related beekeeping practices in other sites. These included access to packing houses and laboratories as well as an attempt to secure additional beekeeping placements in the Bay of Plenty and other regions and an urban beekeeping operation in another large city. Despite repeated efforts to secure these opportunities through a number of formal and informal channels, responses were either ignored or for other reasons did not transpire. While these are presented here as a discrepancy between the proposed and actual fieldwork research, they were not considered detrimental to the overall coverage of practices in the investigation. Rather, coverage of these other beekeeping activities (e.g. packing, laboratory testing) was adequately secured through secondary sources such as online videos, organisational materials and other documentation. Nonetheless, the issue of access to practice sites to conduct practice-based research in vocational contexts was recognised as a limitation, a matter discussed in the conclusions in Chapter 10.

Ethical practices

An ethics application (FEDU050/21) was submitted to the Te Wānanga Toi Tangata Division of Education Research Ethics Committee and approved with no comments (Appendix D) prior to confirmation and full enrolment. In addition to the ethics outlined in that application, the following section details the ethical practices applied in this investigation as a means to inform ethical practices for future practice-based research of vocational practices and VET.

Access to research sites and participants

Organisations of interest were communicated with in advance of the research activity taking place to gain consent and provide information about the purpose of the research activity, timeframes, matters of informed consent, and the anticipated organisational and participant involvement in the research activities. Gaining access to the work-based field research activity was in principle pre-established through my work with that organisation prior to my doctoral enrolment. Upon research ethics approval and successful confirmation, formal consent was sought through the owner and manager of the organisation. Similarly, gaining access to the provider-based field research activity was in principle pre-established through inquiries made to the programme tutor and head of department, and then through the institution's research department prior to the commencement of enrolment in the apiculture programme. Upon research ethics approval and successful confirmation of the doctorate proposal, formal consent was sought and approved through the institution's research department, the head of department and programme tutor for apiculture.

Informed consent

The process of obtaining informed consent followed the University of Waikato's Ethical Conduct in Human Research and Related Activities Regulations 2008. Consideration was given to procedures of informed consent as they applied to "Informed consent of participants" (Section 9) and "Field research and informed consent" (Section 11). Concerning "Field research", it was identified prior to the research activities being undertaken that obtaining informed consent of all potential participants in the field research was impractical given the number of participants in each location (e.g. workmates and programme cohort) and the potential for a variation of participants, such as new workers or learners coming into or exiting these locations. Regardless, care was taken to apply ethical principles to minimise the risk of harm to and maintain the anonymity of participants (Section 11, clause 4). This was achieved through an initial sensitisation activity

conducted at work and in the classroom with fellow workmates/learners outlining the purpose and process of the research. This included stating timeframes as well as participants' rights and obligations in and during the research project.

Concerning the “informed consent of participants”, participants were invited to complete the informed consent process. The approved research information sheets and informed consent forms (Appendices A and B) were given to interested participants and reviewed, signed and returned by willing participants. In the work setting, a total of four consents were obtained including from the manager and those work colleagues I worked closely with in the apiary and whom I spent the most time driving with as a passenger. Workplace participants ranged in age and were all male with a range of four to 25 years of beekeeping experience. In the programme setting, a total of five consents were obtained including from the tutor and four fellow learners with whom I conducted the practical components of the programme. Again, participants ranged in age, with a three to two male to female split.

An ethics of care and ethical reflexivity

Beyond “procedural ethics” concerned with institutional research ethics reviews (Guillemin & Gillam, 2004), the success of the research approach was always recognised to revolve around developing and maintaining meaningful and transparent relationships with participants in the sites of research. Consideration was given to an “ethics of care” (Reich, 2021) where imperatives for relationship building were not defined by methodological motives but rather were inherent in and formed through participation in the site. While I recognised that the methods selected could never be truly devoid of plausible power asymmetries and that “conversations with a motive” (Swain & Spire, 2020, p. 5) were always present in research, I also recognised and was sensitive to the idea that ethics manifest “as an ongoing dialogical social practice to be continuously and reflexively achieved in the mundane conduct of everyday life” (Roth, 2018, p. 17). Ethics therefore were understood to be situated (Groundwater-Smith, 2010) and guided by the institutional and social norms and conventions of the situated contexts where research was conducted. This included adhering to contractual obligations as a worker and enrolment obligations as a learner. However, ethics also manifested in uncodified social norms and expectations between participants through practice (Roth, 2018). These included notions like “work ethic” or “study ethic”, where expectations of ethical conduct were defined by the expectation of my performance in these

contexts. Being sensitive to an ethics of care also enabled me to respond to “ethically important moments” (Gullemin & Gillam, 2004) that require researchers to be attentive, intuitive and responsive to unanticipated ethical concerns that transpire in the field (von Unger, 2021).

An ethics of care was particularly important in this research because of the duration working and studying with others, mostly during periods unrelated to the targeted research activities, for example during downtime or breaks and so forth. Therefore, I was aware of and sensitive to my position not only as a researcher but also as a work colleague and fellow learner, and the need to regularly switch positions between researcher, worker/learner and friend/colleague in the spontaneity of activity. Hence, being attentive to an ethics of care throughout the research activities in this way required an “ethical reflexivity” (von Unger, 2021) that recognised research as a social process with potential consequences for all parties involved.

Therefore, in the two research settings the principle of whanaungatanga, the Te Ao Māori or Māori way of forming meaningful relationships (Love, 2020), informed and guided the enactment of an ethical reflexivity by identifying, being sensitive to, and applying appropriate behaviour and values as they were positioned in these sites and as they related to developing and maintaining connections between people (Love, 2020). To re-emphasise, this principle was evoked not only for the purpose of procedural ethics or an ethics of representation in research; rather it formed and informed a daily and considerate, thoughtful, compassionate and empathetic approach to care through ongoing human relationships in the conduct of daily life.

Methodology: tools for surveying the practice landscape and traditions

The philosophical-empirical enquiry and workshop logic described earlier backgrounded the approach used to select tools to conduct this investigation but could also be selected for practice-based research of vocational practices and VET more generally. This section outlines the specific methodological tools selected from the workshop that were used to survey the practice landscape and traditions of beekeeping in this investigation.

Being ethnographic (not doing ethnography)

The primary methodological approach used in this investigation is captured under the label of “ethnography”. Ethnography is one of many methodological approaches in social research that overlap with other labels such as “qualitative inquiry”, “fieldwork”, “interpretative method” and

“case study” (Hammersley & Atkinson, 2007, p. 1). As such, ethnography is often “swallowed up in a general, multidisciplinary movement promoting qualitative approaches” that, over the course of time, “have been reinterpreted and re-contextualised in various ways in order to deal with particular theoretical and methodological circumstances” (Hammersley & Atkinson, 2007, p. 2). Ethnography was selected due to the immersive sensibility necessary to identify the sayings, doings and relatings as they unfolded in the sites of practice while using an orientation to research that was open and flexible and commensurate with the exploratory nature of the investigation (Delamont & Atkinson, 2021).

In selecting an ethnographic approach, the well-trodden contestations of researcher positionality and representation and associated practical and ethical concerns were considered. Positionality considers how researchers “affect research subjects and environments, and thus the research itself” (Reich, 2021, pp. 577-578). In this investigation I was sensitive to the direct involvement and engagement in the shaping of research, the collection and construction of data, and eventual interpretation and representation of the social world (Delamont & Atkinson, 2021). I was also sensitive to how my position as researcher determined the nature of social relationships sustained with the hosts in the field, affecting both methodological contestations of claims to truth (Hammersley & Atkinson, 2007) and the appropriateness of claiming to represent “Others” (Smith, 2012). Therefore, a constant reflexive engagement with the collection of empirical evidence was undertaken, to problematise issues of positionality and consider the wider political and social-historical conditions that shape social production (Madison, 2011). The meaning of “reflexivity” here is not confused with personal reflection (Whitaker & Atkinson, 2019), but rather considers the range and types of epistemic, disciplinary, textual, methodical and positional reflexivity that are central to “an awareness that the researcher and the object of study exist in mutual relationship with one another. Thus, reflexivity calls for attention to how thinking comes to be, how it is shaped by preexisting knowledge, and how research claims are made” (Whitaker & Atkinson, 2019, p. 2).

This sensitivity was achieved by assuming the disposition and attitude of “being ethnographic” (Madden, 2014), as opposed to “doing ethnography on others” (p. 77). This approach emphasises the indivisible quality of talking, doing and relating in practice through activity and participation, being culturally and socially immersed, and being enmeshed with ethical responsibilities and obligations in the site of practice. Therefore, being ethnographic is less

concerned about following method and more about building the dispositions to distinguish what is meaningful in the field and what right courses of action to take based on the relationships that are formed between participants. From a practice-theoretical perspective, being ethnographic drew attention to methodology not as some unmovable or static premise upon which research was undertaken (Hui, 2023) but rather to the activity of methodologies-in/as practices to “support the spiralling reflections, undoings and redos that move away from the reproduction of problematic aspects of researchings and towards a multitude of promising ones” (Hui, 2023, p. 1090). In being ethnographic and recognising methodology-in/as practice, the term “beekeeping ethnography” captures most accurately the exploratory, open, flexible and sensitive approach that describes my empirical encounters with the sayings, doings and relating in beekeeping practices.

Discursive practices

While ethnography was selected as a useful approach to survey practices occurring in the practice landscape, observations in the field alone did not provide historical context for why these practices transpired. Methodologies that survey the history-making aspect of practices (Wilkinson & Bristol, 2018) are necessary as practices “arise from history and project people and things forward into history, with particular consequences for all concerned. Practices unfold like stories; they make history” (Kemmis et al., 2014, p. 88). In this project, these “stories” were understood as “discursive practices” (Gherardi, 2019), representing a “doing” and a “knowing how to do” with words (p. 125) evident in the practice landscapes through the various discourses produced through practices of communication (Kemmis & Grootenboer, 2008). As Gherardi (2019) notes, “people work with their hands, arms, heads and bodies, but they also work with words, language, communication situated in interactions, and embedded in texts” (p. 125).

Important in this approach was understanding the link between discursive practices as history-making activities of practices of communication in the site (e.g. sayings) and the reproduction of “discourses” in these sites (e.g. cultural-discursive). In practice theory, discursive practice as discourse can be understood from two analytical positions. On the one hand, discourse is understood as the mundane use of language in social interaction – the actual use of language to accomplish some activity in a specific scene of action that can be located by “zooming in”. On the other hand, discourse is understood as a “broad system for the formation and articulation of ways

of thinking, behaving, and eventually being” (Nicolini, 2013, p. 190) that can be located by “zooming out”.

In this investigation both approaches to discourse were pertinent. In the ethnographic fieldwork this included zooming in to observe everyday communication such as talk in interaction (Gherardi, 2019) and practice-specific language or utterances to the material-semiotic; how cultural artefacts such as physical implements, technical procedures and symbolic resources (Hager & Beckett, 2019) were formed and mediated in the practice landscape. It also included zooming out to analyse written documentation about practices, for example in the range of texts and general discourses identified in the field of beekeeping. In other words, language as it played out in the practice landscape required zooming in to identify relevant language specific to the practices (as opposed to all language), yet also zooming out to capture the formation of meaning of such language in use. This was achieved by listening into practice over a period of time in the sites of practice/research, establishing a sensitivity to practice-specific sayings, and subsequently tracing the origins of such language in use through a critical reading of discourses produced on this practice-specific language in use.

Methods: tools for capturing the practice landscape and traditions

Continuing with the workshop logic, the following section outlines the tools selected as methods used to capture various aspects of the practice landscape and traditions of beekeeping. These include a hybrid approach to participant observation/observant participation, unstructured interviews, field notes, photographs and document analysis.

Participant observation/observant participation

Participant observation/observant participation (Seim, 2021) was selected as a method of observing and gathering information through a more or less active participation with people in commonplace situations and everyday life settings, as opposed to those artificially manipulated by the researcher (Jorgensen, 2020). In selecting participant observation as a tool and technique for capturing practice, issues of both its methodological utility and practical implementation were considered.

Concerning its methodological utility, participant observation was appropriate because it allowed for full immersion in the particular vocational contexts over time to identify salient

features of practice that facilitated “thick descriptions” (Geertz, 1973/2008). Thick descriptions “include reflections on meanings attributed to situations and phenomena, turning a witnessed, momentary event into a written discourse which can be perused repeatedly and ‘read’ in different ways” (Cohen et al., 2018, p. 648), thereby presenting a more comprehensive and rigorous account of information for analysis. This represented a commitment to an ongoing dialectical interaction between data collection and analysis while also ensuring adequate data was collected to avoid the potentiality of “an analytical impasse in its final stages” (Hammersley & Atkinson, 2007, p. 160). Examples of activities observed included practice-specific language in use; observations and descriptions of the use of tools, materials, and the environment; the movement and interactions between human and nonhuman actors in local environments; records of the timing of events and other practice-specific procedures; and detailed contextual information and processes specific to practice (Cohen et al., 2018).

Participation was both passive and active. Passive observation is when a researcher is present in a site to observe what is going on but is not directly engaged with people and their activities. Alternatively, active participation is when a researcher is either engaged with the activities of a site or seen to be passively engaged while remaining connected by their thoughts and feelings (Jorgensen, 2020). Where “crossing over” the artificial boundary between participation and research was traditionally denounced as “abandoning the objectivity of science” (Jorgensen, 2020, p. 3), this view has changed as researchers have realised the richness of participating in research as “insiders”. In this sense, my role in participant observation took both a passive, spectator-outsider role to observe the conditions that shape practices that appeared to be external to the practitioners themselves, and a practitioner-insider role to observe how practices had meaning and were made coherent by practitioners (Kemmis, 2012). This dual role has also been framed as taking both a participant observation and observant participation role that once inducted into the research site becomes an interchangeable “hybrid approach” (Seim, 2021, p. 4).

Concerning the practical implementation of this method, Jorgensen (2020) suggests participant observation is appropriate when certain minimal research conditions are present. Those relevant in this investigation were: capturing human meanings and interactions viewed from the participants of those situations and settings; observing the everyday situations and settings in which activity occurred; securing access to participation in the site through a work contract and

course enrolment; and ensuring participation was sufficiently limited in scope, size, and location (pp. 11-12). An additional criteria was the time spent in the site (Bernard, 2011) to facilitate thick descriptions of practice specific sayings, doings and relatings. This impacted how I was socialised into the practical settings of work and study and remained authentic to the practices of the site without being unnecessarily intrusive. Therefore, the notion of “learning as becoming” (Chan, 2020) in developing a vocational identity through socialisation with others through the authentic work and learning context and the principle of *whānaungatanga* in forming mutual and trusting relationships with colleagues helped guide this process. Hence, the value of being immersed through working as an employee and learning as a learner presented both an authentic experience but also reduced the potential awkwardness of being an outsider within practice. This was essential given the need to spend time in the sites of practices for research and to build meaningful relationships with my peers.

Lastly, the fluidity of the hybrid, insider/outsider approach where the presence of the researcher comes into and out of the context (Bernard, 2011), depended on the conditions imposed within the site. For example, in my role as a worker I was tactful in not recording organisationally sensitive information or work practices to avoid any mistrust in the research relationship while also recognising the contribution of such information to the research. Likewise, it was not always possible or appropriate to spend prolonged amounts of time observing practice, especially when I was expected to be working or learning in the two research settings. Finally, consideration was given to not being a nuisance or distraction that could compromise the safety of others as well as my relationships with them.

Czarniawska’s (2007) notion of “shadowing” was employed in this respect where a researcher uses subtle cues in situated practice to define appropriate observation roles and methods to use in different situations, providing greater flexibility and mobility between roles in particular situations. This was achieved, for example, by communicating clearly with the supervisor, tutor and participants in work and the programme of my intentions to shadow them during an activity. In this way the roles and methods taken into observation settings were always provisional and premised on upholding the respect for appropriate, ethical and safe observation activities yet without compromising the anticipated authenticity and potential contribution of the observation activities themselves.

Unstructured interviews

The use of unstructured interviews or informal conversations in qualitative research considers how the spontaneity of conversations during social interactions between the researcher and participant develop the substance of the interview rather than imposing predetermined categories of questions that lead the conversation (Swain & Spire, 2020). This approach increased the “salience and relevance of questions” so that conversations were “built on and emerg[ed] from observations” (Patton, 1980 as cited by Cohen et al., 2018, p. 511). This was a useful approach to glean insights from other aspects of practice (e.g. doings and relatings) observed during the participant observation activity, as well as generating a catalogue of “sayings” of discursive practices. Two procedural factors determined the usefulness of this approach.

The first was that the exploratory design of the research meant that a set of premeditated interview questions were neither viable nor appropriate. Rather, initial questions evolved through conversations with my peers to further the generation of insights occurring over time and as opportunities arose and further information was required. Therefore, the second, related factor was that the immersive nature of the participant observation activity provided numerous opportunities as well as time for dialogue with colleagues. These conversations occurred spatially in the apiary or in the vehicle while traveling to different sites, and temporally during the ebb and flow of the working day and over the week, season and duration of the programme.

Swain and Spire (2020) contend that unstructured interviewing is “a relatively underused method of generating data in social and educational qualitative research”, where the “majority of qualitative researchers rely on more standard or formal” (p. 4) structured or semi-structured interviews in their fieldwork. In contrast, the value of a continuous unstructured interview technique allowed me to “gain trust, establish rapport, and form an empathetic, non-hierarchical set of relationships” (Swain & Spire, 2020, p. 5) with participants, thereby establishing more authentic and less artificial responses, and easing the communication flow: “to tell it as it is in an everyday context in a more natural and less artificial way” (Hammersley & Atkinson, 2007, p. 160). Another consideration was the idea that because dialogue was unstructured, it might be unguided and therefore frivolous. On the contrary, building trust with participants through time spent in the field enabled the gradual refinement of more detailed practice-specific inquiry. In this way, this process of inquiry was not dissimilar to the types of probing questions or “feed forward”

dialogue (Chan, 2020, p. 69) practitioners being initiated into vocational practices ask in the same work-based or learning contexts in becoming a practitioner. Therefore, the quality of insights generated from these conversations was also assisted through my interest and investment in “becoming a beekeeper”.

Crucial for the success and authenticity of this approach was for dialogue to be fluid and unobtrusive, however not in a way that portrayed intentional or implied covertness or deceit (Bernard, 2011) and so that the decisions and willingness for participants to enter into dialogue were transparent. Likewise, discretion was necessary to identify appropriate opportunities to lead into conversations without distracting participants or me from the tasks at hand, such as driving or conducting hive work, or recognising the diminishing effect of any conversations due to work fatigue. Clear communication and establishing strong mutual relationships with the immediate workplace manager and tutor for this purpose and likewise building rapport with participants allowed me to traverse these appropriate moments to enter into meaningful dialogue over time.

Finally, as an additional layer of insight, the “interview to the double” (Nicolini, 2009a, p. 196) technique was utilised for guiding dialogue with the purpose of gathering detailed information about practice-specific activity while remaining unobtrusive. This interviewing technique imagines respondents having a double who will replace them at their job the next day, requiring them to give detailed instructions to be explained before taking over their role. In the research activities, this technique entailed asking the supervisor or peer to describe or show what was happening, or in other instances, presenting a hypothetical scenario for elaboration. This was a useful technique to “nudge” participants (Hopwood, 2016, p. 116), to focus and detail features of their working lives and practices that might normally be overlooked, that accumulated in the observation of both processual (i.e. doings) as well as linguistic descriptions (i.e. sayings) of activity (Nicolini, 2009a). In this way, the interview to the double technique complemented the notion of “shadowing” (Czarniawska, 2007) however also helped to verbalise and capture the “sayings” of embodied-material interactions and techniques while using equipment and tools.

Field notes in practice

Field notes were used to capture observations of activity and language use in practice. Field notes are the traditional means for recording observational and interview information in ethnographic research (Hammersley & Atkinson, 2007). In the process of taking field notes, researchers must

consider how the time lag between field activity and conversations and the process of notetaking affects recall and its effect on the fidelity of information (Hammersley & Atkinson, 2007). In this investigation, time lag was seen to help (rather than hinder) as an information filtering process so that only sedimented details of vocational practices were recalled. This process can be understood within the interactional and distributed enactment of “practice memory” (Kemmis, 2022b; Schatzki, 2010) of repeated action as it occurs with and between actors in practice. Therefore, in this investigation, the quality of fidelity was not related to the period of time spent away from the activity but rather the cumulative time spent in the activities as a whole and the opportunities for reflection and the iterative collection and validation of information and ideas.

Another consideration was whether to write covertly or overtly in the act of generating field notes. To remain unobtrusive in practice, covert notetaking is premised on the notion that notetaking should remain unforced and natural within the practice setting to remain inconspicuous (Fontana & Prokos, 2007). However, writing is a physical and often cumbersome activity in the field – it is not a discreet activity. Overt notetaking by comparison is a more deliberately visible activity in the field. In this investigation, the deliberate act of overt notetaking presented a way to build transparency and trust in the research exercise, providing opportunities for practitioners to inquire about the recording of activities. In this way the act of notetaking contributed to learning about each other’s craft in a mutual relationship of engagement (and entanglement) in the practices of research and work.

Procedurally, in the same way that discretion was applied in entering conversations as a form of unstructured interview, the same level of discretion was applied to identify appropriate moments to write notes. In this investigation, notetaking in the field was an overt process, however discretion was applied as to the timing of notetaking due to work and study commitments and the tasks at hand. Notetaking was mostly completed during “downtime”; during breaks or moving between work locations or made at the end of the day’s work without interfering in work or studies. Notetaking therefore was both covert in that it occurred off site and out of work hours and overt when undertaken during downtime yet also inviting participants to explore and ask questions about what was being written.

Field notes consisted of handwritten notes and diagrams corresponding to the accumulation of observed interactions of practice-specific tasks, daily activities, thoughts and experiences of

participants and myself as both researcher and practitioner, key words, phrases, and ideas from conversations, and relationships identified within the organisational contexts and broader ecologies of practices (Kemmis, 2022b; Kemmis et al., 2014) of beekeeping. In addition, descriptions of tool use and technique were important in capturing the full range of specific “sense regimes”; how practices and complexes of practices are perceptively organised in a specific way (Reckwitz, 2016). Field notes therefore captured the different ways senses were deployed in and through practice including practice-specific smells, sounds and sensations such as weight and force that described more than visual aspects of activity. This described not only what perceptions are utilised in practice but also how perceptions worked within the framework of practice (Reckwitz, 2016).

So too, initial thematic coding was included during the notetaking process to begin to identify sayings, doings and relatings as they related to cultural-discursive, material-economic, and social-political arrangements. Taken together, the process of notetaking and selection of content to include began the iterative process of thematic analysis described later in this chapter.

Photographs of practice

Photographs are used as a powerful resource for portraying what cannot be articulated linguistically (Eisner, 2008). Photographs were used to provide layers of information that word-based/written information alone could not and to present a more vivid image of phenomena for analysis and interpretation with the intention of retrieval at a later time or for use in analysis. Photographs were therefore utilised as a means to support information recall but have also been included in the analysis as visual examples of practices.

In using photographs, the ethics of anonymity of participants and issues of consent were always adhered to and photographs were only taken when anonymity could be guaranteed (e.g. if defining features of participant identities were adequately concealed due to the nature of the practice), and prior consent was granted by the manager and participants. This required a verbal request with the manager/tutor prior to specific daily work activities being undertaken, as well as with participants at the site prior to taking photos. Due to the issue of unreliability of taking photos in the instance consent or anonymity could not be guaranteed, photographs were used as a supplementary source of information rather than a primary means of capturing data. An unforeseen

positive aspect of taking photos was the intrigue generated with participants in the public act of taking them, thereby helping to generate additional collaborative inquiry.

Another consideration was the way photography as a qualitative research tool can objectify people and things into something to be possessed (Sontag, 2003). Groundwater-Smith (2010) suggests one way to overcome this is to have participants take the photos themselves (p. 83). However, this approach was impractical in this research context during working hours and in workplace and study conditions. Therefore, participants were asked to direct attention to what they felt should be photographed, becoming agentic in the image-creating process. In this way, commensurate with Nicolini's (2009a) interviewing to the double technique discussed above, this was a form of "photographing to the double" by calling upon participants to reflexively position their practice outside of themselves and in "my shoes" and to guide me on what they felt was valuable for me to capture.

Document analysis

An important element of using the TPA was to identify, "traces in the shared and overlapping semantic spaces, material spaces, and social spaces that always already exist in particular places" (Kemmis et al., 2014, p. 35), which describe practice traditions. While these traces manifest through extant and emerging practice in real time reflected in the methods presented above, a review of texts was also necessary to locate genealogies of practice-specific activity of beekeeping throughout history in general and New Zealand's context specifically as discourses of discursive practices (Gherardi, 2019). This was achieved through the considered selection of some textbooks on beekeeping as well a review of historical and contemporary literature, both academic and general, that supported this review.

This activity was important for two reasons. First, it provided a framework to understand intergenerational changes to practice by tracing genealogies of practice-specific sayings, doings and relatings. It was also anticipated that practices identified during the fieldwork could also be traced through a historical review of various documentation to describe the continuity and resilience of practices over time. In addition, a historical review enabled an understanding of how external or internal changes affected practice. External changes included social, political, ecological and environmental "shocks" that affected the way practices unfolded, such as changes to regulatory or legal requirements, significant global events or market fluctuations, or the

introduction of pathogens, for example. Internal changes included those specific to the industry such as the way industry bodies, organisations and enterprises innovated and evolved to take advantage of opportunities or minimise risk. Second, document review and analysis provided a framework to understand how practices travel over horizons into local practice and vice versa and how practices have come to be understood as definitive and unique practice traditions that have evolved in situated contexts. The objective of including historical evidence was therefore to both trace genealogies as well as locate those sedimented practices that have remained resilient, albeit with changes, over historical time and space (Kemmis, 2022b).

Two procedural factors were considered when entering the field of historical and documentary evidence for this purpose. The first was to locate suitable primary and secondary sources of information and anticipate the workload and techniques required to review them in selecting what historical materials to use. The second was to consider the authenticity and credibility of documentation by asking who produced it, why it was produced, and whether it was possible to scrutinise the reliability and accuracy of the information and issues of representation. In this way I was sensitive to the idea that history does not speak for itself (Garland, 2014); it is written and spoken in a time and place by people with particular motives and agendas. Therefore any use of historical materials were scrutinised for their representation of “facts” and according to the underlying structure of thought as “a historically specific order of words and things that shape[s] discourse and experience in a particular era” (Garland, 2014, p. 370)...“to reveal something important but hidden in our contemporary experience” (p. 368). This reading between the lines, while an arduous and time-consuming activity, was nonetheless necessary to filter through issues of historicity and the sociality of discourse.

Data analysis: tools for analysing the practice landscape and traditions

This final section outlines the methods used to organise the data for analysis. As a tool in the researcher’s workshop, the analysis of practices describes the ways social phenomena is retrieved, brought back into view and organised to make sense of this information for some productive output. In this investigation, the general approach to analysis was “reflexive thematic analysis” (Braun & Clarke, 2021) and the productive output of analysis was to form “situated generalisations” (Simons et al., 2003).

Concerning the latter, Simons et al. (2003) suggest the notion of “situated generalisations” transcends the issue of ineffectual transfer between evidence-based research and how practitioners are expected to use and understand evidence not as freestanding knowledge but rather how it “is bound up in the situation in which it is generated and re-generated” (p. 360). Thus “generalisation lies at the heart of evidence-based practice, in that what turns experience located within a specific context into evidence is a function of both its communicability and its applicability and relevance in other contexts” (p. 359). In this investigation, analysis had a dual purpose; first as a means of organising the empirical evidence from the research activities to address the research questions; second to adequately communicate this evidence in a relational and situated way. Analysis was undertaken in a two-step process; organising empirical insights into memos to “get to know” the evidence; and identifying patterns for thematic development that were disseminated as vignettes.

Reflexive thematic analysis

Reflexive thematic analysis was identified among other pattern-based analytical tools as an appropriate “starting point” (Braun & Clarke, 2021) to generate situated generalisations as themes of practice for analysis. There are various approaches to thematic analysis (Braun & Clarke, 2021) that reflect “divergent paradigmatic and epistemological positions and associated procedural differences” however share in common “an interest in capturing patterns in data” (p. 333), where “reflexive thematic analysis” (RTA) is another approach. RTA differs from two other approaches to thematic analysis.

The first is that RTA does not conform to a positivist prioritisation with strict and rigid rules for theme development that relies on coding reliability and avoiding subjective “bias” as the basis for thematic development. For Braun and Clarke (2006, 2019, 2021) such an approach in qualitative analysis is illogical where meaning and knowledge are understood as situated and contextual. Therefore themes do not “emerge” from the data but are identified through the processes of thematic development (Braun & Clarke, 2021). The second is that contrary to the independence from the data sought through a positivistic lens, a researcher’s subjectivity should be understood as “a resource for knowledge production, which inevitably sculpts the knowledge produced, rather than a must-be-contained threat to credibility” (Braun & Clarke, 2021, pp. 334-335).

RTA therefore highlights the active role of the research(er) in knowledge production through “approaches that fully embrace qualitative research values and the subjective skills the researcher brings to the process” (Braun & Clarke, 2021, p. 333). This was pertinent in this investigation because I was required to draw upon my research acumen to manage a potentially large set of empirical evidence while remaining cognisant and reflexive to the philosophical, theoretical and methodological approaches inherent in the use of the TPA as a philosophical-empirical inquiry described earlier in the chapter.

Braun and Clarke (2021) suggest a six-phase process for data engagement, coding and theme development. Summarised, these comprise: data familiarisation; coding; generating initial themes from coded and collated data; developing and reviewing themes; refining, defining and naming themes; and writing the report (p. 331). They make clear these phases offer guidance to the process of RTA and should not be followed rigidly and are dependent on the researcher’s “craft” to blend them together so the analytic process becomes increasingly recursive. The process of RTA used in this investigation described below follows a semblance of these phases, notably: data familiarisation through the process of generating memos including their titles and content, the coding activity as a method to develop initial themes, and the reflexive approach used throughout thematic development to make final judgements of themes. The first initial phase of evidence organisation and thematic development began with the process of memoing.

Memoing

The first step in organising the empirical evidence was to collate information captured from the research activities into more isolated “chunks” of information while remaining sensitive to the ongoing process of “coming to know” (Kemmis, Edwards-Groves, et al., 2017) the practices. This was achieved through the process of memoing. Memos or “memoing” is an “analytical process that involves the recording of processes, thoughts, feelings, analytical insights, decisions and ideas in relation to a research project” (Birks & Mills, 2015, p. 179). In this investigation memos were utilised to extract meaning from the various sources of empirical evidence however with a degree of flexibility and without prejudice in the recording of ideas not otherwise available during the data collection activities in the field (Birks et al., 2008). As the empirical evidence captured in the field was not yet rendered with explorations of historical insights, the memoing activity also supported reviewing key texts that helped to isolate and investigate genealogies of different aspects

of discursive practices. At the same time, the use of memos also served to practically manage the production of a potentially large set of information, thereby enabling me to maintain momentum through this arduous process without losing sight of an anticipated timeframe of development (Birks et al., 2008).

The memo writing activity was itself a continuous iterative process utilised to confidently ascertain how practices and practice arrangements came together as sedimented rather than fluid aspects of practice (Salamon et al., 2016). The process of writing memos was initiated by stating title headings that served as topics for further description, for example; “Hive inspections”, “Honey”, or “Regulations and Standards”. The titling of memos formed a significant early form of thematic development requiring reflection and amendments that served to form boundaries of specific aspects of practice identified in the empirical evidence while remaining open to possible linkages to other aspects of practices. In this way, memoing served as an initial form of data familiarisation and to establish a “funnelling structure” (Hammersley & Atkinson, 2007, p. 160) to progressively identify common connections and canvas themes of practice for further development.

Memos were written on a word processor in a conversational yet formal tone and descriptive style with a focus on clarity and conciseness of meaning and ideas. Words or phrases identified to be commonly used in the sites of practice (e.g. sayings) were enclosed in speech marks to help identify their use in the field. In addition, a synthesis of the main ideas identified in each memo was written as a short “snapshot” in a concluding paragraph. This helped to consolidate the accuracy of the information and assist with retrieval at a later time. In total, 60 memos were generated with a cumulative word count of more than 42,000 words. The titles of these memos are presented in Figure 5.2, clustered in groups corresponding to their relationships with one another. Once generated, memo files were transferred into the NVivo12 qualitative data analysis software for coding.

reflexive coding and subsequent reflexive review and validation of these code selections that final judgements on themes were made.

The next step was to generate codes in NVivo12 corresponding to cultural-discursive, material-economic and social-political arrangements. Each memo was then reviewed in NVivo12 to identify “sayings”, “doings” and “relatings” evident in the memo descriptions and to code selected sentences, phrases or words in the text. Identified “sayings” included frequently used terms, phrases, ideas or notions specific to beekeeping practice. Identified “doings” included selections of text corresponding to descriptions of different embodied beekeeping activities as well as words and phrases for equipment and material interactions. Identified “relatings” included references to organisations, relationships and social networks. Once identified, the applicable text was highlighted and “dragged and dropped” into the relevant code panel category. This was also a highly reflexive and interpretive activity through scrutinising the applicability of attaching codes to each corresponding selection of text. Reviewing memos and making coding choices therefore was a protracted but exhaustive activity. In many instances, more than one code was applicable to a specific section of text. In these instances, multiple codes were attached.

Once coding was completed, the memos could be reviewed for coding insights. The Nvivo12 software helped with this process for two reasons. First, it allowed for the segregation of the information between individual memos or code categories, such as the three practice arrangements. Second, coding highlight functions helped to distinguish different coded arrangements in the text. Through this coding process and ability to review coded highlights and categories, themes could be ascertained. The themes identified were numerous, representing a range of sayings, doings and relatings and their respective cultural-discursive, material-economic and social-political arrangements. These are presented in Figure 5.3 and are also clustered in visual regions corresponding to their relationships with one another.

Figure 5.3

Themes of beekeeping practices and practice arrangements in New Zealand



Vignettes of beekeeping practice

The final process in the data analysis activity was to identify, develop and then present themes of beekeeping practices into an analytical framework. It was vital in this process that the progressively abbreviated forms continued to represent the empirical evidence. As this is a subjective process, and therefore interpretive, at every step of the process it was necessary to examine and consciously acknowledge the assumptions and biases brought into the inquiry that impacted these decisions and interpretations, as per the reflexive processes outlined throughout this chapter.

To assist with this process, a series of vignettes were developed corresponding to each coded arrangement: cultural-discursive, material-economic, and social-political representing the sayings, doings and relatings observed in the field activities and developed in the memoing activity and supporting document review. This process served as an additional iterative and reflexive activity to bring into focus my interpretive position through the process of selecting and

textualising themes corresponding to each arrangement. The vignettes consisted of a short synthesis of the identified practices and a description of their practice architectures under thematic headings.

While these vignettes were written to emphasise one particular arrangement under view, I remained attentive to how the different practices included in one related to the arrangements of others. Therefore the categorisation of practices into respective arrangements was done for analytical purposes; they are recognised as otherwise coming into and being sustained as interrelated aspects of practice (Kemmis, 2022b). The final output from the vignettes was the formulation of the final thematic judgements to include in the analysis. This represented both the scope of analysis as the boundaries of empirical evidence captured and the depth or richness of investigation achieved through the reflexive thematic development process. This information was further utilised in formulating the “Table of Invention” (Kemmis, 2022b) included for analytical purposes in Chapter 6.

The table of invention is an “aide-memoire” that helps to systematically interrogate a broad range of elements of practices selectively for the researcher to be satisfied that the most relevant information has been identified (Kemmis, 2022b, pp. 152-153). Final thematic judgements included in the table of invention however were based on a review of these visualisations in concert with recollections of experiences in the field to recall how these practices were encountered in intersubjective space, for example in the “doing” through “work and activity/time and space” that described the material-economic arrangement. Through this identification process, common words were again reviewed against their corresponding memos to gauge their significance and location in the practice architecture and their pertinence in the discussion of the findings. Thus, while here I have presented the formalisation of the reflexive thematic analysis exercise, the actual process of thematic analysis was an ongoing and iterative process throughout the analysis. The final themes that were used in the analysis however were demarcated through the process outlined above. These themes of practice are presented as a “complex array of beekeeping practices”.

A complex array of beekeeping practices

In the final section of this chapter, I present a summary of the results of the empirical evidence generated from the research activities and analysis. This is presented as a “complex array of beekeeping practices” in Figure 5.4. This array represents practices consisting of the sedimented

sayings, doings and relatings observed and experienced in the fieldwork activities and document review and organised through the recursive process of reflexive thematic development outlined above. Each practice also entails many more practices and practice architecture. In this way, the totality of practices identified in the array represents an interpretation of the observations and experiences from the field that form a “slice of the practice plenum” (Schatzki, 2010, 2019), for example of the vocation of beekeeping practice (note singular) consisting of “slices” of beekeeping practices (note plural).

It was always possible the boundaries of this array could be expanded to encompass more practices not identified through this research process. Equally, separate nodes of beekeeping practices could be (and have been in the findings chapters) expanded to include more intricate details. Therefore, this array should not be read as an uncomplicated and easily identifiable set of practices that constitute a vocational practice but rather a field of analytical potential to explore practices in vocational sites. As Kemmis et al. (2017) reflect, “...the TPA imposes limits on these apparently limitless webs of possibility. *All* is not possible. The way a practice actually happens is finite; large though it may be, the site in which it happens is also finite” (p. 241). The methodological strength with the interpretive exercise was to capture “slices” of the practice plenum (Schatzki, 2019) utilising my vantage point and ethical orientations (and obligations) as a researcher coming into and researching practices. In this way it provided the empirical basis (Kemmis, 2022b) to generate situated generalisations used for analysis.

Figure 5.4

Complex array of beekeeping practices



Chapter summary and conclusion

The purpose of this chapter was to position the research approaches and detail the methodologies and methods used to generate the empirical evidence used for analysis. I first outlined the general approach to research using the TPA as a form of philosophical-empirical enquiry, signalling the importance of theoretical development through the empirical activities of research, generative of further theoretical insights through a “workshop logic” as a useful way of selecting from an eclectic arrangement of research approaches. I then presented the research setting, ethical considerations, methodologies and methods used for capturing and analysing the empirical evidence. Finally, I presented the themes of beekeeping practices as a complex array of beekeeping practices. This provides the empirical resources I used in the analysis and discussions, the focus of the next four chapters.

Chapter 6 – Ethnographic encounters

The first of two chapters analysing, reporting and discussing the findings of the research activities, this chapter details my ethnographic encounters with the practices and practice architectures of beekeeping practices. This provides the empirical resources to address the main and supporting research questions in the subsequent Chapters 7 to 9. To reiterate, these questions are:

Main research question:

- How can understanding the practices and practice architectures of beekeeping contribute to the development of relevant VET for just transitions?

Supporting questions:

- What is relevant to learn and why, according to the practices and practice architectures of beekeeping?
- What is the symbiosis between VET aspirations for relevance and vocational practices of beekeeping?

In this chapter I first detail two vignettes of selected encounters with the beekeeping practices of hive work and seasonal colony management as examples of beekeeping practices entangled in the broader and complex array of beekeeping practices. I then outline the identified projects and practice traditions of beekeeping practices that describe how beekeeping practices are held in their course. In the last section I describe the changing practice landscape of beekeeping practice to understand the challenges and opportunities for beekeeping and what these mean for trajectories of beekeeping practices and practice arrangements moving forward. Together, this analysis informs a consolidated “Table of Invention” (Kemmis, 2022b, pp. 152-153) that is used heuristically to develop the analyses in Chapters 7 to 9. Note that quotations used without a corresponding citation denote “sayings” captured in the fieldwork.

Encounters with beekeeping practices

The following sections describe my encounters with the practices of hive work and seasonal colony management (SCM) that informed interpretations of the practice architectures that shape and are shaped by these practices. Hive work and SCM practices were selected for analysis because they

are central practice “niches” (Kemmis, 2022b, p. 90) contributing to the continuity of the wider complex array of practices that make up the vocation of beekeeping identified in Chapter 5. The descriptions are written in the past tense denoting their observation in the undertaken research activities however could also be written in the present tense indicative of their ongoing unfolding as examples of beekeeping practice.

The practices of hive work

The term hive work refers to activities observed happening in and around each hive in the apiary. My encounters with the practices of hive work are described in this section and visualised in Figure 6.1.

Figure 6.1

Practices of hive work observed in the apiary



My initial contact with hive work began not interacting directly with or within the hive but rather through listening to beekeepers and my tutor talk about the hive and observing hive work

activities play out on the periphery. This included learning the names of different hive components and beekeeping equipment and their functions. In the apiculture programme (herein called the “programme”) this consisted of classroom interactions with the use of slides and eventual physical assembly of a hive from a pre-formed pack, and in the workplace, assisting the beekeeping team with the harvesting of bush honey at the beginning of the summer honey harvest season. Specific sayings of hive components included talk of “supers”, “frames”, “foundation”, “queen excluders”, and the “brood box” to name a few, correlating with observations of their functionality and use in the apiary. I also learned about beekeeping equipment and their practical and safe use, including the “Langstroth hive”, the “hive tool”, the “smoker” and the “bee suit” and “veil”. These encounters of talk-in-action (Gherardi, 2019) and observations of actions with hive components and beekeeping equipment later led to a desktop review of the historical development of these artefacts.

Having understood the physical components of the hive, I became attuned to the use of these artefacts inside and outside of the hive and asking why. I came into closer contact with the colony through my observations and listening to and understanding the language used to talk about them, taking literal steps closer to “zoom in” (Nicolini, 2009b, 2013) with my observations of hive work activity and through more pointed inquiries with my peers. Colonies and bees were talked about in terms of their behaviour as being “happy” or “angry” and their conditions as being “healthy” and “strong” or “weak” or “dead outs” – a term used to refer to colonies too weak to sustain themselves and therefore likely to die out without significant human intervention. I was also shown how to physically feel and assess the condition of a hive by, for example, lifting up the back end of the hive to feel its weight of bees.

In the programme and workplace I observed and learned more about the hive conditions causing colonies to behave in a certain way and how beekeepers manipulated colonies to enact a particular response or remedy problems. This included observing whether the bees and queen had enough “space” to move, lay eggs, store pollen, nectar/honey and “bee bread” – the fermented mixture of nectar and pollen that provided protein for the colony, and to identify and remove “swarm cells” on the bottom edges of frames to prevent the colony from swarming. I also learned more about bee physiology, lifecycles and development, and bee activities inside and outside of the hive. I was able to differentiate between “worker bees”, “drones” and “the queen”. In the

workplace I observed sayings and doings related to “treating” the colony for pests, and “re-queening”, “excluding the queen”, “supering up” and “supplementary feeding” as processes to manipulate the colony for some purpose. I also came into closer contact with the bees themselves, applying knowledge gleaned through programme and workplace interactions with my peers to observe their specific and unique activities. I could see bees communicating through “trophallaxis” as a method bees use to determine the quality of food entering the hive, and “Nasonov fanning” as a method bees use to spread the colony’s pheromone to guide foraging bees back to their colony. I observed bees carrying pollen in their “pollen sacks”, their defensive behaviour when provoked, the egg laying and brood patterns of effective and problematic queens, and so on.

I also observed the sayings and doings utilised in the apiary to appraise local environmental conditions and factors that influenced particular actions taken during hive work. These included talk of the abundance and location of “forage” and “bloom” that determined how much of a certain type of nectar or pollen a colony could store (or not), and the prevalence of pests such as wasps and Varroa mites that threatened weak and sometimes even strong colonies. Through more acute observations in the field, I began to differentiate the activities colleagues simultaneously undertook in the hive that appeared uniform when observed from afar. I was amazed, for example, at the speed in which an experienced colleague was able to identify a “virgin queen” that looks very similar to a worker bee, while simultaneously completing other hive work tasks such as adding treatments and inspecting brood.

In addition, I observed the methodical embodied actions beekeepers used to conduct hive work quickly however with a propensity and disposition of care. I was informed of and observed the need to be sensitive to not disturbing the colony nor crush the queen and how to “work the hive” carefully and considerately. This included very subtle and gentle corporeal movements and sensitivity of the body, hand and tools in and around the hive; the right amount and temperature of smoke was applied when opening hives; and the hive tool was worked fluidly but carefully as an extension of the hands. Propolis-infused boxes and frames were pried apart and lifted carefully and considerately to reduce disturbances as was how beekeepers moved in and around the hive to avoid “crushing” bees and especially to avoid disturbing, losing or killing the queen. I noted, for example, the long process required to identify the queen when not immediately observed in the hive. This was like detective work making sure to work through every possibility to locate the

queen while being considerate not to inadvertently kill or crush her in the process of moving equipment and bees around while searching for her.

Finally, I observed and became highly attuned to the sensations of the apiary; the pitch of the bees when calm or aggravated, the smell of the nectar emanating from the hive, the clusters of “escort bees” feeding and cleaning the queen that helped identify her, and the weight of brood, food and bees in the hive. I resonated with the time and focus spent in close proximity inside the hive to locate the queen, being enveloped into the “thought-scape” (Kemmis, 2022b) of internalised communication with the colony, observing the thought processes in those quiet moments between the beekeeper and their colony and my own whispering with the bees, anthropomorphising them (Burnside, 2015) as if I were their friend.

Having moved from the periphery into closer contact with the hive and colony I was then able to “zoom out” (Nicolini, 2009b, 2013) to understand the connections between hive work sayings and doings to the relatings of these activities. These connections were informed by theoretical components of the programme on the business of beekeeping, linking workplace observations with inquiries between my beekeeping colleagues in unstructured and informal conversations, and through additional desktop reviews of beekeeping books and resources. I identified two threads of language and activity as they related to the productivity of the colony. One was talk of the colony’s productivity to sustain itself over the season; building colony strength to ward off pests and diseases, ensuring the colony was “queenright” with an effectively laying queen, and ensuring the colony had sufficient resources of nectar and pollen or in the absence of such, was provided with “sugar syrup” and “candy” or pollen substitutes and supplements. The other was talk of and observations of the wider purposes of conducting hive work to harness the productive potential of the colony to support beekeeper interests. This included improving “yields” of honey and meeting “standards of colony strength” to be “efficient and effective pollinators” of horticulture crops. These sayings were also evident when reading beekeeping journals and news articles indicative of regional, national and even international practices and projects of beekeeping.

I formed summations in my notes that important relatings in the conduct of hive work revolved around humans managing the artificially created habitat of their colonies to support their unique interactions within their specific environments to harness the colony’s productive behaviour for some particular purpose. I recognised amongst my work colleagues and fellow

learners the shared concern for honey bees as crucial to environmental and ecological systems due to their foraging behaviour and propensity to pollinate plants. Global food security and societal stability was talked about as if to pivot on this extraordinary creature. The other focus was for beekeepers to sustain colonies on a seasonal basis for some productive purpose, either in a commercial capacity with a pecuniary interest or as hobbyists who kept bees for personal purposes. Productivity was talked about in terms of the production of honey crops and other bee products including beeswax, bee pollen, propolis, royal jelly, and bee venom; and for pollination, either as a paid service to horticulturalists or indirectly through beekeepers keeping hives at home or on farmland.

In the field I also observed and felt the emotional attachment and collective satisfaction colleagues and I gained from working with bees in the apiary, despite the regular stings, physical effort and strenuous working conditions. In this sense there was a deep commitment to and shared interest in conducting hive work with a concern for the welfare of the colonies in their respective apiaries but also on a global level as stewards of bees in general. On the contrary I also observed how time constraints caused by poor weather, changes in the level of aggressiveness of bees in the apiary, and the limitations of the working/study day created pressures to complete hive work tasks within narrow timeframes. I was surprised on a couple of occasions of the need to leave the apiary without completing tasks because the bees had become too “busy” and were “robbing” each other. In the workplace there was also pressure to complete tasks in one apiary to visit other apiaries in order to meet tight seasonal plans within the constraints of the working day, aware of wider time constraints of the working week and the natural rhythms over the season (Newton, 1999). These relatings contributed to understanding the different hive work sayings and doings described above and, as will be discussed in the next section, foregrounded the empirical evidence to support descriptions of the practice arrangements of hive work.

Practice arrangements of hive work

The vignette above outlines my ethnographic encounters with the practices of hive work to provide the empirical resources I now use to describe their practice arrangements. My interpretation of the practices of hive work are that the material-economic arrangement of the hive has enabled (and constrained) the subsequent development of a rich history of cultural-discursive and other material-economic arrangements that describe how hive work practices “go on” in the apiary,

however how these are “stirred into” (Kemmis, Edwards-Groves, et al., 2017) practices or “enmeshed” (Kemmis, 2022b) becomes differentiated when social-political arrangements are considered. These arrangements are discussed in the following.

Sayings encountered in the practices of hive work were enabled and constrained by cultural-discursive arrangements of experiential knowledge (Eraut, 1994; Gherardi & Nicolini, 2003; Hordern, 2014) of beekeeping equipment and its use in the unique local environments where apiaries are located and hives are kept. In addition were discourses of bee physiology, colony behaviour and pathologies generated in the disciplinary field of apiculture over time. The continued generation of this knowledge is shaped by and shapes the doings of hive work that enables and constrains the material-economic arrangements. Material-economic arrangements identified included the bees themselves – their initial importation to New Zealand in the 19th century (Matheson & Reid, 2018) and the different breeds that described variations in their behaviour, temperament and use in different regions of the country. Most importantly, the effective design of the Langstroth hive and associated beekeeping equipment requires some elaboration here, as these artefacts of practice are central to the genealogy, continuity and potential transformations of beekeeping practices.

Human-made hives mimic the cavities colonies of bees would naturally occupy in the wild, for example in the hollows of trees. In New Zealand and many other countries, hive work practices in their current form are made possible by the innovation and standardised use of the moveable frame type hive developed by L.L. Langstroth in the 19th century. Langstroth’s unique insight that bees move freely within a “bee space”, a gap large enough for bees to move through yet small enough that they do not build “burr” or “bridging” comb between this space, has enabled beekeepers to sustain colonies on a seasonal basis by keeping them in cavities (the hive) with removable frames, usually inserted with human-made “foundation” that mimic the pattern and dimensions of worker cells for bees to “draw” comb out of. These frames can be arranged and removed, making redundant the need to destroy the colony to harvest honey or wax (Crane, 1999; Matheson & Reid, 2018). Movable frames thereby enable the manipulation of colonies by adding boxes and arranging frames, creating space for the queen to lay eggs and the colony to develop brood and store honey, further allowing beekeepers to control a colony’s natural, seasonal tendency to swarm. In addition, the ability to manipulate colonies over multiple seasons in this

way enabled beekeepers to spend more time observing their behaviour and activity, leading to a proliferation of new interest and knowledge of bees for those who could afford this equipment setup (Crane, 1999).

In addition, the Langstroth system was also a catalyst for the evolution and use of new beekeeping techniques and tools. The closer working relationship with bees required the development of bellows smokers that could smoulder for longer periods with more directional streams of smoke to calm bees during more prolonged inspections; the evolution of the hive tool to pry and lift propolis-fused boxes and frames apart; and improved visibility of the beekeeper's veil to observe the colony and work the hive while still providing protection (Crane, 1999). The standardised dimensions of the Langstroth system also enabled the mass production and use of hives such as supers, subtle design variations of frames with different functions, different types of lids and roofs, entrance controls to prevent robbing, and so forth (Matheson & Reid, 2018).

The impact of the Langstroth system on the types of hive work practices in New Zealand's traditional and contemporary beekeeping contexts remains pronounced. The ability for undertaking precise inspections by removing frames to observe brood for the disease American Foulbrood (AFB) led to legislation in the 19th century for its standardised use in the New Zealand beekeeping industry (Matheson & Reid, 2018). The implication is that most commercial operators and hobbyists continue to use a form of the Langstroth system (Apiculture New Zealand, n.d.-c). Thus, the multitude of practices and practice architectures in the complex array of beekeeping practices are enabled and constrained by this system. It defines how hives are transported on trucks, trailers and pallets for forklifting or helilifting, as well how hive boxes/supers are stacked when harvesting honey and for storage, or in the manual and automated designs and processes of honey extraction. It also defines how colonies are manipulated for pollination or for the production of bee products, and so forth. To emphasise, viewed as a material-economic practice arrangement, the innovative design of the Langstroth system has been crucial in the history of global and national beekeeping practices, spurring new ways that humans interact with bees and the subsequent and ongoing development of variations on existing beekeeping equipment, techniques and knowledge.

In addition to the Langstroth system, other identified material-economic arrangements were the time constraints of the working day, week and season and the effect of these time constraints on the performance of hive work practices. Time constraints were also impacted by

variations in the local conditions found in the apiary on a day-to-day and seasonal basis. These conditions included, for example, the level of aggressiveness of the bees in the apiary or the amount of propolis or honey a colony in a particular apiary produced in any one season. These conditions affected how beekeepers approached and eventually conducted hive work, for example, whether bees were aggressive, thus making it difficult to conduct hive work, or in making decisions and taking actions to feed colonies with supplements in instances of “nectar dearth” – a locally specific period of the season where there is an absence of nectar flow for the bees to forage from. As apiary visits and inspections were infrequent, commercial beekeepers survey the local conditions in the apiary before making judgements that have a long-term effect on the colonies until their next apiary visit. This requires observing flora in the area and bee activity at the hive entrance or manually feeling the weight of the hive for signs of health and honey. These assessments were then used for forward planning of future activities (e.g. seasonal colony management detailed below).

This in turn described variations of hive work practices enabled and constrained by differing levels of personal and group expertise and dispositions when completing hive work tasks at any given site on any given day. I noted how more experienced beekeepers surveyed the local environment, expedited judgements and undertook spontaneous yet informed actions. I also noted the concordance between the actions of beekeepers in their attention to care in handling hives while methodically completing hive work tasks in a timely manner. These methodical approaches were differentiated between beekeepers and within the group on different days of observation. My summation was that the degree of expertly conducted hive work evident in the apiary at any one time was enabled (and constrained) by the propensity for beekeepers to work methodically on each hive within time constraints while maintaining a degree of care towards their colonies.

This brings me to the social-political arrangements. The methodical attention of care signalled above describes an affinity between beekeepers and their colonies in the unfolding of their hive work informed by the close proximity beekeepers have with their colonies (Crane, 1999). This affinity extended to the shared interest and concern within the broader beekeeping community towards the welfare of bees globally, given their importance to ecological systems, but also because of personal infatuation. Shared interest in bees and beekeeping was evident in the plethora of books on beekeeping and bees, online videos, journals and so forth. More personally and within the community of practice (Lave & Wenger, 1991) I was embedded in, this shared interest was

evident in the sharing and dissemination of “best practices” related to hive work through information and resources provided by the local beekeeping club and social encounters with peers. For example, among my conversations with colleagues there was a genuine infatuation and bewilderment with what bees and the colony did and could do. The solidarity that defined how beekeepers self-identify as being beekeepers was generated by this affinity, as those who “lift the lids” (Newton, 1999).

However also informing this solidarity were the pecuniary interests and commercial viability of beekeeping operations evident in the workplace and taught as a component of the programme. Beekeeping has been and remains a significant commercial activity in New Zealand, contributing to international exports of bee products and crucial pollination services to the horticulture industry (Apiculture New Zealand, n.d.-a, n.d.-c). This was evident in the regular market reports published by the Ministry of Primary Industries (MPI) (MPI, 2020) and through articles on the commercial landscape of the beekeeping industry published in the *Beekeeping Journal: The New Zealand Beekeeper*. Beekeeping is also a livelihood and occupation for many. While the majority of registered beekeepers are hobbyists with five hives or fewer, the majority of the total number of hives in the country are owned and managed by a smaller number of commercial beekeepers (Apiculture New Zealand, 2023).

I also identified social-political arrangements that are neither affective nor pecuniary but rather bureaucratic and regulatory. There is a strong tradition, beginning in the late 19th century, of the regulation to control the spread of AFB complemented by other stringent biosecurity controls unique to New Zealand being a borderless nation (Matheson & Reid, 2018; The Management Agency, 2021). There are food safety and quality assurance standards to ensure the safe export, consumption and brand protection of New Zealand bee products globally and nationally. Also, both publicly- and privately-operated national and regional honey marketing boards, cooperatives or companies have existed and continue to promote the interests of commercial beekeepers by marketing New Zealand bee products and securing commercially viable prices for honey (Matheson & Reid, 2018). Finally, there are numerous suppliers and services offered to beekeepers including honey extraction and packing, beekeeping equipment, bulk suppliers of supplementary feeds such as sugar syrup, wax, pest treatments, queen breeders and package bee suppliers, and laboratories for testing honey samples, to name a few.

These social-political arrangements enabled and constrained hive work practices in different ways. The commercial viability of a beekeeping operation was determined by numerous factors, most of which translated into a minimum or maximum number of hives a beekeeper/operator might manage in a season and their apiaries. These numbers are based on forecasted prices obtained from honey yields or payments through pollination contracts against operational and regulatory compliance costs. Similar cost considerations are made by hobbyist beekeepers too. These are all difficult to assess given fluctuations in global markets for products and supplies. They also have an effect on labour as it determines whether beekeepers in different capacities, either as general labourers (as in my case working with the beekeeping operation to harvest honey), as more experienced beekeepers as assistants seeking opportunities to work for or manage a commercial operation, or as owner/operators, can work or sustain their operations and livelihood. The implications of these social-political arrangements affect what I earlier described as the propensity for beekeepers to work within time constraints while maintaining a degree of care towards their colonies. In other words, social-political arrangements were identified to add a dimension of pressure that was further enabled and constrained by the time beekeepers had to complete a multitude of tasks. To consolidate this interpretation of the practices and practice arrangements of hive work, a table of invention is provided in Table 6.1.

Table 6.1 *Table of invention – practices and practice architectures of hive work*

Empirical evidence	Arrangements
<p>Sayings Using site-specific language and communication of beekeeping terms for processes and equipment (e.g. supplementary feeding, smoking the bees, lifting frames, removing supers, excluding the queen, re-queening, etc.); Talking and thinking about...</p> <ul style="list-style-type: none"> • colony wellbeing (e.g. strength, weakness); • local and climatic conditions in the apiary (e.g. forage, bloom, inclement weather) and in the hive (pollen, nectar); • colony behaviour (e.g. angry, happy, collapsing); • pests and diseases in the hive (e.g. Varroa, AFB); • colony productivity (e.g. brood development, honey yields, pollination efficiency, number of hives to work). 	<p>Cultural-discursive arrangements Experiential knowledge:</p> <ul style="list-style-type: none"> • beekeeping equipment and its use; • local conditions in the apiary; <p>Discourses of knowledge about bee physiology, colony behaviour, pathologies, and the regulatory environment; Discursive knowledge of daily and seasonal operational operations.</p>
<p>Doings Inspecting and manipulating the colony;</p>	<p>Material-economic Design and functionality of hive and beekeeping equipment (e.g. the Langstroth hive);</p>

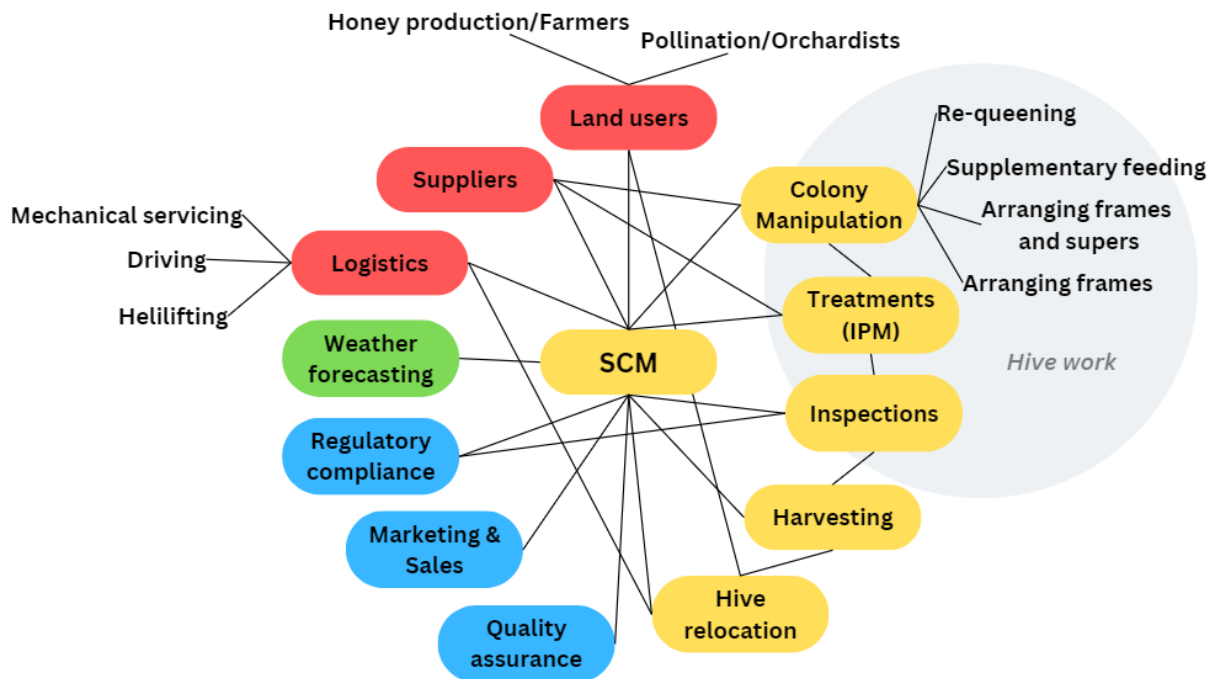
<p>Using hives and beekeeping equipment (e.g. adding and removing supers, arranging frames, wearing a bee suit correctly, using the smoker and hive tool as an “extension of the hands”); Assessing local apiary and hive conditions (feeling the weight of hives, smell, location and abundance of bloom); Adding and removing treatments; Working methodically to minimise harm to the colony/queen; Moving people and equipment to and from the apiary.</p>	<p><i>Apis mellifera</i> – European honey bees (importation, genetic traits, seasonal “rhythms” and tendencies); Variations in local conditions and personal and group expertise and dispositions; Location of hives/apiary; Numbers of hives; Prevalence of pests and diseases; Time to practice in the working day, week and over the season; Logistics and accessibility.</p>
<p>Relatings Dissemination of best practices through local and national channels that reflect personal and shared concern for the welfare of bees; Production of bee products and offering of pollination services (e.g. honey, pollen, propolis, pollination contracts); Offering of supplies and services to beekeepers (e.g. sugar syrup, treatments, equipment). Reporting incidences of AFB and compliance of infected colonies.</p>	<p>Social-political Care for bees defined by personal affiliation and solidarity between beekeepers; Pecuniary interests and commercial viability of beekeeping operations; Regulatory environment for the control of pests and diseases and minimum standards and quality assurance of bee products.</p>

The practices of seasonal colony management

The analysis above outlines my encounters with hive work practices and analysis of the practice arrangements that hold hive work practices in their course. This section turns to describe my encounters with the practices of seasonal colony management (SCM). SCM refers to activities undertaken in the apiary against the wider context of beekeeping practices related to the planning and enactment of colony interventions over and on a multi-seasonal basis. SCM includes practices of hive work that occur as interventions in the hive related to the seasonal management of a colony, however also includes other practices observable outside of hive work alone. My encounters with SCM are described in this section and visualised in Figure 6.2.

Figure 6.2

Practices of seasonal colony management observed in the apiary



Note. Colours represent complementary or unique practices and practice architectures of SCM.

My encounters with SCM were informed through observations during the completion of work tasks with other beekeepers in the workplace and learning about and enacting colony management principles throughout the programme. In the workplace I kept within earshot of beekeepers’ conversations about daily work plans coinciding with the rest of the week’s plans as they related to wider seasonal objectives. For example, I observed beekeepers in management positions frequently conversing over and checking a large whiteboard with information pertaining to the numbers of hives located in each apiary.³ This information and the discussions related to it revolved around the numbers and conditions of these colonies and plans to prepare and relocate hives for pollination, honey production, and “recovery” – the process of replenishing colonies in

³ For reasons of commercial and operational sensitivity, I did not take photos of this or other practices in the work shed.

resource-abundant locations after the completion of pollination or honey production activities. Plans were made first thing in the morning but frequently changed throughout the day during conversations in the apiary or over mobile calls with others while travelling. I was never involved in these conversations or planning activities; it was neither my role nor was I knowledgeable or able to contribute meaningfully to this activity. Rather, making sense of these planning activities was informed later and hence deeper into my understanding of SCM during inquiries made with work colleagues and through my programme and research. This included learning about colony management over different components of the programme and applying this knowledge in our local apiary and on our individual hives, albeit within the confines of completing particular programme-based tasks. Gradually I was able to connect how different beekeeping practices came together in the projects of SCM.

I noted sayings that characterised SCM were captured by talk of logistics, numbers and conditions of hives, blooming conditions in and accessibility to different apiaries, forecasted weather, various supplies available and required to take to the apiary, timeframes for meeting, setting off or completing tasks in the apiary or for relocating hives, and securing the availability of labour to complete tasks. While assisting with these tasks I made inquiries to begin connecting this talk-in-action (Gherardi, 2019) to the longer-term seasonal objectives. This included talk of treatments and feeding plans, re-queening activities and swarm control, “stripping honey” and relocating hives, extraction and “wintering down” – the process of preparing colonies for winter by reducing the size and openings of the hive and providing supplementary feed or treatments to the colony to keep it free from disease, healthy and warm.

I observed that doings correlated directly to these conversations and interactions either as the completion of daily or weekly tasks or as the intention to accomplish them to meet seasonal plans and objectives. Plans formalised at the end of the previous day’s work or first thing in the morning were briefed to colleagues in different roles, who then set about preparing for and heading out from the work shed to complete them in the apiaries scattered around different locations. Preparation included loading the vehicles with the required supplies and equipment to complete tasks: bee suits, smokers and hive tools, additional supers, queen excluders, sugar syrup, treatments, water cans for cleaning honey and sugar syrup spills, live queens in queen cages or queen cells for re-queening, and so forth. Once in the apiary, tasks included manipulating and

inspecting each hive, identifying, relocating or replacing the queen or re-queening the colony, removing “swarm cells” and virgin or “unmarked queens” to prevent swarming, “supering up” by adding additional hive boxes, arranging “wets” (post-extraction frames with comb and residual honey) or “foundation” frames in the hive, adding different treatments in the hive, and providing supplementary feed such as sugar syrup to stimulate colony development or replenish an energy source during nectar dearth. Work tasks were also undertaken in the work shed when poor weather prevented work in the apiary, including fixing and cleaning equipment. In addition, considerable time was spent driving to and from the work shed to and between different apiaries.

I also noted that sayings and doings were differentiated according to the period during the season when they occurred. Practices early in the season from August through to November consisted of planning for and checking and manipulating colonies to build colony strength for pollination, differentiated from practices of preparing colonies for relocation and the harvesting of honey from December through to February. These practices were again differentiated from those occurring later in the season after February, for example wintering down and cleaning and preparing equipment for the next season. I noted that while these seasonally differentiated practices were plans made by beekeepers for the projects of beekeeping, they were dependent on the knowledge of the rhythms of the colonies, both in terms of general discursive knowledge of bee physiology and behaviour but also according to the site-specific environments and conditions in which they were observed during apiary visits.

Later, through reflecting on my observations, making inquiries with colleagues and reviewing programme materials, I found different sayings and doings at different times over the season were connected to different relations between beekeepers and other stakeholders. In the workplace I observed and was embedded within the internal relationships within the beekeeping team and management and in the programme between the tutor and classmates. SCM practices were undertaken collectively with a shared interest and dedication to complete tasks bound to daily, weekly or seasonal time constraints. Other stakeholders included those operating outside of the apiary but who were indirectly connected to it. In both settings this included interactions with suppliers of beekeeping products and equipment and those tasked with logistics – moving people and things around. Additional connected stakeholders in the workplace included interactions with farmers and orchardists – important for securing seasonal contracts to locate hives in temporary

apiaries for honey production or pollination services, and helicopter pilots and personnel for helilifting hives to remote temporary apiaries for Mānuka honey production, and so forth. These interactions were characterised mostly by amiable relations – friendly conversations and mutual cooperation coming into the workplace indicating dedication to serve and support each other, although sometimes not; a point that informs important discussions on the competitive nature of the contemporary commercial beekeeping environment discussed later in the chapter.

I also observed that sayings, doings and relatings between internal and connected stakeholders were informed by external stakeholders who had no direct personal relationship with the commercial setups of beekeepers I was involved with but nonetheless had a significant influence on SCM practices. These included: the suggested treatment plans from suppliers of Varroa treatments (e.g. Apivar or Bayvarol); research insights published through different communication channels suggesting variations to “best practices” for pest and disease treatments and control of honey quality; short- and long-range weather forecasts; laboratory testing requirements for honey; mandatory inspections for AFB; and industry and market reports and forecasts for honey prices and quality assurance, to name a few.

Through the reflexive thematic analysis I began to understand a more complex picture of interrelated beekeeping practices occurring through numerous intersubjective spaces according to different perceptions of time – daily, weekly and seasonal. I reflected on how each required different allocations of time and energy in decision-making processes for SCM. I noted, for example, that logistics required a substantial amount of planning and resources to move people and equipment to cover as many different apiaries in the day or week or to prepare and relocate hives to other locations around the country for honey production or pollination and to return them to their wintering sites at the end of the season. Logistics required that vehicles were serviced, fuelled, and that drivers were fresh and managing personal levels of fatigue and operated within their maximum daily driving limit for heavy vehicle licences. This required a high degree of coordination and planning by the manager.

Another example was the need for integrated pest management planning (IPM) to control the prevalence of Varroa in the apiary. This required substantial forward planning and the additional task of adding or removing treatments during hive work and inspections. Effective Varroa treatment required using different chemical classes to be alternated over the season to avoid

Varroa infestations building intergenerational chemical resistances to treatments. Beekeepers were required to manage suggested treatment timeframes, for example four to six weeks, to coincide with other colony management objectives, such as the need to avoid chemical contamination in honey production or to ensure the colony was suitably effective for pollination. Compounding this were supply constraints of certain types of chemical classes of treatments due to high seasonal demand in the industry.

Yet another example was how inclement weather affected weekly plans. Bee and colony behaviour was affected by cooler temperatures and inclement conditions that limited foraging, or washed away or restricted “nectar flows” to create “nectar dearth”. As a defence mechanism, bees/colonies faced with nectar dearth aggressively protected their honey stores or sought out and “robbed” weaker colonies, making work in the apiary more difficult or at risk of creating uncontrollable robbing in the apiary. Neither could hive work or honey harvesting be conducted in the rain to avoid water entering open hives and creating moisture that causes “chilling” of the colony – the inability for the colony to adequately thermoregulate the hive to keep it dry, warm and free from mould and associated diseases such as “chalk brood”. On some occasions, poor weather also affected access to different apiary sites. I observed the manager consolidate a number of different weather forecasting services and combine these with local knowledge of how weather conditions affected the different apiaries. In other words, checking weather forecasts and anticipating the impact of immediate weather events and longer-term seasonal and climatic effects in the apiaries was a constant practice, creating uncertainty and unpredictability that influenced daily and weekly planning as well as affecting longer-term seasonal objectives.

Finally, outside of the apiary in the broader context of the “industry”, I noted the talk of how the supply and demand of national and international honey stocks dictated prices of honey on a year-by-year basis, defining the profit margins and financial resources beekeepers could utilise in any given season. This implicated decisions on the number of hives to keep and labour required to manage them over a season that beekeepers could not easily change when the season progressed and conditions changed. In other words, the decisions made at the beginning of the season had longer-term implications on costs; there was always an element of risk involved in anticipating operational capacities at the beginning of the season when future seasonal climatic or pest variables were unknown.

These observations and experiences of SCM were brief and at a surface level; there were possibly more precise circumstances or variables I was unable to observe or capture due to not being in a privileged position in both the workplace and programme to do so and my limited experience and knowledge of these details. These encounters nonetheless described slices of the practice plenum (Schatzki, 2016, 2019) of the multitude of sayings, doings and relating entailed in the practices of SCM that provided an empirical basis to interpret their practice architectures that shape (and are shaped by) these practices.

Practice arrangements of seasonal colony management

The vignette above outlines my ethnographic encounters with the practices of SCM that provided the empirical resources I now turn to describe their practice arrangements. Unlike the analysis of arrangements of hive work that were informed analytically by a stronger dimension of material-economic arrangements that were stirred into cultural-discursive and social-political arrangements, in this analysis of SCM I identified greater balance between these arrangements in how they shape (and are shaped by) SCM practices. These arrangements are discussed in the following.

Cultural-discursive arrangements were identified by the types of specialist and non-specialist language and how this was used relationally between beekeepers to make decisions and communicate plans for colonies and apiaries over the season. Specialist language was drawn from a discursive repertoire of “global” and “local” beekeeping knowledge, activities and actions related to SCM. Kemmis (2022b) notes that practices unfold in intersubjective spaces that have their own local and global histories, such as “histories that reflect the histories of the languages and specialist discourses used in a place” (p. 76). From a global perspective, these languages and discourses included knowledge of the principles of SCM such as talk of manipulating the hive, treating colonies for pests and diseases, re-queening, removing queen cells or splitting colonies to prevent swarming, harvesting honey or wintering down, and so forth. In the field this knowledge was covered in the theoretical components of the programme and through my observations and inquiries in the workplace over a period of time, in addition to reading textbooks on beekeeping as a part of the desktop review. However, use of this knowledge was limited because of the unfamiliarity with the locations where it was to be applied, namely, a deep local knowledge of the apiaries where the hives I interacted with were kept. In other words, the use of global knowledge of SCM principles to communicate and make decisions only made sense in the local and

specifiable contexts and conditions found in specific geographical locations of each apiary. This was observed, for example, with beekeepers conversing over the whiteboard of lists of apiaries and communicating plans for each one based on knowledge of their hive numbers, colony conditions at last inspection, and known environmental factors in their respective locations.

In addition to specialist language use, non-specialist language was used to coordinate non-beekeeping related knowledge and artefacts from a wider arc of practices entangled in SCM practices. Most notable was the frequent reading of weather forecasts and maps to ascertain weather-related variables during the week and over the season and communicated amongst the team or with other beekeepers operating in the region. In addition, other non-specialist language was communicated between beekeepers and other connected stakeholders such as mechanics servicing vehicles, helicopter pilots lifting hives, suppliers of bee products and services, and inspectors required to complete mandatory AFB checks, and so forth. The meaning-making of both forms of specialist and non-specialist language was entangled in the situated contexts and intersubjective spaces in which SCM practices unfolded. Therefore, identified cultural-discursive arrangements included the situated experiential and discursive knowledge of conditions in the apiary and their effect on colonies, and discursive knowledge of both specialist and non-specialist language generated within the community of beekeeping practitioners, their idiosyncratic practices and their entanglement with other practices.

Similarly, identified material-economic arrangements included the activities undertaken by beekeepers to complete a variety of colony management tasks, such as the aforementioned colony manipulation, treatments, inspections, hive relocation, and honey harvesting, and so forth. Analogously, the locus of different SCM doings could be interpreted as radiating spatially out from the hive, apiary, and work shed as locations of specific beekeeping practice, to wider geographical fields of practices entangled in SCM. Colony manipulation such as arranging frames in the hive, adding or reducing the number of supers, excluding the queen, and providing supplementary feed was enabled (and constrained) by access to this equipment. Similarly, accessing apiaries and relocating hives was enabled (and constrained) by relationships with landowners or land users, and the use of vehicles and roads and by extension entire transport and infrastructure networks. These activities were further differentiated temporally by the time of day or during the season when they occurred. Concerning the latter, the equipment taken into the apiary to conduct colony

manipulation to build colony strength in spring was different from the equipment used and tasks required to harvest honey near the end of summer. Concerning the former, hive relocation had to be undertaken during the cooler temperatures of the early morning or overnight. As signalled earlier, this required going to the apiary the night before relocation to block the entrance of hives, prolonging what was already a long operational day working in the field completing other tasks.

In addition, while planning to accomplish these different tasks was mostly predictable, they nonetheless unfolded with variations in the field. The locations of different apiaries and the conditions of the colonies found there determined how SCM plans were to be approached; what equipment to take and how to move it there and what eventual decisions were made in the apiary in anticipation of the next visit and seasonal activities. This was evident in the deliberations between beekeepers over the whiteboard of apiaries with information that changed over the season. Further, these plans and activities were dependent on suitably experienced and reliable beekeepers being able to implement them. Management decisions on the labour needed to implement SCM plans in different apiaries required trusting the autonomy given to individual and groups of beekeepers making judgements leading to tangible actions for effective SCM, both in planning and conducting SCM across the organisation in multiple apiaries, as well as in individual apiaries and hives. Finally, these plans could spontaneously change due to changes in the weather, logistical challenges, or an unforeseen lack of competent personnel to complete them.

Lastly, the cultural-discursive and material-economic arrangements described above identified the social-political arrangements of different stakeholders coming into practices of SCM. Lave and Wagner's (1991) concept of "communities of practice" provides an added contextual layer to describe these relationships within the boundaries of SCM practices unfolding in their sites. For example, the "domain" of shared interest, the "community" of historical relationships and the "practices" of cumulative embodied knowledge describe how different stakeholders came into and related to one another in conducting SCM (Wenger et al., 2002, pp. 27 - 29).

Therefore, examples of social-political arrangements included the histories of various mutual commercial or personal relationships that directly attended to beekeepers' needs, interests or obligations over the season between fellow beekeepers inside or outside of the commercial operation, or suppliers of bee products, and mechanics, and so forth. Others included individuals

and groups regulating the control of pests and diseases or minimum standards and quality assurance of bee products to protect the biological-pathological and market-based aspects of beekeeping that describe the history and aspirations of industry-wide beekeeping objectives. For example, the strong tradition of AFB control and plans to eradicate it requires mandatory annual inspections of all colonies by a Disease Eradication Conformity Agreement (DECA) certified inspector. AFB control as well as the enduring activities of marketing boards and initiatives to support the commercial interests of beekeepers therefore encompass a history of shared interest towards the survivability and commercial viability of beekeeping in New Zealand. While elsewhere it has been noted that there are sources of tension or asymmetry between industry and individual beekeepers (e.g. Newton, 1999), this regulatory environment has nonetheless contributed to shaping local histories (Kemmis, 2022b) of SCM practices.

Moving beyond these “communities of practitioners” (Gherardi, 2009) however, variations of engagement between beekeepers and other stakeholders were observed. For example, while farmers offered temporary sites for honey production for a pecuniary exchange and orchardists remunerated beekeepers for services to pollinate their crops, there was limited interaction between either in their own practices and sometimes tensions or mistrust between them. Here however, it is important to utilise the metaphor of “ecologies of practice” (Kemmis, 2022b; Kemmis et al., 2014) to describe how different practice traditions with their own niches become entangled with other practices and practice architectures. In the examples above, securing access to land to site apiaries for a particular productive (and profitable) purpose was the extent of mutual interest shared between beekeepers and landowners/users; neither wanted to necessary interfere with the other in the progression of their own practices however each valued what their practices brought to each other. Another more distant example is the practices of weather forecasting, logistics and infrastructure that have their own unrelated practice traditions to beekeeping yet are essential in shaping the practice architectures of beekeeping practices. These relationships and the connections between them are complex, however an analysis of the practice architectures helped illuminate them unfolding as a “living practice” (Kemmis et al., 2012, p. 40). To consolidate this interpretation of the practices and practice arrangements of SCM, a table of invention is provided in Table 6.2.

Table 6.2 *Table of invention – practices and practice architectures of SCM*

<p>Sayings Specialist and non-specialist language used relationally between beekeepers to make decisions and communicate plans. Talking and thinking about...</p> <ul style="list-style-type: none"> • local and climatic conditions in the apiary (e.g. forage, bloom, inclement weather) and in the hive (pollen, nectar); • colony behaviour (e.g. angry, happy, collapsing); • production (e.g. colony development and productivity, honey yields, types and quality, pollination efficiency, number of hives to work): • AFB compliance and Varroa treatments; • Logistics (relocating hives and honey); • The selling and sales of bee products; • Relationships with others. 	<p>Cultural-discursive arrangements Situated experiential knowledge of conditions in the apiary and their effect on colonies; Discursive knowledge within the community of beekeeping practitioners and practices and other practices.</p>
<p>Doings Undertaking a variety of colony management activities including manipulation, treatments, inspections, hive relocation, honey harvesting, and over-wintering.</p>	<p>Material-economic Access to land to site apiaries for some productive use e.g. recovery, wintering down, pollination or honey production; Various equipment used to undertake SCM tasks including, beekeeping equipment, types of treatments, vehicles, and supplementary feeds; Time of day or season; Access to labour.</p>
<p>Relatings Mutual commercial cooperation and activity between beekeepers, landowners such as farmers, orchardists, and suppliers and services; The dissemination of best practices through local and national channels reflecting personal and shared concern for the welfare of bees and state of the industry.</p>	<p>Social-political History of relationships informing the types and quality of relations between stakeholders; Regulatory environment for the control of pests and diseases, and minimum standards and quality assurance of bee products; Global markets for the sale and consumption of bee products and horticultural products produced by bees.</p>

Encounters in the complex of beekeeping practices

The vignettes above describe my ethnographic encounters with two selected practices of beekeeping. By way of signalling the potentially expansive scope of analysis, other beekeeping practices were also encountered that are entangled in the practices of hive work and SCM that form their own niches within the complex array of beekeeping practices. These included, for example, the practices of driving to and from the work shed to the different permanent and temporary apiaries and the practices of building and maintaining relationships with others in beekeeping and other “ecologies of practices” (Kemmis, 2022b; Kemmis et al., 2014).

Driving, for example, required a significant amount of time and energy in the daily practices encountered in the site. Driving entailed the physical embodied activity characterised as a doing. However it also required talking and thinking about driver safety in terms of the regulatory requirement of a maximum number of hours one could drive as well as managing personal health and fatigue; fleet management in terms of how many vehicles were available, serviced, fuelled; and the general logistics management of moving people and things around the country such as loads of hives and the suitability of some forms of transport to access the more remote and difficult terrain of some apiaries. On this last point, loading and unloading vehicles with equipment and hives – either manually or with the use of a forklift (or in other sites a utility crane) took time to be conducted safely, requiring clear communication as well as requisite licencing. In addition, the road networks had to be considered in trip planning that affected the timing of activities or changed plans due to unforeseen events on these networks due to roadworks or accidents. In my personal case, I did not hold the requisite licence to drive heavy vehicles and therefore talk revolved around who I would travel with or if I should drive a utility vehicle (ute) and trailer. Therefore, in addition to the time-consuming activity of actually driving to different apiaries, there was the thinking and talking about and relating to a wider array of practices involved in logistics and fleet management extending to the practices of navigating the national road network as well as accessibility on privately owned land. Important here is to highlight that while driving was itself an independent activity – a practice on its own, it was interconnected and interdependent with the practices of hive work and SCM through connecting beekeepers with their apiaries located around the country.

Another encounter was the practices of building and maintaining relationships with others – between beekeepers, suppliers, packers and buyers, inspectors, regulators and so forth, in the unfolding of daily, weekly and seasonal practices observed as how beekeepers navigated or negotiated these relationships to achieve different ends. These relationships were observed through face-to-face discussions or over the phone conversations between beekeepers and others during the unfolding of daily activities. Mostly I was not privy to the details of these unfolding conversations, however through listening in to them and making further inquiries I was able to make connections between what was being talked about as they connected to the wider (and complex) array of beekeeping practices. I noted how beekeepers consulted with other beekeepers in the field to get second opinions in decision-making processes – for example in anticipating the effects of weather forecasts on different apiaries, or to determine how long to keep hives in honey

production before harvesting according to the current seasonal bloom. I also noted how the managers, in both the workplace and programme (e.g. tutor), conversed with suppliers to determine timeframes for receiving equipment, or in the workplace how beekeepers had continual communication with orchardists and farmers to determine timeframes for the completion of different activities. While these have been positioned as contributing to descriptions of hive work and SCM, the activities of maintaining cordial and mutually sustaining relationships with others was also identified as a practice in itself.

Complex practice arrangements of beekeeping practices

To summarise the chapter thus far: the fieldwork and desktop review identified a number of arrangements that shape (and are shaped by) the unfolding of the complex array of beekeeping practices. While the complex of beekeeping practices and practice arrangements is vast, using the TPA as a heuristic enables making analytical decisions to delineate those aspects that are empirically relevant for the investigation (Kemmis, 2022b). In the examples provided, the practices of hive work and SCM were identified as being the most significant practices to analyse, where other practices, while also relevant, were interdependent on completing hive work and SCM tasks. This brings me to an analysis of the projects, practice traditions and changing practice landscape of beekeeping practices, detailed below.

Identifying the projects of beekeeping practices

In practice theory, the projects or teleoaffective structures (Schatzki, 2019) of practices describe what makes sense to “carry on” and be “stirred into” particular practices (Kemmis, Edwards-Groves, et al., 2017). In other words, the projects of practices describe why and how individuals join in and participate in practices, which further describes the sayings, doings and relatings characteristic of those practices. In addition, the TPA aims to understand how people participate in and transform the practice architectures of practices. In the examples of hive work and SCM explored above, two projects were identified emanating from the unique human-bee relationships sustained by the use of the Langstroth system described earlier.

The projects of hive work and SCM

The first identified project in the practices of hive work and SCM was to manage and manipulate colonies so that they survive on a seasonal basis. As detailed under the section on hive work above,

prior to the advent of movable frame type hives, honey and wax was either collected from wild colonies established in the bush or through the destruction of colonies kept in rudimentary cavities such as the commonly known “basket skeps”. Thus, multi-seasonal colony progression consisted of attracting swarming colonies or shaking bees into new cavities before partially or completely destroying the comb to extract honey and wax (Crane, 1999). The advent of the movable frame type hive however enabled colonies to be kept alive on a seasonal basis through the manipulation of colonies to prevent or control swarming and to extract only surplus honey and wax. By keeping colonies alive through the projects of hive work and SCM, beekeepers keep their colonies in perpetuity according to their needs, ensuring they remain healthy to survive cooler temperatures of winter and suitably strong in bee numbers to fight off pests and disease and minimising colony losses. This cycle is then repeated, to strengthen colonies again in spring to split them to make up more hives or to control their swarming behaviour to retain the same number of hives. In other words, beekeepers sustain the productivity of their colonies so that the colonies can survive.

The second identified project, extending from the first, is that the projects of hive work and SCM are to harness the productive potential of colonies for some human purpose. Bees’ productive behaviour, enabled and constrained by how beekeepers manage them on a seasonal basis, gives rise to the production of different bee products. Bees forage for nectar to then dehydrate and store as honey as a surplus energy source for periods of nectar dearth and the cooler temperatures over winter. In other words, honey provides the essential energy source for colonies to thermoregulate at an optimal temperature for the colony to survive. In addition, colonies forage for resin to make propolis and pollen for protein, enabling beekeepers to not only harvest honey and wax but also pollen, venom, propolis and royal jelly that have all been used for different purposes in different cultures throughout human history around the world (Crane, 1999). Further, bees’ productive foraging behaviour is also used as a direct or indirect source of pollination. Indirectly, bees’ foraging behaviour pollinates vast numbers of different flora including those that support human productive activity, such as clover crops used for grazing, as one example. Hobbyists also keep bees to pollinate the garden and local surrounds. As a direct service supporting the horticulture industry, orchardists remunerate beekeepers as a service to use their colonies’ productive foraging behaviour to pollinate their orchards. Hives are temporarily relocated into orchards during the pollination period and then removed so that they do not interfere with other orchard tasks such as

harvesting, but also because orchardists use harmful pesticides, which can weaken or kill bees and colonies.

These two projects come into and shape a unique human-bee dynamic that describes the continuity of beekeeping practices. On the one hand, beekeepers operate in a bees' world, supporting them to survive to harness their productive potential for some human purpose. On the other hand, bees respond to the world humans have created for them, inside the hive through manipulation, as well as outside of the hive in the local environments where they are strategically located. There is a perpetual unfolding of interactions and balancing act between bees and beekeepers. Importantly, these projects also describe the practice traditions that sustain the continuity of beekeeping practices, the focus of the next section.

Identifying the practice traditions of beekeeping practices

According to the TPA, “practice traditions encapsulate the history of the happenings of the practice that allow it to be reproduced and act as a kind of collective memory” (Kemmis et al., 2014, p. 31). These traditions can be understood both from their general or widespread patterns of global histories however how they come to be enacted and transformed is entailed in their local histories (Kemmis et al., 2014). In this way practices are not static but are malleable and adapt and “through history evolve within practice traditions, which can become differentiated so multiple practice traditions can co-exist or compete” (Kemmis et al., 2014, p. 143). The empirical question was to identify how general or global histories manifest and “go on” through the intersubjective spaces of the sites of practice.

Using the empirical evidence presented above, this section outlines those salient features of beekeeping practice identified in the field that describe the practice traditions of beekeeping. This aligns with the genesis of the inquiry stated in Chapter 1 to understand how traditions of particular vocations (i.e. its “happeningness”) are held in their course. Further, by framing the salient patterns of continuity described as practice traditions, it is possible to explore the changing conditions or practice arrangements that are in turn changing these traditions to create new traditions (Kemmis, 2022b). This establishes the practice landscape as slices of the practice plenum (Schatzki, 2016, 2019) that foregrounds analysis of notions of relevance in Chapter 7. Three practice traditions were identified and are described in the following.

An affective dimension of care

In the analysis above I noted how beekeepers conducted, talked about and related to their colonies in terms of their welfare. While there is a functional purpose to conducting hive work with care, for example to avoid killing the queen or disturbing the colony to minimise affecting the colony's productive potential and capacity to produce bee products or offer pollination services, this narrower perspective ignores the emotional connection and affinity generated between beekeepers working in close proximity with their colonies and observed in the sayings, doings and relating of practice. By contrast, I use the term "affective dimension of care" to describe those practices of care inherent in the projects of sustaining colonies on a seasonal basis for their own productive wellbeing to harness the colony's productive potential for a particular human purpose. In other words, an affective dimension of care was identified as being inherent in the continuity of the practice traditions of beekeeping; there was a sense of guardianship amongst beekeepers in the care for their colonies and wider sense of stewardship towards global bee populations and practices of care for honeybees in general in addition to the commercial production of goods (e.g. honey, wax, and so forth) and services (e.g. pollination for horticulture).

In practice, this affective dimension of care was evident in how beekeepers worked their hives methodically and carefully in all procedures and elements of hive work. It describes why beekeepers approached and stood over the hive while conducting hive work a certain way, making sure not to stand in front of the hive entrance to block the flight paths of foraging bees or to inadvertently stand on them. It describes how and why beekeepers used the right amount and temperature of smoke; subtle puffs at the entrance and under the boxes being lifted – not too hot to singe their wings and not too much to excessively heighten their sensitive alarm pheromones and responses. It describes how and why the hive tool was used as an extension of the arm and hand, utilising different grips to carefully leverage boxes or pry and lift frames free from propolis, to avoid sudden or jerky movements or knocks that could crush the queen or bees or unnecessarily aggravate them. It also describes the subtle actions of inspecting and moving frames; gently lifting the frame by the "lugs" – the extensions of the top bar of the frame that provide a space to hold, and holding it between the thumb and index finger to rotate it on its vertical axis to avoid disorientating bees when the frame was re-inserted into the hive. Further, I identified that this tradition of care was founded on the deep local knowledge of the conditions and environments

where apiaries are located that determined beekeeper inputs to ensure colonies remained healthy and suitably productive, enabled (and constrained) by the time beekeepers spent in these locations that shaped how beekeepers came into and practiced hive work in their apiaries. These are all examples of the embodied, methodical actions (i.e. doings) undertaken by beekeepers in their care for the colony.

Similarly, sayings encountered included the ways beekeepers talked and thought about and with their colonies. As identified earlier in the chapter, I observed how beekeepers anthropomorphised bees, making connections with their activity with human notions of work and life, verbalised, for example, in the names and activities given to “worker” bees and the work that they did. Finally, the cumulative actions with and talk of and thinking about bees in this way described the solidarity in which the immediate communities I was embedded with came together in solidarity while conducting hive work. To emphasise a point made earlier, there was an infatuation with bees and what they did and could do that brought the community of practitioners together, both in their actions in completing tasks as well as sense of identity as being “beekeepers”. However, there was also a sense of respect in operating in a bee’s world, including being mindful of their proclivity to attack and sting when their honey stores were threatened and that a human presence was not always wanted. The affective dimension of care therefore extends to a deep emotional, mutual respect towards the colonies.

This dimension of care was enabled (and constrained) by a number of arrangements. The close proximity and time spent observing and interacting with bees established with the innovation of the Langstroth system was a catalyst for the development of new affinities and relationships between humans and bees. Thus, an affective dimension of care was a response to this closer proximity and connection with bees and what they do through the practices of sustaining colonies on a seasonal basis. It describes both a personal affinity and connection between the beekeeper and colony as well as collective solidarity shaping the identities beekeepers associate with one another in the practices of beekeeping – as a vocation or a hobby, expressed in the coming together as a community of beekeepers.

Further, the physical dimensions of the Langstroth hive only enable a single beekeeper to peer into and conduct hive work and undertake interventions in the colony; there is no room for two beekeepers to stand over a hive to make similarly informed observations and decisions. This

describes the autonomy required of beekeepers to work each hive and make judgements independently based on a combination of their “sense regime” – how practices and complexes of practices are perceptively organised in a specific way (Reckwitz, 2016, p. 63), of the local conditions of the apiary and drawing on their discursive and experiential knowledge of global and local histories of practices. Thus, in contrast to processes of memetic and guided learning common in other vocational practices, where learners copy or follow what others are doing (e.g. Chan, 2020), beekeepers, whether experienced or newcomers, find their own way with each hive and colony on a moment-by-moment basis but also over time – on a season-by-season basis.

Therefore, beekeepers generated both a collective memory of their colonies and apiaries that assisted in the organisational conduct of hive work and SCM but also personal and deeply situated and connected memories with each colony. In signalling the term “affective” I do not only denote a subjective emotional connection to feel but also a diligent and performative responsibility to act towards each colony’s wellbeing. Thus the affective can be understood as “the capacity of bodies to affect other bodies and be affected by them, creating new affective relations between bodies” (Zembylas, 2021, p. 44). As will be described in the last section of this chapter, this was important given that bees can no longer survive on their own without human intervention due to Varroa mites. It also describes the type of intense focus required of beekeepers to make optimal decisions for each colony, aware that not doing so could have compounding or terminal consequences to the colony over the progression of the season or multiple seasons.

To summarise; the affective dimension of care is a unique outcome from the development of the movable frame type hive that enabled beekeepers to keep colonies alive on a seasonal basis and through close working proximity with these colonies generated new knowledge, discourses, affinities and activities or doings in beekeeping. The tradition of care as inherent in the practices of beekeeping is shaped by (and shapes) the ongoing reproduction of global as well as local histories of practices described by the project of sustaining a colony on a seasonal basis for some additional productive good or service. This requires beekeepers to have dispositions of being sensitive to each colony during hive work and in making SCM plans; conducting hive work with a high degree and diligence of care in their corporeal movements in and around each hive and the apiary; and to do so out of the shared interest and concern to avoid making mistakes that could

have longer-term seasonal or terminal consequences for each colony; to associate with being an effective and useful member of the team, and being a guardian of their colonies and bees in general.

Deep local knowledge

As signalled in the previous section, the affinity beekeepers generate with their colonies is also enabled and constrained by the rhythms of the environments in which their apiaries are located. The location of apiaries has important directions on how the projects of beekeeping unfold over the season. Colonies need access to an abundance of different resources – nectar for energy, pollen for protein to support brood development and colony growth, resin to support propolis production to secure the structural integrity and seal of the hive, and water to hydrate and support the thermoregulation of the hive to maintain a constant optimal temperature. Bees can forage significant distances from their hives (Matheson & Reid, 2018), therefore beekeepers need to develop deep local knowledge of the environments where their hives are kept that shapes hive work and SCM practices for a number of reasons, depending on their particular projects.

To support colony welfare, beekeepers need to be aware of the different types and blooming periods of flora so that colonies ideally have a year-round source of forage. This was evident in the decisions made to “drop hives” in recovery sites so that they could replenish their health after Mānuka honey harvesting or pollination where single pollen/nectar sources were abundant. It was also evident in the decisions to provide colonies with supplementary feed to support their ongoing development or recovery. Beekeepers also need to be aware of how colonies access these different resources. This requires surveying the landscape to ascertain flight paths bees travel to different resources and any threats along the way. Beekeepers are encouraged to locate their colonies away from passing vehicle traffic and the public (Apiculture New Zealand, 2017) and be aware of any widespread or local uses of pesticides on flora that bees might forage on. Beekeepers also need to be aware of how different climates and weather affect the conditions of different apiaries. Bees’ foraging behaviour is determined by local temperatures and light conditions. Therefore, beekeepers position hive entrances to ideally face the morning or evening sun to promote longer flight hours, requiring familiarity with the sunlight hours and rising and falling temperatures found in each apiary. Beekeepers also need to be aware of any risks associated with each apiary. This includes knowledge of how weather events might affect the local environment, either in terms of washing away local sources of nectar over the season or the threats

imposed by extreme wind or flooding. Further, beekeepers need to ascertain the risk of livestock or other pests entering the apiary and damaging or disturbing hives. Finally, beekeepers need to be knowledgeable about and updated on suitable road access to each apiary that can prevent seasonal tasks from being completed, often in very remote locations over challenging terrain.

Evidence of this tradition of deep local knowledge was evident in the workplace when visiting and inquiring with work colleagues about each apiary. Bloom was talked about in terms of its visual presence in and around the apiary or when driving towards an apiary but also evident inside the hive as it was collected as pollen and nectar and stored by the bees in the cells of the frames. Thus, during inspections I observed how beekeepers thought and talked about the rich variety of pollen colours or smell, colour and taste of different types of nectar and honey being produced as they worked through each hive. Local knowledge was also important in determining the type and quality of honey crops as well. The development of local knowledge was also evident in the decisions made to provide supplementary feed or in the numbers of hives to put in each apiary to avoid overstocking – either during pollination in orchards or in other permanent or temporary sites. The timing of seasonal activities, for example when to relocate hives for honey production or pollination and to harvest and return them to their recovery apiaries, was also dependent on local knowledge of weather and climatic conditions affecting blooming conditions and periods.

Finally, a number of arrangements describe the continuity of this tradition. First, deep local knowledge is enabled by the portability of the Langstroth hive to further and more remote locations on trucks and vehicles. Therefore, the portability of hives and accessibility to different locations enables and constrains the types of local knowledge beekeepers will develop over time and according to the frequency these apiaries are visited. Further, observation of bees' interactions with the local environment during inspections and apiary visits also determine the types of information useful to beekeepers that determine hive work tasks and SCM plans. Therefore, developing deep local knowledge of the sites where apiaries are kept is essential to the continuity of the traditions of beekeeping. As identified throughout the fieldwork and desktop review, this tradition remains based on beekeepers visiting and spending time in their apiaries, building a full sense regime of their apiaries and understanding the multi-seasonal effects of local conditions on their colonies.

Working alone but together

The last tradition emphasised is the practice of sharing information and resources between beekeepers and others. Newton (1999) identified the rhetoric that beekeepers are “rugged individualists” and “solitary workers” who “purport to doing things on their own, operating in the bees’ slower world, and learning from their own ingenuity through trial and error” (p. 18). This is a useful observation of how individual beekeepers make sense of and enact hive work and SCM in remote locations as “bricoleurs” of self-sufficiency without a need to interact with the world outside of their apiaries (Newton, 1999). However it skirts the traditions of solidarity and shared knowledge and practices of beekeeping, as it might other vocations, that rely on and progress through communities passing knowledge of and expertise to others (Hager & Hyland, 2002). In other words, beekeeping relies on networks of people working together to realise the projects identified earlier that sustains the continuity of beekeeping practices and community of beekeepers, even though they appear to unfold in isolation.

In the previous sections I identified the affective dimension of care was inherent in the tradition of beekeeping, crucial to how beekeepers self-identify as being guardians and stewards of bees, also dependent on the development of deep local knowledge of the environments where their apiaries and colonies are kept. In the reproduction of care and concern for their colonies, local beekeeping communities develop and share “best practices” with each other in the realisation of their craft (Newton, 1999). Thus, beekeepers in different regions of the country develop their own idiosyncrasies related to and reproduced according to the different environments and conditions in which their apiaries are kept. While there are distinct local practices shaped by the arrangements of a single operation within their respective apiaries and organisational histories, local beekeeping practices are also shaped through the relationships sustained between beekeepers in the same regions, climates, flora, and so forth.

Importantly, these best practices are shared between beekeepers through various layers of communication. Newton’s (1999) examples of Canterbury beekeepers “telling stories and constructing narratives” during field days or honey promotions as essential in constituting and developing craft knowledge (p. 37) is consistent with the conversations I overheard in the field between beekeepers from the same region meeting in different contexts or talking over the phone, sharing stories and problem solving about their operations during the season. Similar conversations

were encountered between learners in the programme and communicated via the local beekeeping club's monthly correspondence.

In addition, beekeeping cannot be undertaken in isolation; it depends on others to secure the continuity of different seasonal activities (i.e. doings), whether as hobbyists or as commercial operators. Beekeeping requires access to land for reasons described above, however beekeepers do not need to own large areas of land to site their hives. Rather beekeepers work with landowners to establish informal or formal land use agreements. The history of larger scale honey production for export in New Zealand has relied on the close and mutually supporting relationships beekeepers sustain with farmers through their bees pollinating crops or pastures (e.g. clover) while producing bee products (Matheson & Reid, 2018). Beekeepers also need access to expensive extractors to extract honey, and packers and marketers to pack, distribute and sell their products. Therefore, traditions of building and maintaining relationships are essential for sharing information, accessing land, using a variety of equipment, and securing markets to sell bee products that sustain the continuity of beekeeping practices.

The arrangements that describe this tradition were evident in the conversations between beekeepers in the field and communicated through beekeeping clubs, national organisations, and online and print subscriptions to popular periodic publications. Communication channels are therefore important resources for beekeepers to correspond and learn about the latest trends, advice and local, regional and national issues. This type of open and transparent communication is also enabled (and constrained) through the shared interest and concern for the welfare of bees. In this way, linking back to the affective dimension of care elaborated earlier, beekeepers were aware of and committed to sharing best practices that supported beekeepers in becoming better beekeepers – a beekeeping praxis, not only to meet their organisational or operational objectives but also for the benefit of their colonies and their concern for other beekeepers and beekeeping in general.

Changing arrangements in the practice landscape of beekeeping practices

Having described the ethnographic encounters of sayings, doings and relatings of beekeeping practices and analysing the arrangements that shape (and are shaped by) these practices that describe the projects and traditions, this section turns to describe observations in the field that are changing these arrangements that describe changes in the beekeeping practice landscape. As detailed in Chapter 4, the practice landscape describes the diversity of practices that can be

empirically distinguished as “interconnected and interdependent from those that are *not* connected and are independent of one another” (Kemmis, 2022b, p. 95). In this section I use the “practice landscape” similar to how Schatzki (Schatzki, 2016, 2019) talks of sites of the social as slices of the practice plenum to emphasise that while projects remain the same and traditions carry over into current practices, there is also evidence of changes in practice under way. The purpose of this section therefore is to identify those significant changes observed in practice that describe changing practice arrangements, to foreground what this means for notions of relevance for just transitions moving forward. Two changes were identified. The first is the changing nature of the competitive commercial environment of beekeeping in New Zealand due to the advent and growth of Mānuka honey production and horticulture industries. The second is the impact of Varroa destructor mite on human-bee relationships.

Mānuka hunting, pollination and competition in beekeeping

The growth of Mānuka honey production has been driven by research since the 1980s of the unique microbial antibacterial properties found in the Mānuka shrub that is different from other honeys (Carter et al., 2016; McPherson, 2016; Van Eaton, 2015). Subsequently, medical grade Mānuka honey is produced and exported globally for use in burn and wound dressings and marketed for its medicinal and wellbeing benefits. In the field, the quality and purity of Mānuka honey is determined by the production of single source “monofloral” Mānuka honey, produced when bees forage from single stands of Mānuka bush that is subsequently tested to identify concentrations of organic molecule methylglyoxal (MGO) markers and marketed according to its “Unique Mānuka Factor” (UMF) (McPherson, 2016). While the production of Mānuka honey has been ongoing in the history of New Zealand beekeeping as one of a number of Indigenous honey crops, it is only in the past 15 years that significant and exponential increases in prices for Mānuka honey has attracted newcomers to the industry. In a parallel development, the growth of larger scale regional horticulture industries since the 1980s has increased the numbers of beekeepers offering pollination services to orchardists as an exclusive beekeeping activity or to complement their existing honey production capacity and operations (Matheson & Reid, 2018). Concerning the latter, securing pollination contracts is important for beekeepers to diversify their income stream in case of a poor honey production season caused by inclement weather affecting their honey crops or other factors, such as the effect of pests and diseases. These developments are changing the

practice landscape of beekeeping practice, impacting the traditions of beekeeping practices in different ways and creating new practice arrangements and traditions. Two aspects are described below.

The first relates to the growth of Mānuka honey production and the increasing number of beekeepers entering the industry searching for “quick profits” based on high international prices for certain types of quality Mānuka honey. These increasing numbers are generating competition for land access and pollination contracts. Concerning “land access”, the expression “Mānuka hunting” was frequently used in the programme and workplace to describe the competitive search for and securing of lucrative Mānuka sites to locate temporary apiaries. Due to the demand for “monofloral crops” uncontaminated by other nectar sources that bees might forage from, these sites are typically located next to or in close proximity to large stands of Mānuka bush. In this instance, competing beekeepers either sought to “poach” pre-existing agreements between beekeepers and farmers or landowners with promises of more lucrative profit share agreements or to “boundary stack” (McPherson, 2016, p. 12) hives in areas close to existing apiaries. As bees operate in a borderless world and no legislation exists to prevent this behaviour, beekeepers are unable to control how other beekeepers approach landowners and establish apiaries of their own in neighbouring areas, depending rather on their mutual histories of trust and relationships with landowners. Concerning “pollination contracts”, similar behaviour was observed in the workplace where competing beekeepers sought to undercut existing pollination contracts or agreements with orchardists by offering lower unit costs for pollination.

This type of competitive activity has compounding effects on the practice arrangements of beekeeping. The increasing numbers of hives in closer proximity to each other causes overcrowding and overstocking of bees and more competition between colonies for access to a limited number of resources (McPherson, 2016), leading to poorer yields and conditions for colonies to survive. The effect on beekeeping practices is more aggressive production techniques to strip hives completely of their already fragile resources, and the increasing need to use artificial feeding with supplementary sugar syrup to sustain colonies. The lack of resources and competition between colonies can also increase the risk of spreading AFB and Varroa through apiaries “robbing” each other. This is further compounded by unscrupulous or inexperienced beekeepers

not taking the necessary precautions or care to treat, inspect and report incidences of pests and diseases.

The second aspect of the changing landscape is how the competitive environment and uncertainty of seasonal yields and global honey markets affect the “boom and bust” cycle of risk and reward for existing or new entrant beekeepers in sustaining their operations (Lindsay, 2012, 2016). Viable commercial operations require significant capital inputs in terms of labour and equipment and to absorb seasonal operational costs when seasonal returns are small. Most significantly this requires steady agreements with landowners, honey buyers and pollination contracts with orchardists to guarantee a minimum cash flow to support their operations on a year-by-year basis. This is evident in the differences in scale and commercial setups between big and small firms defined by the number of hives managed, value streams and the integration of systems of production and distribution, and the wider influence larger firms have on the competitive commercial and market environment.

Thus, while larger beekeeping operations were identified to require more inputs such as labour, equipment, supplies and land contracts due to the number of hives they managed, they also had more integrated production and laboratory testing facilities, value-addition streams for product development and quality control, and direct export channels for the sale of their products, enabling them to leverage more financial resources and secure a larger influence on the commercial and market environment. Smaller firms however, were identified to have fewer resources and were dependent on larger firms for their extraction and packing, and their laboratories for testing and “blending” honey to meet quality standards that dictated prices for eventual sales and distribution. In other words, the uncertainty caused by variable seasonal yields and market conditions compounded by the competitive environment means larger and more profitable firms are in better positions to “squeeze” smaller firms and if they fail, to acquire their holdings (“Exit Strategies”, 2023), a sentiment outlined in a recent *Apiarist Advocate* article (NZBI offers public brief to new government”, 2023).

These factors are evidence of the changing practice arrangements of beekeeping. First, the projects of sustaining colonies for their wellbeing to harvest surplus honey in locations that mutually supported indirect pollination is shifting towards larger scale production with focuses less on colony wellbeing and more on securing higher yields. This affects how beekeepers come

into and conduct hive work and apply SCM principles (e.g. doings/material-economic), in turn shaping different approaches to thinking and talking about their colonies (e.g. sayings/cultural-discursive). These in turn are changing approaches to the relationships (e.g. relatings/social-political) between beekeepers and others, evident for example in the tensions caused by competing beekeepers approaching farmers and orchardists to negotiate and counter-negotiate their way into securing apiary sites for their operations. What was clear through the analysis was that the competitive environment was causing tension, eroding trust and promulgating unethical practices rather than best practices; all contrary and in tension with the practice traditions of beekeeping identified earlier. The effect of the competitive commercial environment is best summarised by a respected third-generation beekeeper in a recent *Apiarist's Advocate* article (Berry, 2023), who states:

“...the saddest part [of current beekeeping practices] for me is the loss of trust and respect that beekeepers used to have for each other and the cooperation and free sharing of knowledge that was part of being in the beekeeping community. These things can still be found between friends, but are no longer almost universal like they once were and knowledge is shared a lot more carefully because the potential consequences of that knowledge being used against you” (p. 15).

The effect of these changing conditions on what is relevant to learn and how is described in subsequent chapters. In addition to the competitive commercial environment, the introduction and prevalence of Varroa destructor mite is another factor changing the practice landscape, the focus of the next and penultimate section of the chapter.

The prevalence of Varroa mite

Varroa destructor mite is an external parasitic mite of honey bees that evolved with the Asian honey bee (*Apis cerana*) but jumped species with the European honey bee (*Apis mellifera*) in the 1960s and was inadvertently introduced into New Zealand in the early 2000s (Matheson & Reid, 2018). As *Apis mellifera* have not evolved the genetic traits to clean Varroa from their bodies, the mite develops and reproduces in brood before feeding off its host and travelling with other bees during their flights. Drifting or robbing bees therefore spread Varroa to other colonies and apiaries. The effect is that Varroa causes external damage to bees, such as destroying or deforming their wings, and also weakens their immune systems. The prevalence of Varroa mite therefore is also a

vector for other diseases causing parasitic mite syndrome (PMS) that can lead to rapid colony collapse (Matheson & Reid, 2018).

As indicated earlier, the control of Varroa requires colonies to be treated with a range of organic or synthetic chemicals. The challenge however is to avoid misusing treatments that can lead to Varroa infestations developing intergenerational resistance to treatments, diminishing the efficacy of treatments and requiring longer-term and more elaborate and alternating treatment regimens over time. Treatments come in different chemical classes and active ingredients that requires ongoing yet differentiated planning and use throughout and over multiple seasons. In addition, colonies need to be frequently inspected for the prevalence of Varroa in the colony to avoid unnecessarily treating colonies when Varroa levels are minimal that can cause resistance to treatments in the longer term.

For beekeepers, the prevalence of Varroa has required additional activities in the SCM process and during hive work. For example, inspecting the prevalence of Varroa in a colony is achieved by using different methods, such as the “sugar shake” or “alcohol wash” method (Matheson & Reid, 2018). Both are easy tests to conduct in the apiary but nonetheless take time. An integrated pest management plan is also promoted as a best practice and robust approach to controlling Varroa and preventing resistance (Goodwin & Taylor, 2007), however this also requires additional demands on the SCM process and management by beekeepers. Thus, beekeepers must plan for their treatment regimes in advance, ensure the different chemical classes of treatments are available to purchase, and treat accordingly over the season. Given the dynamics of colonies and apiaries over multiple seasons, no one single season is necessarily the same, and depending on the prevalence found in the apiary and across the regions, treatments can vary from one to three times over the season. Treatment regimens also need to be added and completed with subsequent time left over for the chemicals to dissipate in the hive before using the hive for honey production or harvesting.

In addition to the added costs of time and purchasing treatments, as well as planning for and treating colonies correctly, Varroa has fundamentally changed the human relationship with bees, where the projects of care are now necessary (rather than voluntary) aspects of practice. Beekeepers sustaining their practices are therefore required to attend to their colonies with added frequency and attention to ward off the effects of this parasite, placing ongoing demands on the

development of beekeeping knowledge about the threats of Varroa and forever changing activities in the apiary.

Consolidating beekeeping practices and practice architectures

This chapter has presented the empirical evidence of practices captured in the fieldwork and analysed it through an interpretation of the TPA, to understand and describe arrangements that hold these practices in their course. Through this analysis, projects and practices traditions have also been presented, leading into a description of some challenges posed by the changing practice landscape of beekeeping in New Zealand. The purpose is to provide a table of invention, presented in Table 6.3, which consolidates the descriptions of the practices and practice architectures, projects, traditions, dispositions and changing practice landscape detailed above. This in turn provides the information used heuristically to explore the research questions, the focus of the next three chapters.

Table 6.3 *Consolidated table of invention – beekeeping practices and practice architectures*

Empirical evidence	Arrangements
<p>Sayings Using specialist and non-specialist language in a site-specific way, mostly as it relates to the apiary.</p>	<p>Cultural-discursive arrangements Experiential knowledge:</p> <ul style="list-style-type: none"> • beekeeping equipment and its use; • local conditions in the apiary; • discursive knowledge; • bee physiology and environmental factors; • daily and seasonal operations.
<p>Doings Completing a multitude of daily and seasonal tasks in and around the hive and in apiaries located around the country.</p>	<p>Material-economic Bees, human-made hives and beekeeping equipment; Land, apiaries and the conditions found there; Rhythms of the seasons and time constraints of the working day.</p>
<p>Relatings Communicating best practices; Building and maintaining mutually supporting relationships with a range of stakeholders.</p>	<p>Social-political Shared interest in the welfare of bees; Regulatory environment and commercial setups to protect industry objectives.</p>
<p>Projects Coordinating daily and seasonal activities to manage colonies for the productive purposes of: sustaining the wellbeing of the colony on a seasonal basis; harnessing the productive potential of a colony for the production of bee products or pollination services.</p>	<p>Practice traditions Practices of efficiency and care in sustaining and minimising damage or disturbance to the colony; Deep local knowledge of the conditions and environments surrounding apiaries; Working together in regional networks of shared interest and support.</p>
<p>Situated knowing, dispositions Knowledge, skills and values attuned to the connection between bees, their environment, and beekeepers' seasonal/operational objectives and diligence and planning to complete seasonal tasks in time.</p>	<p>Practice landscape Methodical hive work practices constrained by time; Managing multiple, seasonal and situated variables and relationships; Lifting and shifting bees, bee products, and people over land and sea.</p>

Chapter summary and conclusion

The purpose of this chapter was to present an analysis of the empirical evidence undertaken in the research activities. First, detailed vignettes of the beekeeping practices of hive work and SCM were presented, extended with descriptions of their respective practice architectures. This provided the evidence to identify the projects and practice traditions of beekeeping practices. Lastly, details of the changing arrangements of the practice landscape of beekeeping were outlined. This provides the historical contexts and changing conditions of beekeeping practices that are now used to explore the notion of relevance as it is positioned in VET, beekeeping practices, and the symbiosis between them.

Chapter 7 – Relevant beekeeping practices

Chapter 6 detailed the practices, practice architectures, traditions and changing practice landscape of beekeeping encountered in the research activities. This provides the analytical resources that are now used to explore the supporting research questions:

- What is relevant to learn and why according to the practices and practice architectures of beekeeping practices?

To address this question, this chapter details notions of relevance as they are positioned through an analysis of the practices of beekeeping presented in Chapter 6. These findings provide the resources I then use to analyse and discuss the symbiosis between VET aspirations for just transitions and the practice perspectives of beekeeping in Chapter 8.

Positioning relevance through the lens of beekeeping practices

This section highlights the conditions of beekeeping practices that sustain the practice traditions or are changing the practice landscape that further describes what is relevant to learn and why in the vocation of beekeeping. Four aspects of relevance were identified from the empirical evidence that foreground this analysis. These are: time pressure and developing hive work proficiency; developing local expertise; the physical conditions of shifting hives and honey; and accessing resources as a means of progressing to becoming a beekeeper and belonging in the community of beekeepers. These are elaborated below with the findings summarised as statements at the beginning of each section to support the discussions in Chapter 8.

Time pressure and developing hive work proficiency

Finding 1: Time pressures experienced in the apiary require the development of unique hive work proficiency. What is relevant to do, be and know is how to work hives methodically with a high degree of focus and attention to care.

This section explores the types of hive work proficiency that are developed to contribute effectively in the projects of an apiary – mostly informed by and framed from a commercial

operator's perspective either working in a team or autonomously in the field, but also describes proficiency in general, for example for hobbyists keeping a small number of hives. The development of hive work proficiency is enabled and constrained by a complex arrangement of conditions that equate to how beekeepers manage time pressures by working diligently yet maintaining a high degree of focus and methodical actions of care. These conditions are described below.

The first consideration is the number of hives a beekeeper must attend to in their operational settings. The numbers of hives beekeepers keep in single or multiple apiaries is dependent on their commercial objectives (e.g. production and profit expectations) balanced with the need to remain commercially viable against operational costs. As described in the previous chapter, the practice landscape is changing how beekeepers manage hive numbers due to the added time and costs required to inspect for and treat colonies for Varroa and the competition for and access to land to maximise yields of Mānuka honey (or other bee products) with the ability to sell these. In addition is the need to secure contracts to pollinate orchards that either provide a main or supplementary income for beekeepers. The decisions on numbers of colonies/hives to manage in a season subsequently determine the number of personnel required to realise these commercial objectives.

The second consideration is the locations where hives are kept. Permanent apiaries are sited for their suitability as optimal sites to provide colonies with enough forage to support their development and strength of numbers over the season. On the other hand, temporary sites are used for the production of certain honey crops or for pollination. In addition to commercial objectives, the decision of numbers of hives to keep in different locations is determined by the available resources that support these objectives without overstocking the area, as well as having the physical access to these sites. In some instances, the location will determine a minimum or maximum number of hives to offset operational costs or to balance stock numbers while meeting certain objectives (e.g. pollination efficacy or maximising honey yields). Apiaries are thus scattered in numerous locations around the region or country, requiring frequent travel and relocation of hives between these sites, depending on what these colonies will be used for. The distances between these locations also influences the timing of activities and logistics required,

including the types of vehicles to be used and management of drivers according to licensing regulations and managing fatigue. This is elaborated in another section below.

The third consideration is the variable environmental conditions found in the apiaries. For example, the purpose of SCM is to plan for anticipated scenarios based on general knowledge of the expected colony behaviour and conditions at that time of the season as well as local knowledge of the colony and environmental conditions found in each apiary. Thus, beekeepers assess recent and past historical information, make plans for, and set out to accomplish certain seasonal tasks in each apiary. However, these plans change as unexpected conditions in the apiary change. This includes the conditions of colonies that change from one inspection to another or environmental changes that affect the apiary – such as weather, blooming conditions or the level of aggressiveness of bees and robbing behaviour found at the site. These three conditions influence the types of tasks to be completed in the apiary at any given time during the day, week, or over the season including the timing and frequency of inspections, how colonies are to be manipulated, the types and frequency of Varroa treatments, the periods allocated for pollination or honey production, and preparation for and relocation to and from their permanent apiaries to support colony recovery or for overwintering.

The ability for beekeepers to complete this multitude of tasks however are enabled and constrained by the timing of certain activities and available time in the working day and week to complete them. These time constraints are numerous. The first are the natural rhythms of the bees during the day and over the season. Daily rhythms include the period of a colony's foraging behaviour dependent on the temperature and daylight hours in the apiary and abundance of forage found there. This affects the ideal times for beekeepers to conduct hive work to avoid aggressive bees and to prevent robbing between colonies. For example, warm conditions where there is a "good nectar flow" means that bees are "busy" foraging and less defensive and aggressive in the apiary, making hive work easier and the threat of robbing lower. In contrast, periods of prolonged inclement weather and "nectar dearth" means bees are likely to be more defensive, difficult and unpleasant to work, with an increased propensity to escalate robbing as their resources become meagre. Daily rhythms also affect the time when hives can be prepared for relocation to ensure foraging "field bees" have returned to their colonies in the evening before "blocking" hive entrances to load them onto trucks to be shifted overnight or early the following day. Similarly,

seasonal rhythms affect colony behaviour and environmental conditions that determine the types of activities and tasks to be completed over the season. These included periods of colony development in spring, managing periods of nectar dearth or honey production cycles over summer, and harvesting and wintering down hives in late summer to autumn. In summary, beekeepers work to time constraints according to the rhythm of the bees.

The other time constraints are the working hours that exist in the operation. Beekeepers work irregular hours during pollination and honey production and harvesting periods to work with the rhythms of the bees. However, these working hours are also determined by the contractual obligations personnel have with their employers and balancing the management of personal fatigue over the working week and season. For example, during pollination colonies need to be shifted at night into their temporary pollination sites, often in difficult and unlit terrain of the orchard. Also, because pollination is located in a single pollen source without ready access to nectar, such as kiwifruit, colonies need to be fed with sugar syrup to support their energy levels, development and productivity. Finally, due to the timing of pollination during the beginning of the natural swarming cycle of the colony in spring, colonies need to be frequently checked for swarming behaviour and swarm cells. The pollination season therefore requires long hours and frequent visits to apiaries scattered around the orchards. Similar irregular and long working hours are experienced throughout the summer until the end of the honey harvest. Cumulatively, these natural rhythms and work-based time constraints affect how beekeepers come into and enact hive work.

The final considerations are the material-economic arrangements of the design of the Langstroth hive and working conditions in remote sites, working with bees themselves and the protective equipment used. The dimensions of the Langstroth hive only enables space for a single beekeeper to efficiently and effectively work through the hive to complete hive work tasks. For example, the technique for working in a hive is to stand on one side of the hive to avoid crushing or disturbing the colony's flight path at the entrance, as described in the previous chapter. Boxes that are removed are placed on their side around the hive carefully to avoid losing or crushing the queen and bees when moving equipment and frames. Similarly, frame inspections are conducted over the hive so that bees or the queen drop back into the colony and to minimise disorienting the colony through the methodical and perpendicular movements of the frame before reinserting them back into the hive. Beekeepers also peer into the hives in a way to avoid blocking overhead sunlight

that improves visibility – especially important for identifying eggs in cells indicative of a “queenright” hive, which is otherwise already difficult given that the bee suit veil obscures vision. Therefore, it is both impractical and disruptive to have more than two people working in and around a hive.

Compounding how equipment is used are the working conditions. Beekeepers wear bulky protective clothing that makes hive work cumbersome with the aforementioned meshed veils that restrict visibility. Hive work is also undertaken in hot conditions with strenuous physical activity of one- or two-person lifting of heavy and sticky equipment, while managing the fatigue of long drives and long working hours of the day. There was also the constant threat of being stung, and depending on the temperament of the bees in the apiary, managing their varying levels of aggressiveness. In other words, the equipment used to complete hive work tasks and the working conditions found in the site enabled and constrained how quickly and easily these tasks could be completed.

This leads into a summary of the conditions that describe proficiency. The combination of the numbers and locations of apiaries and hives; variable colony and environmental conditions and the multitude of tasks to complete; rhythms of the bees and work-based time constraints; and the dimensions of a single hive, working conditions and equipment – all affected how beekeepers approached hive work. Hive work proficiency therefore can be described as the ability and dispositions for beekeepers to work through hives methodically yet with a high degree of care and focus while diligently completing tasks within the time pressures of naturally occurring, operational and work-based time constraints under strenuous conditions. This is unpacked in two points below.

First, methodical actions undertaken in hive work relate back to analysis in Chapter 6 about the need to conduct hive work with an affective dimension of care to minimise harm and disturbance to the colony. Beekeepers respond to this notion of care through the careful and considerate corporeal use of tools such as the smoker and hive tool and subtle embodied actions entailed in moving and shifting equipment to minimise jerky movements that can provoke attacks and to avoid crushing the queen and bees. These actions are made more difficult by the varying amounts of propolis and wax buildup that impacts how equipment can be dislodged and worked inside the hive, as well as the level of aggressiveness of bees and their propensity to attack and

sting. In other words, having a calm temperament was crucial to being able to conduct hive work carefully and with care.

Second, the number of tasks and time constraints to complete them meant that beekeepers multitasked when conducting hive work. This included inspecting the colony for evidence of the queen, by locating her or assessing the stages of development of the brood or evidence of eggs; assessing the health and conditions of bees and the queen by checking brood patterns or visible signs of bee or brood damage; identifying swarm cells or virgin or “unmarked queens”; adding and removing treatments or providing supplementary feed; arranging frames and splitting colonies, and so forth. This required an intense focus that combined observation and the utilisation of the full range of senses, the “sense regime” (Reckwitz, 2016), and spontaneous analytical thinking and problem solving. These decisions were observed being made autonomously by beekeepers working in each hive but also through soliciting advice through conversing with others in the apiary. However, while these conversations provided guidance on decisions to take and actions to enact, due to the singular nature of working each hive, initial assessments and eventual activities undertaken were conducted between the single beekeeper working with their respective colony and in the hive.

These methodical actions and intensive focus however were compounded by the time constraints and working conditions described above. To visualise this, the photos images 7.1 and 7.2 show these arrangements from photos taken from the field. Note in Image 7.1 the numbers of hives that needed to be worked, the physical positions of the beekeepers conducting hive work to the sides of the hives, and the environmental conditions found there. In addition, note in Image 7.2 how the frame is being held and inspected for brood development and the queen simultaneously while the frame is being gently tilted from the top bar upwards to avoid crushing bees underneath, letting bees fall back into the chamber. Also note how the hive tool is being gripped as an extension of the hands.

Image 7.1 and Image 7.2

Examples of hive work and SCM



Note. Inspecting colonies, re-queening and adding Varroa treatments in late spring. Due to an increased level of aggressiveness of the bees due to poor weather, completing these activities was cut short. Own photos.

Therefore, to summarise; this analysis of hive work proficiency describes one aspect of relevance that is important in the daily and seasonal operations of a beekeeper. Thus, in describing what is relevant to learn and why; learners entering or intending to enter beekeeping need to be aware of the levels of dexterity and focus to be valuable members of a beekeeping team. This level of control and focus takes time to develop, as it is through the constant and repetitive interactions with each hive in each specific apiary that improves this proficiency over time. However, because each colony, hive and the conditions found in each apiary were different, the types of repetitive action were not necessarily always the same. This type of repetitive action as deliberate practice is “required to build and consolidate muscle memory, connect movement to the minute-by-minute decision-making undertaken during concentrated work activities and attain fluency of action and response” (Chan, 2020, p. 52). Thus, a beekeeper’s hive work proficiency could be said to be an

always evolving form of deliberate practice with their colonies in response to new conditions found in each hive in each site. However, the signal to repetitive deliberate practice should not be understood as mechanical and needs to consider how the affective dimension of care required corporeal movements that were also subtle, careful, considerate, mindful, and respectful to the colony – at all times and equally, at all different times. In other words, hive work proficiency could be described as developing a perpetual and unfolding link between the worlds of bees and beekeepers. This finding leads into the next section on the importance of developing local expertise.

Time spent in the apiary and developing expertise

Finding 2: Time spent in the apiary over multiple seasons inculcates deep local knowledge of the environment and colony responses to it. What is relevant to do, be and know is the full sense regime of each apiary.

The practices of SCM were described in Chapter 6. In that chapter the importance of global histories and how they came to be located in local histories (Kemmis, 2022b) of practice were elaborated. This dynamic was important because it described how SCM practices were learned over time and the conditions that enabled and constrained this learning. In this section, the development of SCM principles is described as having a bearing on the types of relevant expertise that sustain the continuity of beekeeping practices important in the levels of autonomy beekeepers entrust to newcomers (but not necessarily novices) in the apiary.

Local knowledge is essential to the development of the craft of beekeeping. This was described as an important practice tradition in Chapter 6 and partially described in the previous section exploring proficiency in hive work. In linking local knowledge to the development of expertise it is important to highlight some important conditions of beekeeping practice as they come into and affect beekeeper's decision making and problem solving in the apiary.

The numbers and remoteness of apiaries and distance between them means that visits to apiaries are infrequent and periodic; beekeepers cannot attend to all hives at all times. This means that feedback from the apiary that informs SCM decisions and plans is never informed by the unfolding of real time but rather snapshots of time when the apiaries are visited, thus building a catalogue of historical events and circumstances and successful or unsuccessful beekeeper

interventions in each site. To elaborate this point, the information taken during apiary visits is numerous. As noted in Chapter 6, beekeepers make assessments of the local environment as well as how the local environment is coming into the hive. This included observing the types and blooming conditions of flora in the vicinity, observing the flight paths of bees from the apiary to surrounding flora, and noting the colour and density of pollen carried by bees returning from foraging flights at the entrance of the hive. It was also ascertained from feeling the weight of the hives or scanning the entrance of the hive to observe bee behaviour. Inside the hive it included observing the colour and density of pollen and nectar stored in the cells, in addition to general inspections for evidence of Varroa mite damage or other diseases and brood patterns. Further, queens were located and carefully marked with coloured paints corresponding to the International Queen Colour Code where different colours represent the years of their raising that determine their age and hence whether or not they should be replaced. Finally, recent or forecasted weather conditions or events were assessed to determine their likely impact on the apiary also influencing plans and interventions at the site. Thus, the full “sense regime” (Reckwitz, 2016) was engaged in the assessment of conditions affecting the colony in each hive and apiary at that time. Beekeepers thus generated local knowledge not only to make independent and autonomous judgements while working each hive individually but also to contribute to and inform joint planning and decision making within the team about the apiary.

Therefore, time spent in the apiary was identified as an important delineator in developing deep local knowledge of the conditions affecting colonies in each apiary. The information obtained in one visit built a record or catalogue of events and traces of information – snapshots – that could be retained and used in immediate and longer-term planning and problem solving. Similarly, historical snapshots could be recalled from past visits in the same season or from multiple past seasons to inform decisions and problem solving in response to immediate unfolding circumstances.

This last point is important in understanding what is relevant to learn and why in the development of expertise. First, the time spent in the apiary over a season and multiple seasons develops the types of situated and experiential knowledge useful in SCM, as described in Chapter 6. In this way, discursive knowledge makes sense when applied in the situated contexts of the apiary unfolding in practice. As noted above, deep local knowledge facilitates expertise through

autonomous and independent decision making. However, given the inability for all personnel to visit all apiaries, for reasons outlined above, beekeepers rely on the accurate judgements of their peers working remotely with the expectation that accurate information is relayed back and informs the team about decision making – either in phone conversations or at the end or beginning of the next working day. Therefore, in addition to proficient hive work, managers need beekeepers who can develop local knowledge of the different apiaries to support wider organisational SCM planning.

This type of expertise is important for the continuity of practice, as well as identity formation of novice beekeepers in their journey of becoming beekeepers. Poor or incorrect judgements in the field that are either enacted upon or provided as feedback to the team can have serious implications in the apiary or on a colony. Again, this is due to the infrequent visitations to the apiary where decisions made and actions taken at one point of time have an exponential impact on colony development or survival until the next inspection and opportunity to remedy any mistakes. This includes, for example, accidentally killing the queen or leaving the colony with a poor queen, not identifying swarm cells and preventing the colony to swarm, misidentifying resource needs and having colonies starve by not providing additional supplementary feed, or misidentifying diseases or Varroa infestations and not taking appropriate actions. Incorrect decisions can also affect the overall development of the colony to be suitably productive to meet organisational objectives such as having strong colonies coinciding with the periods to pollinate or maximise yields of honey.

In this way, expertise as local knowledge is how beekeepers recall and use this information to respond to new conditions, drawing on a historical repertoire of experiential knowledge generated from past experiences and acumen with discursive knowledge generated within “global” and “local” histories (Kemmis, 2022b) of practice applied in the situated contexts of the apiary. Thus, expertise can be understood not as the development of general or discursive knowledge of colony management but rather the cataloguing or building a repertoire of site-specific colony responses to dynamic and variable environmental changes. Combined with the notion of hive work proficiency identified earlier, this dynamic of time spent in specific apiaries along with the affective dimension of care establishes a new frame of what it means to be suitably skilled and knowledgeable as these classifications are uniquely tied to the land. Thus novices with adequate

local knowledge developed over a few seasons could be more useful to an operation than more experienced beekeepers with vast discursive and experiential general knowledge but with little knowledge of the nuances of each apiary. As such, notions of expertise in beekeeping can be understood as being inextricably tied with the land.

A wrinkle in this analysis is the introduction of internet-based and digital technologies, such as how real time remote sensing equipment inserted in hives and hive management software, which could change these traditions of local beekeeping knowledge. The use of these technologies was not observed in the fieldwork, however the desktop review identified that they are being utilised in beekeeping operations in New Zealand (e.g. BuzzTech). Remote sensing, for example, enables beekeepers to monitor and assess colonies to make decisions prior to visiting the apiary while the use of hive management software improves the collection and retrieval of historical reporting of apiary-specific information, without writing this information in a notebook or recalling it from memory. I am aware this technology has been invested in and taught in a local training institution (TEC, 2023f). Given the use of these technologies enables a vast information base from an apiary to be captured and managed remotely, this could impact beekeepers' approaches to developing and sustaining the traditions of deep local knowledge of their apiaries moving forward.

Shifting hives and honey to make money

Finding 3: The global consumption of bee products requires tremendous physical effort to lift and shift outputs from colonies across landscapes and over horizons. What is relevant to do, be and know is how to do this safely while complying with regulations and best practices.

The need to lift, shift and move personnel, equipment, hives and honey throughout the country was outlined in Chapter 6, including for example, the amount of energy and thought that goes into logistics. In this section the relevance of these activities to the continuity of beekeeping practices is elaborated as it describes important dimensions in commercial beekeeping that need to be learned and understood that is also indicative of the changing practice landscape in relation to the global export of bee products.

The arrangements that describe the logistics entailed in commercial beekeeping are the locations where temporary apiaries are sited for some productive purpose, namely, for honey production or pollination. The term “temporary apiaries” is a legal definition for sites that do not need to be registered if they do not have hives on them for more than 30 days (Apiculture New Zealand, 2017). There are two factors that determine why apiaries are sited in temporary locations. The first is for the production of certain honey crops or for pollination. This has been described in Chapter 6 where beekeepers seek out sites that will produce monofloral crops, such as Mānuka, or other crops unique to that region or area, such as honey dew. Due to the high demand for Mānuka, these locations can be very remote, requiring significant travel over long distances and/or the use of helicopters to lift hives into more remote sites for specific periods of honey production. For pollination, site selection and the timing of pollination activities are defined by the needs of orchardists to maximise pollination efficacy. The second factor is the regional variations of seasonal bloom. Hence, where pollination and honey production coincides at the same time in the same region, commercial operators might secure sites in different regions of the country to spread these activities out over the season so that they do not converge, enabling them to utilise their hives for both and maximising their productive potential over the season.

The effect of these arrangements on practices is the significant planning and use of logistics across the country using a variety of vehicles and equipment that requires knowledge and best practices of health and safety and fleet management. The types of vehicles used depends on the amount and type of equipment and the distances it needs to be shifted. In my experience, a fleet of large single flat deck trucks were used to shift hives, equipment, and eventually transport full honey supers back to the work shed for storage before extraction. Driving these trucks required having a Class 2 driver’s licence and adhering to the driving regulations of that licence. These trucks could not be used to access all sites however, and flat deck utility vehicles (utes) and trailers were also used that did not require special licences. Helicopters were also used to lift pallets of hives from a drop site to apiaries high up in the hill country next to stands of Mānuka bush.

In addition to the types of logistic used was the timing and duration of their use and effect on management. As hives needed to be blocked during transportation to avoid bees flying out of the hive, the transportation of hives was conducted in the evening, overnight or in the early morning to avoid overheating the bees during the warmer temperatures of the day. These irregular

hours, compounded by the amount of equipment that needed to be shifted during specific busy periods of the season, had a bearing on the length of the working day and number of hours driving. This required managing driver workloads to comply with licensing regulations and driver fatigue. In addition, the fleet also needed to be managed. This was undertaken by the manager to ensure vehicles were fuelled, serviced and were compliant with registration and warrants of fitness. However it also required drivers to conduct checks on the vehicles before, during and after long hauls. This included checking oil and tyre pressures, having a fuelling plan when driving to remote locations or taking extra fuel in jerry cans, and being knowledgeable about each vehicle's unique performance and handling characteristics. Knowledge of the roading network and access to different sites also required consideration to avoid delays and identify the safest route.

The shifting and lifting of hives around the country also required knowledge of a number of health and safety concerns. First, physically lifting hives, equipment and honey required using the correct lifting techniques, manually or with cranes, or requisite licensing to use forklifts. For example, in the field I was required to manually lift hives with another beekeeper onto/from the flat deck of the truck. During honey harvesting I was required to lift single full honey supers from the "blow stand" to the truck. This was heavy work. Two box hives with a strong colony can weigh in excess of 50 kg and supers full with honey over 30kg each. In addition, the farmland terrain where hives were relocated was uneven. This required being sure-footed and paying attention while shifting hives/supers while managing fatigue.

Second, tying down and securing loads on the decks of trucks, trailers and utes required focus to avoid being hit in the head with strapping being flung over the load and ensuring tiedowns were secure. Consideration was given to the estimated weight of the load and its positioning and balancing on the deck to minimise roll and movement under acceleration and braking. In addition, to avoid damaging equipment under strain, empty supers were arranged in a particular order and pattern and used as containers to hold extra equipment such as jerry cans with fuel or water, smokers and hive ware. Securing loads also required frequent checks to make sure loads were secure at all times. Third, drivers needed to be aware of the licensing requirements, keep records in their log books and also remain mindful of their personal fatigue; the days were long, with early starts compounded with the physical activity over the day. Fourth, additional health and safety requirements were necessary to handle equipment used for helilifting and being knowledgeable

and aware of flight operations and to secure loads correctly for lifting. Lastly, hygiene was required to ensure all beekeeping equipment including hive ware and bee suits were sterilised after each site visit or washed at the end of the day to prevent the possible spread of AFB. Health and safety therefore required the habitual reflection before, during and after activities had been completed to ensure all checks and precautions had been made. In this way, similar to the notion of “habits of mind” (Lucas et al., 2012) that describes the pride and determination to strive for perfection and constant self-critique in craftsmanship, what I term “habits of safety” reflects the necessary determination to strive for safety and constant self-awareness about danger in and around working with, shifting and lifting heavy equipment.

These practices captured the ways beekeepers talked and thought about logistics, fleet management and health and safety, the actions of physically lifting and shifting people and things great distances for some productive purpose, and how relocating hives is integral to the New Zealand beekeeping practice landscape. These details are captured in Image 7.3, taken of an early morning helilifting operation receiving pallets of hives after honey production to be loaded onto the trucks and returned. Note the remote location and logistics involved; the flat deck trucks used for carrying hives and strapping involved to secure loads, and the helicopter and its specially designed rigging. Once landed, the hives on the pallets were manually two-person lifted onto the flat deck and strapped down. The early morning start was due to the need to shift these colonies/hives to a drop area where they were to be later harvested.

Viewed through the lens of the TPA, the arrangements of these activities can be extrapolated to wider arrangements of global production and consumption of bee products. The livelihoods of New Zealand beekeepers have been sustained by the global movement of New Zealand honey since the late 19th century (Crane, 1999; Matheson & Reid, 2018). In addition, regional variations of honey production or pollination have always depended on remote locations requiring some form of transport to and from these sites. However the growth of the Mānuka industry and intensification of horticulture industries requiring pollination services has significantly increased the distances and use of logistics entailed in beekeeping. This is indicative of the more extensive and inter-regional use of logistics that has a bearing on carbon emissions. Included in this carbon emissions profile is the global export and freight of New Zealand bee and horticulture products pollinated by bees. These conversations were not discussed in the apiary as

beekeepers went about their long and hard days' work and it is unclear how this might be managed in the future or what a transition to lower carbon emitting logistics would look like. Given the urgency of the need to reduce carbon emissions however, these conversations could begin to change the arrangements of where beekeepers site their apiaries and the inter-regional distances travelled and/or the types of logistics they might use (e.g. lower emitting vehicles).

Image 7.3

Helilifting and shifting hives of honey



Note. Receiving pallets of hives after a period of honey production in isolated back country. Own photo.

Accessing resources, sustaining relationships

Finding 4: The ongoing progression of “becoming and belonging” in the community of beekeepers requires access to resources to sustain practice. What is relevant to do, be and know is how to build and maintain relationships while navigating and negotiating the competitive practice landscape.

This final section explores the importance of forming and maintaining social relationships within an organisational setting (e.g. working in a beekeeping operation) or with others in the beekeeping

community (e.g. starting a beekeeping operation or enterprise) as a means of accessing the resources that enable and constrain being initiated into and ongoing opportunities of learning experiences that develop hive work proficiency, local expertise and logistics management described above. This touches upon notions of “learning as becoming” as sites where individuals are inculcated into the learning culture of an organisational, what has been called a “vocational habitus” (Colley et al., 2003), but also as belonging in these sites that afford the possibilities for the continuity of relational learning experiences with each other (Filstad et al., 2019) and with the natural or “brute” world (Billett, 2009, 2011). On this view, learning as becoming and belonging informs the relational inter- and intra-personal identity formation co-produced within the social setting of an organisation, vocation or occupation that is also mediated by the socio-material world (Chan, 2020; Fenwick, 2010; Filstad et al., 2019). However as signalled, this is dependent on the conditions of possibility (Kemmis et al., 2014) that enable (and constrain) newcomers being socialised into beekeeping practices through accessing those resources of beekeeping that sustain their practices.

The importance of workplaces to learning in VET has been developed in previous VET research. Billett (2001b, 2004) for example advances the concept of workplace participatory practice to account for the interdependent processes whereby “workplaces as learning environments are negotiated and constructed by individuals, albeit mediated by what is afforded and regulated by the workplace, as well as the cultural norms and practices being exercised through the work practice” (Billett, 2004, p. 320). Thus, while personal life histories have a bearing on an individuals’ engagement in and learning through work that is unique in some way, there remains an inevitable negotiation “between the workplace’s norms and practices and individuals’ subjectivities and identities as the two intersect during participation” (Billett, 2004, p. 320). In the analysis two factors were identified that had a bearing on how newcomers were afforded opportunities for becoming and belonging as a beekeeper in practice.

The first factor was having the physical and attitudinal dispositions to complete beekeeping tasks. As identified throughout this analysis, beekeeping requires significant physical effort to complete day-to-day and seasonal tasks. This included being able to lift heavy hives, drive long distances over different and difficult terrain, and work long hours and days over the season in hot or variable working conditions in exposed locations. There was also the inevitability of being stung

and imperative not to be allergic to bee venom or pollen. The usefulness of physical attributes alone however was dependent on the proclivity to also complete tasks under such conditions. Therefore in addition to the physical effort required to complete tasks was maintaining the attitude to work knowingly in these conditions and manage expectant fatigue. Having these physical and attitudinal dispositions enabled beekeepers to become and belong in the team, being useful and supportive in accomplishing daily and seasonal tasks, however also in maintaining these dispositions to not become a hindrance and to slow down or make mistakes due to fatigue in the completion of tasks. In other words, certain physical attributes were required or helpful but attitude was equally valued.

The second factor was whether individuals could be entrusted with becoming autonomous practitioners in and around the hive. In addition to showing an inclination of care in hive work proficiency and accuracy in colony management assessments and manipulation, showing a long-term multi-season commitment to inculcate the idiosyncratic practices of the organisation and experiential knowledge of the organisation's specific apiaries was identified as a reason for encouraging the investment of time and energy from the manager and the team to support personal development. This confirms Billett's (2004) notion of workplace participatory practice whereby what is valued in the workplace – its norms and regulations – determine how learners progress. It also confirms Billett's (1998) findings that employers are reluctant to invest in an individual's training if there is a risk of them being poached by other organisations at a later time. The notion of "talent" is useful here, to denote not only the subjective, innate and unrealised potential of an individual or skill or ability to perform something excellently (Robb, 2021). Rather talent also relates to the combination of individual physical and attitudinal dispositions as well as a long-term commitment and dedication to the organisation that warrants investments in time and effort to socialise newcomers into the work team and organisational settings. In this way there was an implied or tacit mutual trade-off between newcomers according to their long-term interests or needs and employers to provide meaningful opportunities to progress in becoming and belonging in practices of beekeeping according to their respective organisational idiosyncrasies and apiaries.

On a different tack, the other identified pathway into beekeeping is to start an operation or enterprise. As described in Chapter 6, beekeepers work together in a plethora of relationships. These include sharing advice or accessing equipment in both commercial and hobbyist settings.

Beekeepers also maintain relationships with suppliers of equipment, treatments or supplementary feed; mechanics to service vehicles; and landowners to secure access to temporary or permanent apiaries for different purposes. They also require access to markets to sell their products or orchardists to secure pollination contracts that will support their livelihoods.

However, these relationships operate in a highly competitive landscape. Thus, newcomers intending to start an operation require either forming new relationships while navigating this competitive landscape or “buy into” existing relationships – either through family or acquaintances or through purchasing an existing operation. To emphasise this point, a recent article in the *Apiarist’s Advocate* (“Inter-Generational Beekeeping Business Hits the Market, 2023”) interviewed the sons of a 107-year-old intergenerational beekeeping company selling up with the purview that the prospective buyers would secure existing apiary sites, contracts and relationships with local industry connections. This implies that beyond personal circumstances that might enable an individual to buy into an existing and commercially viable organisation that includes tangible and intangible assets such as land use agreements and deep local knowledge offered as advice, being able to navigate the competitive commercial environment to build relationships within the community and negotiate with key stakeholders is necessary to access the resources that enable progression.

Chapter summary and conclusion

The purpose of this chapter was to position notions of relevance as they are informed through an analysis of the practices and practice architectures of beekeeping practices. Four aspects of relevance were identified that inform what is relevant to learn and why. These were presented as findings including the types of proficiency and expertise to work autonomously in each hive and each apiary and to develop a deep connection to the respective and unique environmental conditions they are found in; and the attitudes and dispositions necessary to contribute to the team and organisation safely and according to its unique working dynamics and conditions, that further enables (or constrains) being given opportunities to become and belong in beekeeping practices. This analysis provides the resources I now use to explore notions of relevance as they are positioned in the apiculture qualifications and programmes and the symbiosis between them.

Chapter 8 – Symbiosis with VET

Chapter 7 detailed the findings of what is relevant to learn and why through an analysis of the practices and practice architectures of beekeeping practices. This provides the analytical resources that are now used to address the final supporting research question:

- What is the symbiosis between the apiculture qualifications and programmes and practice perspectives of beekeeping?

To address this question, I first analyse the qualification settings of the apiculture qualifications. This includes an analysis of the strategic purpose statements and outcome statements of the Level 3 and 4 Certificates in Apiculture. I then analyse the programme settings of the two different mixes of provision of the apiculture qualifications. This includes a review of the programme structure and selected details of the provider-based Level 3 Certificate and the work-based Apprenticeship in Apiculture. Key discussion points are generated for further synthesis in Chapter 9. To assist with readability, references to the analysis of the practices and practice architectures undertaken in Chapters 6 and 7 are referred to as the “practice perspective/s”.

Positioning relevance through the lens of VET

Qualification settings

This first section explores the symbiosis between the qualification settings for apiculture qualifications as they are stated on the NZQF and practice perspectives of beekeeping described in the previous chapters. This was achieved by reviewing the strategic purpose statements and outcome statements that includes the graduate profiles and education and employment pathways detailed in the qualification specifications for the Level 3 and 4 Certificates in Apiculture published by the NZQA. These are critically analysed to consider the permutations for notions of relevance in relation to just transitions.

Strategic focus

The strategic focus of the apiculture qualifications is defined by the “Strategic Purpose Statements” located in the beginning of the qualification specifications. Strategic purpose statements identify why a qualification is listed on the NZQF and state the qualification’s use and relevance to learners,

industry and communities (NZQA, 2016). At a functional level they are a requirement for qualification approval (NZQA, 2020b). At a systemic level, they reflect the process of stakeholder engagement and consultation in the rationalisation and coherence of qualifications. In the current settings, this includes oversight in the development of qualifications for eventual endorsement through the respective WDC as the primary standard-setting body in collaboration with industry stakeholders and TEOs. There are no specific requirements for the number or type of stakeholders to be engaged, however the NZQA gives examples of individuals or organisations that may have a “stake” including, for example, employers, registration bodies, TEOs, and community and cultural groups, to name a few (NZQA, 2020b, p. 10). Consultation is important in the approval process as stakeholders, such as registration boards that may ordinarily be understood as custodians of education and training for their respective “industry”, act as gatekeepers through their endorsement for the justification of the qualification. Inevitably, there is likely to be complex practices and respective practice arrangements of advising, negotiation, bargaining and lobbying between different entities in this consultation process. This process was not empirically captured in this investigation, however arguably this system, either within the current RoVE context or under the former prerogative of ITOs, is worthy of further attention.

For apiculture qualifications, responsibility for the oversight of this consultation process is currently undertaken by Muka Tangata – the Workforce Development Council responsible for Primary Industries working with representatives of ApiNZ and their Education and Skills Focus Group (Apiculture New Zealand, n.d.-b). Pertinent in this analysis was analysing whether the strategic purpose statements reflect the practice perspectives of beekeeping and how this implicates the relationship between VET and vocational practices. To explore this, the strategic purpose statements for the Level 3 and Level 4 Certificates in Apiculture are presented in Figure 8.1 and 8.2.

Figure 8.1

Strategic purpose statement of Level 3 Certificate in Apiculture

The purpose of this qualification is to provide the apiculture industry with individuals who have the skills and knowledge to work safely and effectively as an assistant beekeeper.

The qualification is for people who are either intending to work, or are working in, the apiculture industry.

Graduates will be able to work under limited supervision.

Note. Reproduced from NZQA. Copyright New Zealand Qualifications Authority, 2024

Figure 8.2

Strategic purpose statement of Level 4 Certificate in Apiculture

The purpose of this qualification is to provide the apiculture industry with individuals who have the skills and knowledge to supervise and oversee a viable apiculture business.

This qualification is for people who are single-source, comb, or medical grade Mānuka honey producers; pollination service providers; or self-marketing producers.

Graduates will be able to work independently and could supervise others.

Note. Reproduced from NZQA. Copyright New Zealand Qualifications Authority, 2024

In these two examples, the purpose statements indicate an explicit industry focus, stating the anticipated roles or occupational identities graduates are expected to assume and the types of productive activity graduates would be expected to contribute to. The industry focus is logical, given that the statements are the output between two industry representative bodies (e.g. Muka Tangata WDC responsible for Primary Industries and ApiNZ). From this perspective, the purposes of the qualifications are to produce graduates who will contribute to the commercial activities of beekeeping practices in New Zealand, such as producing bee products or offering pollination services that support New Zealand's horticulture industries – both of which support wider national productivity goals of improving international trade and export earnings. At a broader policy level, this strategic focus supports both economic and social imperatives. For example, viewed through the korowai system lens it reflects an enabling environment to support learners with their personal development, contributing to the social wellbeing of their whānau or families, communities, and cumulatively supporting wider industrial, regional and national economic activity and enterprise.

Viewed through the “cogs in the system” lens however, the statements position a more mechanical view of graduates serving economic imperatives that conform to the principles of rationalisation and accountability of the VET system that justifies the funding and provision of the qualifications.

The content of the strategic purpose statements broadly corresponds to the types of activities observed and experienced in the field indicative of the current practice landscape and commercial environment of beekeeping practice. For example, the programme included a heavy theoretical component on bee product production and pollination as a service. Similarly, in the workplace, I was employed to support Mānuka honey production and harvesting during that busy period of the season. More questionable however is whether and how assuming the stated roles of “assistant beekeeper” or “supervisor/owner-operator” would be obtainable after completing the qualifications given the types of highly autonomous proficiency and expertise identified as necessary to effectively conduct hive work and SCM principles described in Chapters 6 and 7. These points are developed further in the analysis under “employment pathways” below.

Another notable point of contention of the explicit industry focus however is that it denotes only one project of beekeeping practice: to produce bee products or offer pollination services. However, this focus ignores and makes implicit the affective dimension of care identified as inherent in the other and arguably more important project that sustains the continuity of beekeeping practices: to sustain colonies to ensure their survivability where harnessing each colony’s productivity is a mutually supporting objective in the traditions of beekeeping and unique history of human-bee interactions. This is an important distinction because what sustains the continuity of beekeeping practice traditions are the practices of care enabled by working in close proximity with colonies and the shared interest for their wellbeing as a local form of personal praxis or morally-committed action (Kemmis, 2022b) that further shapes a global and collective concern for bees.

Discussion point 1: While an industry focus contained in the language and content of the qualification specifications is congruent with one project of beekeeping to be productive for profit, it ignores the important affective dimension evident in the projects of productivity for care, creating tension when considering the reproduction of beekeeping practices through VET moving forward.

Graduate outcomes

Outcome statements describe the knowledge, skills and attributes of a graduate and are used by prospective employers and TEOs for comparing qualifications (NZQA, 2016). Outcome statements appear in the qualification specifications after the strategic purpose statements and include two elements: graduate profiles and education and employment pathways. Graduate profiles identify the expected graduate outcomes of a qualification, comprehensively describing what a person awarded the qualification must be able to collectively do, be and know (NZQA, n.d.-b, p. 7). Chan (2016) suggests the term “graduate profile” was used to ameliorate any confusion with the term “learning outcomes” used in the programme specifications. Graduate outcomes therefore are “an umbrella term to cover a range of results related to the knowledge, skills and values acquired through higher education” (Chan, 2016, p. 7). Education and employment pathways on the other hand identify what other qualifications or employment and community roles graduates could assume upon completing the qualification (NZQA, 2016). While the combination of these two elements are called “outcome statements” for the purposes of the NZQF, cumulatively they both relate to the notion that they contribute to understandings of “graduate outcomes”.

Spronken-Smith et al.’s (2013; 2015) research on outcome statements in New Zealand (i.e. graduate outcomes or graduate profiles) identified that while there was “patchy engagement” with the use of graduate outcomes for a mixture of administrative, pedagogical and quality assurance processes (2013, p. 33), respondents agreed engaging with them improved understandings of the qualification’s structure, educational pathways and a deeper understanding of what they were learning/teaching among students and staff (Spronken-Smith et al., 2013, pp. 110-111). As a valid and valued information tool, how the two elements of the outcome statements reflect the practices perspectives of the vocational practices they target requires close attention and is scrutinised in the following.

Graduate profiles

Unlike the use of the more restrictive and “realist” unit standards that came before them (Chan, 2016), the use of graduate profiles recognise that learners achieve outcomes in different ways and therefore represent a minimum (NZQA, 2016) or “relational” (Chan, 2016) level of achievement. The use of graduate profiles is both functional and prescriptive. Functionally they provide

stakeholder coherence by describing the expected performance of the graduate in relation to the designated level of the qualification awarded (Chan, 2016) to be used to rationalise the qualification for approval in concert with the strategic purpose statements, level descriptors and associated education and employment pathways. Prescriptively, they guide stakeholders – tutors, learners, employers and administrators and managers – on the full range of capabilities and competencies specific to that qualification that a learner will know, understand and be able to do when they achieve the qualification (Chan, 2016; Spronken-Smith et al., 2013; Spronken-Smith et al., 2015). Therefore, they are important indicators mapping pedagogical and curricular responses at the programme development and delivery level and assist with quality assurance processes that review the programmes and their delivery are fit for purpose on the NZQF. Pertinent in this analysis was how the graduate profiles correspond to meaningful pedagogical praxis (Edwards-Groves et al., 2018) compared with the practice perspectives. To explore this, the graduate profiles for the Level 3 and Level 4 Certificates in Apiculture are presented in Figure 8.3 and 8.4.

Figure 8.4

Graduate profile of the Level 3 Certificate in Apiculture

Graduates of this qualification will be able to:

- Maintain, manipulate and operate beehives to produce quality products.
- Assist to transport beehives and bee products and establish hives in new sites.
- Apply knowledge of pest and disease control methods to carry out beehive disease management plans.

Note. Reproduced from NZQA. Copyright New Zealand Qualifications Authority, 2024

Figure 8.3

Graduate profile of the Level 4 Certificate in Apiculture

Graduates of this qualification will be able to:

- Implement and monitor annual and seasonal beehive management plans.
- Implement and monitor a plan for the management of exotic and endemic pests and diseases in the beehive.
- Implement and monitor a Risk Management Programme for safe beehive products.
- Analyse beehive management and pest and disease management plans, and recommend improvements.

Note. Reproduced from NZQA. Copyright New Zealand Qualifications Authority, 2024

The example of the graduate profile of the Level 3 Certificate indicates a focus on colony manipulation, the relocation of hives, and pest and disease management principles. Similarly, the graduate profile of the Level 4 Certificate indicates a more intensive focus on seasonal colony and pest and disease management as well as introducing the regulatory compliance of the Risk Management Programme (RMP) process required for the international export of bee products. This content is commensurate with the practices observed in the field, for example, principles of SCM and the relocation of hives and the broader commercial activities of production for export.

However, similar to the strategic focus of the strategic purpose statements, the explicit focus on “bee products” means that the curriculum is guided by an industry focus on the projects of production rather than any signal to a dimension of care. The implication from a curriculum perspective is that this focus entails that the dimension of care is implicit. That is, tutor’s interpretations of the prescriptions and the socialisation of what it means to “maintain”, “manipulate”, “operate” and “implement and monitor” with a dimension of care are implicitly realised in practice through the nuances of the material semiotic (Gherardi, 2019) – the doing with words and the embodied use of cultural artefacts such as physical implements, technical procedures and symbolic resources (Hager & Beckett, 2019). In other words, there is no formal nor explicit recognition of the dimension of care prescribed in these graduate outcomes and how this comes to be realised in practice is interpreted and reproduced implicitly. Further, it is unclear how the full depth of the “sense regimes” (Reckwitz, 2016) and affective dimensions, which are important in the development of proficiency and expertise in the apiary, should or could be captured in the graduate profiles. This establishes what Billett (2011) describes as the differences between the intended, enacted and experienced curriculum, where the intentions of the graduate profiles (e.g. intended curriculum) are interpreted and adapted by tutors delivering the curriculum according to their various institutional or organisational arrangements (e.g. enacted), that is further experienced differently by learners in these sites (e.g. experienced) (pp. 191-195).

Therefore, the graduate profiles establish tensions that tutors must navigate with regards to their own experiences of practice as “internal” practitioners of the vocation (Choy & Hodge, 2017) in their enactment of the curricular and pedagogical approaches practicing as “external” teachers in the sites of VET provision (Choy & Hodge, 2017). These approaches are further delineated according to the arrangements found in that site and contribute to how learners will experience an

enacted curriculum. On this point, two disparities are identified between the graduate profiles and practice perspectives.

The first is how working under pressure however with methodical attention to care is to be conceived in the profiles as this forms an important dimension of practice related to hive work and SCM. While the profiles are confined to a precise and mechanical semantic ordering, attention nonetheless is given to the production aspect of the practice. This can lead to disparate experiences between training and work because the time pressure dimension is absent. The second point is the notable omission in the graduate profiles signalling the importance of “relationship building”, identified from a practice perspective as being crucial in the ongoing reproduction of practices. The effect of these disparities can generate divergent experiences for learners between the practice arrangements of the sites of learning against the sites of work, unintentionally diminishing the relevance of the qualifications to learners and employers as per their strategic function. In other words, the graduate profiles offer an impoverished account of meaningful practices as they are valued to learners and employers.

Discussion point 2: The graduate profiles prescribe a limited engagement with meaningful beekeeping practices, affecting the experiences of learners and diminishing the potential relevance of the qualifications and programmes to these stakeholders when enacted in work.

Education and employment pathways

Linked closely to the graduate profiles, education and employment pathways are another element of the “outcome statements” included in qualifications as a requirement for qualification endorsement and approval (NZQA, 2020b), identifying progressions for graduates after the completion of their qualifications. Perceived as a whole, “the definition of graduate profiles and educational and employment pathways show intention to recognise career and lifelong implications of completing qualifications” (Chan, 2016, p. 14). Pertinent in this analysis was identifying the relationship between the vocational curricular, as prescribed by the graduate profiles, and their applicability in relation to the stated roles presented in Figure 8.5 and 8.6, against the analysis of the practice perspectives considering the complex nature of occupational identity formation (Chan, 2016, 2020).

Figure 8.6

Employment pathway of the Level 3 Certificate in Apiculture

Graduates of this qualification may be employed as an assistant beekeeper for a commercial operator.

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Figure 8.5

Employment pathway of the Level 4 Certificate in Apiculture

Graduates of this qualification can work as an independent beekeeper or as a supervisor or leading hand in a commercial beekeeping operation.

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Concerning “education pathways”, the Level 3 Certificate in Apiculture progresses to the Level 4 Certificate in Apiculture and Level 4 Certificate in Apiculture Queen Bee Rearing. Completion of the Level 4 Certificate can also progress into “other qualifications in small business management at a higher level”. The practices of queen raising and the Level 4 Certificate in Apiculture Queen Bee Rearing qualification was not explored in this investigation, however, queen bee rearing was identified as an important practice in the field with its own complexity of practices and practice arrangements (see Figure 5.4). Taken together, the progression of the education pathways as they are stated here and relate to the NZQF are logical and uncontentious. Less certain however, is whether the employment pathways correspond to the types of occupational identities graduates would likely assume upon completing the qualifications.

As noted in the discussion on Strategic Purpose Statements, the employment pathways of the Level 3 Certificate indicate graduates can be employed as “an assistant beekeeper for a commercial operation” and for the Level 4 Certificate in Apiculture, “to work as an independent beekeeper or as a supervisor or leading hand in a commercial beekeeping operation” (NZQA, 2019a, 2019b). However, these pathways are identified to be contentious given the types of proficiency and expertise required before being entrusted in these roles. From the practice perspectives elaborated in Chapter 7, this was evident in the ways beekeepers were required to

work hives diligently however with a high degree of care; in making informed decisions autonomously or through accurate assessments of their colonies; and through communicating with their peers based on the experiential knowledge of the site-specific conditions while working on single hives. Further, the development of this proficiency and experiential knowledge over time was identified as crucial to being socialised into the organisational contexts or otherwise to develop relationships to start and maintain a viable organisation or enterprise.

Hence, attaining the role of an assistant beekeeper working autonomously in each hive and making informed decisions as well as earning the respect of their peers was identified to require a much longer process of “apprenticeship” (Fuller, 2019, p. 87) in the site of practice, enabled or constrained by the commitment and dedication to that operation and its specific apiaries and how managers afforded these opportunities. Similarly, attaining the role of a supervisor or independent beekeeper was identified to require more substantial responsibilities requiring deep multi-season knowledge of an operation’s specific apiaries and idiosyncratic operations management, for example in logistics and managing relationships with suppliers, landowners and so forth.

Here it is important to acknowledge that the levels being described as they are positioned on the hierarchical levels of achievement on the NZQF are at an “entry level”. This means that the intention of the Level 3 Certificate is to bring newcomers into the occupational settings that can lead to progression of their occupational identity. Arguably, the stated employment pathway of the Level 3 Certificate to become an assistant beekeeper achieves this by bringing learners into the practices of beekeeping. However, a more nuanced analysis of the practice perspectives identifies the challenges that newcomers must navigate to actually become “beekeepers” during and after training. Therefore, the assumptions made in the employment pathway statements are disparate when viewed from the fuller account of the perspectives of practice. This can potentially diminish the value of the qualification to learners and contradicts the broader information function that the pathway statements serve.

Discussion point 3: The employment roles prescribed in the qualification specifications are disparate from the occupational identities graduates would assume after completing the qualifications, diminishing the value of the qualification to learners and contradicting the information function of the statements.

Programme settings

Programmes, unlike qualifications, are arrangements of study developed and provisioned by TEOs but endorsed and can also be developed by WDCs. As one objective of the NZQF is to provide “flexibility” in the provision of VET and improve the relevance of VET to learners and employers, the NZQA is explicit in not distinguishing between “provider” and “industry (or work-based) settings for the completion of qualifications (NZQA, 2020b, p. 5). Inevitably however, the different operational and institutional arrangements of TEOs in the hybrid VET system (Maurice-Takerei, 2016) means that programmes and their “mixes of provision” – the different and most relevant and responsive delivery modes through which programmes are offered – implicates how programmes are rationalised for approval and funding (TEC, 2015, 2023b) and how they are structured and delivered according to the current qualification schema (e.g. national curriculum/programmes, skills standards and micro-credentials) (NZQA, n.d.-b). This section explores these differences between the provision of apiculture qualifications at the programmatic level of the Level 3 Certificate in Apiculture and the Apprenticeship in Apiculture.

Provider-based provision

To be awarded a qualification on the NZQF, “learners need to achieve the learning outcomes of a programme that enables them to meet the graduate profile of the qualification. Learning outcomes describe the specific knowledge, skills, understanding and application a learner will achieve through each component of the programme” (NZQA, 2023d, p. 1) and are linked to the graduate profiles of a qualification. In addition, credit values corresponding to a volume of learning are linked to each learning outcome, where the value of one credit equals 10 notional hours of learning. Finally, programmes prescribe “indicative content” as guides of coverage under each learning outcome. The efficacy of learning outcomes as the basis for learning and their effect on views of education have been extensively debated. As Hussey and Smith (2002) note, “learning outcomes have value when conceived and used in ways that respect their limitations and exploit their virtues, but they are damaging to education if seen as precise prescriptions” (p. 222). In New Zealand’s recent history of educational reform and moves towards an outcomes-based qualifications framework, learning outcomes were intended to improve the relevance of education and thereby increase the ability of individuals to get jobs and improve the economy (Allais, 2014). Pertinent in this analysis was identifying the symbiosis between the programme structure of the Level 3

Certificate and the practice perspectives of beekeeping. To explore this, learning outcomes and indicative content specified in one course from a provider-based Level 3 Certificate in Apiculture programme (Te Pūkenga, 2023) is presented in Figure 8.7.

The Level 3 Certificate is a 65 credit programme of study corresponding to 650 hours where one credit is equivalent to 10 hours of learning, practice and assessment time (NZQA, 2016). In calendar terms, this corresponds to a minimum programme duration of 17 weeks. As an example, my programme was a one-year part-time programme of study consisting of two days of training per week.

Figure 8.7

Example Level 3 Certificate programme learning outcomes and indicative content

LO1 Describe hive management methods which maximise honey production and pollination

- Queening
- Swarm control
- Uniting and dividing a beehive

LO2 Manage hives safely throughout the seasons to optimise honey production or pollination

- Control swarming and unite and divide a beehive
- Introduce a new queen bee cell or mated caged queen
- Beehive site requirements and establish beehives in a new site
- Inspect and manage beehives at new apiary site
- Transport requirements for beehives to new apiary locations
- Prepare beehives for transport and transport beehives
- Winter down beehives

LO3 Demonstrate the safe harvesting, transport and extraction of honey

- Remove honey supers from beehives and remove bees from honey supers
- Check beehives, and transport and store honey supers for extraction
- Extract honey

Note. Reproduced from Te Pūkenga. Copyright Te Pūkenga, 2023

In the example provided in Figure 8.7, the learning outcomes and indicative content are commensurate with the types of doings, sayings and relatings encountered in the apiary and through the organisation of daily, weekly and seasonal tasks and decision making observed in the field. The assumption here is that in delivering this indicative content, learners/graduates will both meet the learning outcomes linked to the graduate profile to satisfy the award of the qualification

and be suitably employable having attained the knowledge, skills and attributes relevant to the industry and employer. However, from a practice perspective two points of contention were identified about whether and how these learning outcomes and indicative content in the course adequately support learners/graduates to transition into the dynamic situated contexts of the different sites of practice.

The first point of contention relates to the notional hours of expected learning time to achieve each learning outcome linked to the credit units prescribed in the qualification specification. Notional hours include direct contact time with teachers and trainers (e.g. direct learning), time spent studying, doing assignments and undertaking practical tasks (e.g. self-directed learning), and time spent in assessment (NZQA, n.d.-b, p. 8). In this example, the credit value of this course is equivalent to 150 hours of learning. The point of contention is not related to the volume of time spent engaging in learning in the programme; as indicated in the analysis, time spent working on hives and in the apiary is valuable in developing proficiency and expertise. Rather it is how the institutional arrangements, such as the daily operational hours and programme structure, affect the time dedicated to practice in the apiary that could not adequately simulate the time dynamics and pressures experienced in the working day and week and as they occurred in commercial practice settings.

The second, related point of contention is that the programme setting does not reflect the volume of equipment used and number of locations found in the sites of practice that also simulated this time pressure environment. As described from the practice perspective, the numbers of hives and different locations added the dimension of pressure to complete tasks diligently yet methodically and with a high degree and attention to care, enabled and constrained by the time available to complete these tasks. On the contrary, this time pressure dynamic was not simulated by focusing on one hive in one apiary. In addition, while the single apiary in the programme assisted the development of local knowledge of that site, for example in improving the “sense regime” (Reckwitz, 2016) by observing the behaviour of the colonies in response to the local conditions found in that site, this local knowledge could not be readily applied as local knowledge in other sites after training. In other words, there was an opportunity cost in that time spent in the programme apiary took away possible time spent in other apiaries in work-based settings.

To summarise the above two points: time spent under the incorrect conditions and in different sites of practice from those experienced in the commercial settings had an inverse effect on what was relevant to learn. Thus, there are practical considerations in that learning outcomes satisfy one particular but compartmentalised aspect of learning that was relevant to the general field of hive work and SCM applied in a certain situated context (i.e. in the programme), however was irrelevant when considered against the broader situated field in which these outcomes are realised through work-based training and for work.

At this point it is worth highlighting that this disconnect between the learning outcomes and practices speaks to the challenges facing beekeeping practices in the competitive commercial environment per se rather than the relevance or efficacy of VET as it is positioned in the provider-based delivery of the programme. To qualify this, I draw attention to the actual rich and rewarding experiences of spending time on a single hive and in the single apiary afforded by the programme that contributed to a deeper understanding and appreciation of the intricate dynamics of bees with their environments. The programme settings therefore facilitated the types of talking and thinking about bees and what they do and relating to other learners as newcomers in these activities that were conducive to developing an affective dimension of care, even if opportunities to develop proficiency were not adequately simulated or developed, remained unrefined, and observations were limited to only one apiary.

To emphasise and reiterate: the benefit of time to spend in wonderment with single colonies was constrained in the workplace due to the time pressure to complete numerous tasks in meeting broader organisational and daily and seasonal objectives yet requiring diligent and methodical actions of care and precise decision making. Thus, there is a dichotomy between having enough time to reflect upon the discursive knowledge of general principles of hive work and SCM, as expressed in the learning outcomes and indicative content, yet also understanding how these activities were to be applied in the commercial contexts. On the one hand, the programme delivery, due to the limits of the learning outcome descriptions and institutional constraints where apiculture programmes are delivered, neither corresponded to nor simulated the working conditions and expectations that are relevant in the commercial settings. On the other hand, the learning encountered in the less time-pressured environment of the provider-based programme settings enabled the development of an affective dimension of care that is important in the continuity of

beekeeping practices. This latter point suggests an important and legitimate inversion is possible in how educational experiences can be understood to be integrated into work (Grollmann, 2018).

Discussion point 4: The provider-based provision does not simulate the working conditions of the competitive commercial environment, limiting the value of the qualification according to its strategic objectives. However, the different arrangements availed by this provision enable the development of pedagogical practices of care.

Work-based provision

The Apprenticeship in Apiculture is a two-year commitment to training for learners already employed in a beekeeping operation. Learners complete “unit standards” (now called “skills standards”) registered under the Domain of Apiculture on the NZQF. Completion of these contributes to attaining the Level 3 and 4 Certificates in Apiculture. Learning and delivery of the practical units are completed on the job with two periods of block courses provided to cover theory over the two years. Assessments are carried out online or on the job by a certified assessor (Apiculture New Zealand, n.d.-d). The apprenticeship programme is a more recent initiative for education and training for apiculture, established between Primary ITO and Apiculture New Zealand in 2018 (Apiculture New Zealand, n.d.-d). Primary ITO, which develops and manages many work-based training programmes that cover different primary industries, such as agriculture and forestry, remained the custodian of the programme during the transition period to Te Pūkenga and this is likely to continue given the recent ministry directive to disestablish Te Pūkenga.

A review of the programme specification indicates learners must complete 12 unit standards to achieve the requirements for the Level 3 qualification and 10 unit standards for the Level 4 qualification. The titles of each unit standard reflect the different “performance criteria” or evidence requirements that are assessed. “Range statements” are also included to further ensure the same factors are considered in assessment to accommodate differences in approaches to evidencing the same performance criteria (NZQA, 2023c). While attaining the Level 3 and Level 4 Certificates in Apiculture is the output from the apprenticeship, two notable differences are apparent when comparing the apprenticeship with the provider-based programme and in relation to the practice perspectives described in Chapter 7.

The first is that unlike the practical challenges with the provider-based provision identified above, the apprenticeship is more aligned with the types of learning described through the practice perspective. This is logical because, as Guile and Unwin (2019) note, the endurance of the apprenticeship system in different national contexts and across all forms of occupations is “attributed to its power as a model of learning that privileges practice, allowing it to adapt to changes in the mode of production, the division of labour, and scientific knowledge over time” (p. 28).

In this analysis, the most notable alignment between learning and practice is the time commitment to one site of practice (e.g. organisation, apiaries) over two years. This enables apprentices to develop site-specific and deep local knowledge of the apiaries of that operation, initiating them into and developing the local knowledge of their apiaries from the outset, unlike the programme setting where the local knowledge obtained over the programme cannot be readily applied in other contexts. In addition, the apprenticeship enables apprentices embedded in a particular operation to learn the idiosyncrasies of that organisation, including its unique challenges yet also opportunities to develop hive work proficiency and expertise. In this way the pedagogical and curricular responses are informed and inherent in that practice (Billett, 2004, 2009). Further, by becoming a part of a community of practitioners, apprentices are socialised into the practices and by extension, the practice architectures of beekeeping rather than the practice architectures of providers and their institutional and educational arrangements (Choy & Hodge, 2017). This enables apprentices to navigate and negotiate the nuances of the wider arc of beekeeping practices, to self-identify and start the journey to become a beekeeper and through practice, belong in the field. Furthermore, the theoretical block course components provide an additional layer of discursive knowledge of beekeeping to be immediately applied in the specific apiaries in which they are attached through their organisational settings. This conjoins the benefits of the theoretical strength of the provider-based training with its immediate application in specific practice-based settings.

The second difference is that the requirement to complete many unit standards that make up the programme contributes to a more comprehensive engagement with the practice perspectives. This is evident in the titles and content of the different unit standards. As one example, the Unit Standard 30801, “Describe the nutritional requirements of bees and feeding

regimes for bees in different seasonal conditions”, provides an additional level of detail on “feeding” as it relates to bee health, in addition to how it affects honey production (NZQA, 2020c). This level of detail is not captured in the learning outcomes and indicative content of the provider-based programme.

Therefore, not only is the apprenticeship more aligned pedagogically to how beekeeping has been traditionally taught (Newton, 1999) as evidenced by the time and commitment to one organisation and their apiaries, but also the curricular arrangements of the work-based provision and use of more rigorous unit standards provides greater detail more closely aligned with different practices, in this example, with SCM. These two factors indicate that the apprenticeship provides a robust engagement with training for beekeeping that arguably reflects the ways that newcomers were traditionally inculcated into beekeeping through the intergenerational “family” type transmission of practice (Newton, 1999), however with the added constraints or benefits of distinct programmatic features such as the two-year duration and the additional block courses. These factors give clues as to why the apprenticeship has been popular (“Apprenticeship Scheme”, 2021) and aligns more closely with the practice perspectives.

As a point of contention, however, I suggest the allure of the industry-developed qualification is contentious when viewed through the lens of the competitive commercial environment that is changing the practice landscape of beekeeping. This point relates to the opportunities for learning afforded by workplace and work-based participation. Billett (2004) notes that the quality of training afforded in the workplace is dependent on the particular interests that training serves the organisation and the norms and regulations found there. In this analysis, the changing practice landscape of the competitive commercial environment identified in Chapter 6 suggests that some organisations are in better positions to on board apprentices than others due to their greater access to operational and financial resources. This is particularly true for smaller organisations and operators or “smaller players” who need the same access to dedicated trainees/employees but whose financial position may constrain their ability to either invest in on boarding apprentices or to offer the types of roles that lead to meaningful training, for example, in only being able to employ general labour. In other words, the current or forecasted financial position of a beekeeping operation enables and constrains their ability to provide opportunities for

newcomers to have more time in the apiary while attending to their wider seasonal and organisational objectives.

The effect is that larger organisations and operators or “bigger players” are in better positions and have more resources to on board apprentices however into organisational settings with more power and control in the practice landscape. The long-term effect could be the homogenising of beekeeping practices – or the shaping of the particular sayings, doings and relatings of practice a certain way, through larger and more integrated and consolidated enterprises. This could affect apprentices if, for example, their only options to progress as a beekeeper are enabled and constrained through the practices and practice architectures of larger and more corporatised organisations and thus the more industrialised processes and system imperatives oriented towards mass production and profit they permit. This is not to suggest that trainers responsible for apprentices in larger organisational contexts do not hold their own pedagogical praxis (Edwards-Groves et al., 2018). Rather, the changing practice landscape, especially the competitive commercial landscape, indicates trajectories towards homogeneity rather than heterogeneity, a point reinforced and reproduced through the “industry perspective” of the strategic focus of the apiculture qualifications. Another dimension is if larger organisations take up new technologies to assist with their operations that remove the need for developing deep local knowledge, expertise and hive work proficiency – whether this is something desirable, and what this might mean for the loss of traditions.

The final wrinkle is whether the competitive commercial environment dissuades newcomers into becoming beekeepers, where an initial attraction into beekeeping (e.g. the affective dimension of care) is too disparate to the commercial realities of working in the field. This links to the point made above about the dissonance between expectations of practice between the programme and working contexts. Thus while the apprenticeship reflects the time-bound and intergenerational family-based traditions of becoming a beekeeper identified by Newton (1999), this notion could be challenged as practices of beekeeping become more aligned to industry and corporatised prerogatives of industrial production based on profits and yields. These are challenges likely faced in many other vocational practices and occupational contexts that requires illuminating.

Discussion point 5: The work-based provision through the Apprenticeship in Apiculture is congruent to the needs of commercial beekeepers however could also be implicated by or further implicate beekeeping practices that are changing the practice landscape.

Chapter summary and conclusion

The purpose of this chapter was to explore the symbiosis between notions of relevance as they are positioned in the apiculture qualifications and programmes against notions of relevance from the practice perspective of beekeeping identified in Chapter 7. While there were instances of symbiosis between the practice perspectives and some aspects of the qualifications and programmes, the findings identified a number of disconnects when framed against a deeper analysis of the practice perspectives. Viewed practically, these disconnects implicate the efficacy of the aspirations for VET for just transitions, warranting attention for strategies to appease them. Viewed critically, the findings suggest opportunities for development however requiring the ongoing navigation of the “cogs in the system”. A synthesis of this analysis, answers to the main research question, and contributions and recommendations for the future of education and training for apiculture are discussed in the next chapter that concludes the analysis and case study.

Chapter 9 – Discussions

Chapter 8 presented an analysis of the symbiosis between the practice perspectives of beekeeping identified in Chapter 7 against a review of some elements of the current suite of apiculture qualifications and programmes. Through this analysis, key discussion points were generated. These discussion points provide the focus of this chapter and are synthesised to address the main research question:

- How can understanding the practices and practice architectures of beekeeping contribute to the development of relevant VET for just transitions?

This chapter is divided into two parts. I first present a synthesis of the discussion points raised in Chapter 8 to then position answers to the research question. I then conclude the case study with a summary of the key ideas identified in the analysis and provide some recommendations that can be used to inform future possibilities for apiculture education and training. This foregrounds the conclusions made in Chapter 10 that tie the various discussions and syntheses of the investigation together.

Practice perspectives of a relevant VET for just transitions

Identifying and addressing strategic tensions

Discussion 1: While an industry focus contained in the language and content of the qualification specifications is congruent with one project of beekeeping to be productive for profit, it ignores the important affective dimensions evident in the projects of productivity for care, creating tension when considering the reproduction of beekeeping practices through VET moving forward.

This discussion is supported through an understanding of the two projects that sustain beekeeping practice. While the industry focus prescribed in the strategic purpose statements and inferred throughout the intended curricular is commensurate with one identified project of beekeeping – to produce bee products or offer pollination services, the other project of sustaining colonies on a seasonal basis that more closely reflects the affective dimension of care sustaining beekeepers’

unique traditions of human-bee interactions is either ignored or overlooked. This is contentious for two reasons.

The first reason is that this strategic view narrows and constrains conceptions of what it means to be and become a beekeeper that further constrains tutors' and learners' development of a pedagogical praxis or generates tension and establishes a dichotomy in this process (Brennan Kemmis & Green, 2013; Choy & Hodge, 2017; Green et al., 2017; Hardy et al., 2020). Brennan Kemmis and Green's (2013) research of VET teachers showed that VET practitioners created the learning conditions (i.e. their practice arrangements) for their students based on "their own learning journeys, grounded in their own workplace learning, were the roots and stock on which their teaching would flower and fruit" (p. 109). However, these were enabled and constrained in different ways through the arrangements of their VET contexts, in this instance Australia's Training and Further Education (TAFE) system, and the tensions of their pedagogies operating in two competing spheres between business imperatives of the institution and meaningful educational engagement. Similarly in a review of the same national context, Choy and Hodge (2017) note that VET establishes a "dual identity", where the changing arrangements of the VET system creates new professional practices of VET teaching that are external to the occupations that VET teachers come from (pp. 159-160).

As one element or arrangement establishing this duality and tension between vocational practices and the practices of teaching the vocation, the strategic outcome statements enable and constrain how beekeeping is to be understood, what projects are assumed to be important, and therefore prescribes conditions and arrangements indicative of how and what should be taught; in this instance from a clearly industry perspective. This was evident in the strategic focus of the qualifications, for example, through the theoretical component of the programme specifically dedicated to the production of bee products and effective and efficient pollination services. However, this was identified as not the only perspective worthy of attention, nor was this perspective in and of itself how practices manifested in the sayings, doings and relating in the different practice settings. In other words, an industry perspective that is focused only on production for profit denies the unfolding aspects of practice that have different meanings for practitioners and ways of being in the "lifeworld" of those practices (Dall'Alba & Sandberg, 2010).

Consequentially and by extension, the second reason is how the singular industry focus nudges that particular view of beekeeping moving forward – encapsulated in the system of periodic qualification reviews and development, to be translated and recontextualised into VET programming and delivery. It ignores or denies the notion that beekeepers are also guardians and stewards of bees; in their local contexts and broader global histories and trajectories of beekeeping practice traditions based on harvesting the seasonal surpluses of honey stores produced by colonies or contributing to the indirect pollination of crops and pastures. Therefore, in addition to how the strategic objectives of contemporary VET shift how VET teachers conceptualise and practice their occupational practices (Brennan Kemmis & Green, 2013; Choy & Hodge, 2017), the strategic industry focus also has the potential to shift conceptualisations and practices of the substantive practices that are the focus of education and training.

Left untested, an industry focus promulgates and consolidates the types of changing practice arrangements affecting the practice traditions of beekeeping. In other words, the continuity of an industry focus changes the practice architectures of beekeeping practices so that the sayings, doings and relatings become more singularly focused on “yields”, “production” and “profits”. This can be a source of tension or resistance for beekeepers – both aspiring newcomers and tutors and practitioners – whose sayings, doings and relatings were observed to be different. This tension has further implications on diminishing the relevance and value of the qualifications to learners and employers, an argument developed in another discussion point below.

Therefore, to summarise and answer the main research question: understanding the practices and practice architectures of a vocational practice provides for a deeper engagement with the projects or meaning-making of different practices entailed in those vocational practices. On the one hand, these projects are inevitably productive because of the material-economic arrangements that crystallise sayings, doings and relatings of economic activity in those sites. Extrapolated further, this productivity also describes the cultural-discursive arrangements of why productive activity is talked and thought about, for example in producing yields of honey, that further extend into the broader social-political arrangements that describe how and why vocational practices sustain livelihoods or contribute to national productivity that supports social development and so forth, for example as an “industry”.

However, the evidence suggests that this is only one part of the reason why beekeeping practices are reproduced. There is also the deeper affective dimension of practice that has been and remains enabled by the close working environment and relationships humans sustain with bees and the shared environmental locations that bees and humans occupy, even if for fleeting moments while visiting the apiary. This dimension is not readily acknowledged in the qualifications yet is a crucial aspect of the continuity of beekeeping practices. Further, overlooking this important dimension has connotations for how beekeepers “come to know” and “practice differently” (Kemmis, 2021) moving forward. In addition to how an industry focus may shape practice arrangements aligned with the competitive commercial environment, this last point is also especially important with regards to how technology may change human-bee interactions by becoming more distant through spending less time in the environments they occupy through remote sensing or even robotic or autonomous colony management.

In this way, the more nuanced accounts of practices and what sustains them allows for transparent and illuminating connections between human activity and the consequences of this activity in a finite world. In the policy context of just transitions and need to reflect upon and question human activity in this world, signalling this deeper connection in the strategic focuses of the qualifications and curricular could be an opportunity for transforming the practices under investigation as well as more closely aligning strategic visions for VET with a “virtuous” vision (Marope et al., 2015) that supports sustainable, economic development for social wellbeing or otherwise highlights the tensions inherent in privileging some perspectives over others.

Addressing disparities between graduate outcomes and meaningful practices

Discussion 2: The graduate profiles prescribe a limited engagement with meaningful beekeeping practices, affecting the experiences of learners and diminishing the potential relevance of the qualifications and programmes to these stakeholders when enacted in work.

The analysis identified congruence between the content of the graduate profiles and some aspects of beekeeping practices experienced and observed in the field, for example the signals to SCM through colony manipulation and pest and disease management, as well as shifting hives. However, the explicit focus on “products” again indicates a limited focus on the projects of production without accommodating the full and more encompassing dimensions of beekeeping

practices. In addition, other dimensions, such as the importance of building relationships, are absent and unaddressed.

This disparity can be analysed according to how tutors and learners interpret and make connections between the qualifications and their personal pedagogical praxis in terms of the differences between the intended, enacted and experienced curriculum and the wider strategic influences and decision making of others in contrast to those who practice and teach (Billett, 2011). However more practically, it can also be understood according to how graduate profiles are semantically constructed using “active verbs”, “subject” and “context” (NZQA, 2020b, pp. 16-17) and how these correspond to “outcomes”. According to the NZQA Guidelines, graduate profiles are written so that each outcome statement uses descriptors that are at the level of the qualification (NZQA, 2020a). Allais (2014) notes that the verbs that illustrate an outcome are sourced from a general and de-contextualised hierarchy of knowledge, the most influential of these being Bloom’s Taxonomy of Learning Domains. Influential since the 1950s, Bloom’s taxonomy developed and mainstreamed the notion that de-contextualised cognitive skills can be organised on a hierarchy from lower levels of simple recall and recognition of facts through to higher and increasingly more complex and abstract mental levels (Allais, 2014), to be contextualised into specific subject matter indicative of the types of expected behaviour observed through training and assessment. Thus in the example “will be able to maintain, manipulate and operate beehives to produce quality products”, the purely functional and productive aspects of practice – the *technē* of making objects “impelled by the disposition of *poiēsis* as the desire to make something” (Kemmis, 2022b, p. 14) – ignores “the praxis impelled by the disposition of *phronēsis* as the wisdom or prudence aimed at producing a state of affairs in the world” (Kemmis, 2022b, p. 14).

This simplification reflects how processes of curriculum writing is enabled and constrained in socially embedded complex webs of enactment (Priestley & Philippou, 2018). This illustrates that complexities emerge when curriculum is “made”, which itself stems from the “social embeddedness of curriculum as a concept and the social actors involved in such makings” (Priestley & Philippou, 2018, p. 151). In this sense, “curriculum as practice” (Green, 2022) can be understood according to the arrangements that prefigure the technical aspects of writing the syllabus, for example the “national curriculum”, that often occurs with little attention and underestimation to its significance (p. 79). By extension, the curriculum-making process carries

through to how these complexities are recontextualised into the pedagogical and curricular approaches in the delivery of programmes, changing the various arrangements learners and educators occupy and carry forward in these spaces and their individual vocational practices (Hordern, 2021). By drawing attention to the ways the curriculum traverses these ecologies of practices (Kemmis, 2022b; Kemmis et al., 2014) – from the curriculum writing process through to the process of recontextualisation in the classrooms or workplaces, it is possible to trace where the meaning of practices the technical curricular claims to represent becomes diminished or problematic, as evidenced in this example of framing projects of practice from one perspective of production. Inversely, by illuminating these disparities it is possible to advocate for new meanings or interpretations to be included in the curriculum, for example, by making explicit the important affective dimension of care in both the technical syllabus and the taught curricular.

Similarly, the other point of contention is the notable exclusion in the graduate profiles of both the Level 3 and 4 Certificates of the capabilities graduates need to navigate and negotiate the competitive practice landscape through building and maintaining relationships. As identified in the analysis of the practice perspectives in Chapter 7, these capabilities were identified as being crucial in the ongoing development and progression of becoming and belonging in practice through accessing the resources that enabled (or constrained) being socialised into them. The types of capabilities signalled here are often debated as the differences between specific “technical” or general “transferable” knowledge and skills (Guile & Unwin, 2019). Indeed, TEC’s (2023d) guidance for achieving system-wide equity for investment planning places “foundation and core skills”, invariably also called “soft skills, essential skills and human-centred skills”, as a priority for TEOs (p. 17). However, the types of relationship “skills” or “attributes” or “employability skills” identified from the practice perspectives referred to deep and meaningful and sometimes testing forms of situated communication between beekeepers and with others in the field. This was overheard, for example, in the mostly amicable however sometimes strained communication between beekeepers and landowners and orchardists, and constant sharing of information between beekeepers about technical aspects of their practice in their apiaries as well as the forging of meaningful and jovial relationships of mutual support. Thus, the graduate profiles do not or are unable to capture the importance of relationship building; not only as a form of technical or generic skills but as the uniquely oriented way of talking and thinking about and connecting with others in

practice that shapes the arrangements that enable (or constrain) the fulfilling (and sometimes testing) dimension of belonging in a community of practitioners.

To summarise and answer the main research question: while there is a symbiosis between some of the practices encountered in the site and those formalised in the graduate profiles, these remain overly simplified and do not capture the full meanings and dimensions of practice experienced in the field. Further, the importance of relationship building is absent from the profiles. This further implicates how graduate profiles are to be interpreted, affecting personal pedagogical praxis for learners and tutors or trainers in the spaces of provision. This points to the importance of how graduate profiles are written to make more explicit not just the productive perspectives but also the projects of care that shape the important affective dimensions and forms of solidarity that make beekeeping meaningful.

Therefore, understanding the practices and practice architectures of vocational practices allows for deeper reflection in the graduate profile writing activities while being aware of how this activity itself enables and constrains the writing of accurate descriptors. By understanding the meaning-making entailed in practices, for example SCM, it is possible to add descriptors that more accurately reflect meaningful practice. This also empowers those social actors involved in these complex processes (Priestley & Philippou, 2018), from the practices of curriculum writing through to teaching (Green, 2022; Hordern, 2021). Practically, a way to address disparities and make praxis more explicit might be to include adjectives that add depth, meaning that is less functional, and contextualise the subject matter to imbue a fuller connection to the sayings, doings and relatings found in the sites of practice; for example, “to maintain, manipulate and operate beehives *carefully* to support their *ongoing seasonal development*”. Therefore, by paying closer attention to these nuances of practice and providing a fuller account of them through sematic devices (e.g. graduate profiles and learning outcomes), a plethora of new engagements with meaningful praxis and their reproduction in these sites is possible. This more closely aligns with the functional and prospective objectives of graduate profiles as a tool for qualification coherence and information, however in ways that recognise a more thorough engagement with the practices under consideration. It is also a way of bridging the perennial divide between VET and the vocational practices it is answerable to (Mulcahy, 1998).

Addressing disparities between training and occupational identities

Discussion point 3: The employment roles prescribed in the qualification specifications are disparate from the occupational identities graduates would assume after completing the qualifications, diminishing the value of the qualification to learners and contradicting the information function of the statements.

This point relates to how the stated employment pathways of becoming an “assistant”, “manager” or “owner/operator” linked to graduate skills, knowledge and attributes are disparate from how these roles are realised from a practice perspective and the levels of proficiency and expertise required to assume these identities. As identified in the analysis in Chapter 7, the types of hive work proficiency and SCM expertise that lead to autonomous judgements, problem-solving and decision-making requires a long-term, multi-season commitment to a single organisation and their apiaries. Therefore, the assumptions made by the pathway statements are understood as a disconnect when viewed from the practice perspectives. The effects of this disconnect are twofold.

The first effect is that this disparity diminishes the value of the qualification for learners (and others) whose experiences diverge between those availed in education and training and the practices they have trained for. This is expressed, for example, in a recent commentary that “people who come from those courses usually don’t last and they say that they learn more in three days working than they learnt in the course” (“Fees Free Failings”, 2021). This poses a contradiction to the important function of an outcomes-based qualification framework to provide adequate information to learners (and others such as family) about the choices they make about their investments in education and training (Allais, 2014). This dissonance may therefore require additional inputs through the support services offered by providers, such as career advisors or communication with tutors, to guide prospective or current learners with more accurate information on how completing the qualification translates into realistic roles in practice. This additional input however is seen as a contradiction to the purposes of the employment pathway statements.

The second effect is whether the qualifications provide opportunities for learners to be adequately socialised into practice settings. VET research recognises the importance of situated and authentic work- and practice-based learning contexts in the development of occupational

capacities and identities, where a range of pedagogical approaches are used (Billett, 2023; Chan, 2020; Lucas et al., 2012) generating pedagogically rich activities (Billett, 2023). However, these learning experiences are dependent on the quality of workplace affordances (Billett, 2001b, 2004; Vaughan, 2017).

From the practice perspectives, types of deliberate practice leading to the development of ongoing proficiency and expertise required newcomers being given more time than normal in an apiary setting to work hives carefully at their own pace – to avoid rushing or antagonising or damaging the queen, bees and colony and making mistakes, however mindful of the time pressures required to complete tasks working in difficult and strenuous working conditions. This requires an investment from employers because it slows down the rate of tasks that can be accomplished in the site that needs to be factored in both the planning of time and additional labour to complete the same number of tasks. An additional factor is that many tasks that require assistance in the apiary are seasonally-based, requiring labour to work on the periphery to assist with “lifting and shifting” hives and supers rather than to be engaged with the practices of hive work and colony management. Further, commercial operators may not be able to afford full-time staff, relying only on this more general assistance. Therefore, there are often no guarantees that newcomers would assume roles that lead to these richer experiences. Thus, to be an “assistant” or “supervisor” upon completing the qualifications is both highly unlikely in practice and an inaccurate description of what is entailed in being an “assistant” or “supervisor”.

Contentiously, the analysis suggests it does not make a qualitative difference whether newcomers have attained a qualification as a mark or guarantee of “employability”; rather it is whether beekeeping owners or managers are willing to take a “chance” on a newcomer based on their personal judgement of a newcomer’s long-term commitment to their organisation and their dispositions and attitude towards their operations and colonies. Those who show talent – a dedication to the organisation and promising socialisation into the operator’s “landscape of practice” (Vaughan, 2017, p. 551), are more likely to be given the opportunities to progress to become an assistant allowed to autonomously work hives and later take on wider organisational roles. Therefore, in this example, stating roles as employment pathways may be disingenuous or at a minimum irrelevant, for reasons highlighted above.

To summarise and answer the main research question: understanding the practices and practice architectures of vocational practices allows for a more thorough engagement with how individuals learn to become and assume occupational identities and the complexities entailed in this process of “becoming” (Chan, 2020) and “belonging” (Filstad et al., 2019) in practice. With regards to “learning as becoming”, an analysis of the conditions of possibility (Kemmis et al., 2014) of vocational practices allows for a fuller account of the dynamic learning experiences entailed in this process and the conditions that afford them. Due to the range of conditions found in the sites of practice, an interrogation of these dynamics is likely to provide more accurate employment pathway prescriptions. With regards to “learning as belonging”, an analysis of the conditions of possibility (Kemmis et al., 2014) of vocational practices allows for a more critical interrogation into the relational aspects of learning – with others but also with other things (Filstad et al., 2019). The analysis highlighted that an infatuation with bees and what they do was a factor in drawing people into the community of beekeepers, a point I can personally relate to as stated in the genesis of the inquiry in Chapter 1. This same attraction to the way of life of beekeeping (rather than only a means to an ends or a job) describes the unique attraction to what are otherwise difficult working conditions – the vocational or “calling” (Billett, 2011; Hansen, 1994) towards beekeeping. A more thorough analysis of the conditions of practices therefore draws attention to why and how individuals are socialised into different learning contexts that include material, atheistic and emotional aspects (Filstad et al., 2019), in addition to whether the strategic and provisional aspects of the education and training supports these aspects.

Identifying new meanings for provider-based provision

Discussion 4: The provider-based provision does not simulate the working conditions of the competitive commercial environment, limiting the value of the qualification according to its strategic objectives. However, the different arrangements availed by this provision enable the development of pedagogical practices of care.

The analysis identified that the provider-based provision of apiculture qualifications did not adequately simulate the working conditions found in the commercial sites of practice to develop the types of hive work proficiency and SCM expertise that is relevant to commercial operations and the unique environmental conditions of their apiaries. At best, the provider-based provision provides rudimentary experiences working in and with the hive and colony, while the more

intensive theoretical knowledge, useful in developing a “global discursive knowledge” of beekeeping, can only become meaningful when applied in specific apiaries over multiple seasons. Accordingly, this disconnect describes why some beekeepers have shown a disinclination or indifference towards graduates from these programmes (“Fees Free Failings”, 2021).

Yet arguably, it is this very time allocation to spend in wonderment with the colony without the various pressures of the commercial environment that the arrangements of provider-based provision avails opportunities to inculcate newcomers into subjective understandings and infatuations with bees. In other words, as a means to introduce newcomers into the world of bees and beekeeping, provider-based provision allows for unique arrangements of learning that are focused on the projects of sustaining colonies for their wellbeing that is not otherwise found or is difficult to arrange in traditional or contemporary work-based/workplace learning contexts where the projects are also focused on the productive output of colonies. Thus, provider-based provision can allow for learning experiences that can lead to richer “thresholds” (Vaughan, 2018) of learning in unintentional and unique ways.

This raises the question of whether this learning arrangement is not already served by unaccredited and “informal” introductory courses and workshops offered through local beekeeping clubs or other community-based and local organisations. These learning arrangements are also non-commercial, allow learners to spend times in hives without pressure, and bring people with a shared interest in beekeeping together. In addition, because these local training arrangements are organised and delivered by more experienced beekeepers working in different capacities, they also avail organic access to the local networks of beekeepers that can support avenues into employment or enterprise, as opposed to those that need to be arranged by providers. From an efficiency point of view, these local training arrangements do not incur the same institutional costs as provider-based provision either – yet arguably provide similar outcomes.

It is on this point that I suggest micro-credentials offer a plausible means to bridge the purposes of provider-based delivery with the value of introductory programmes into beekeeping. Micro-credentials have been introduced into the NZQF as a means to provide more targeted and responsive training to meet the needs of different stakeholders (NZQA, 2023a). The benefit of an introductory programme of study into beekeeping would provide formal recognition of learning that can be used for a variety of purposes for learners as it applies on the NZQF. It could also

provide a more focused curricular that introduces learners to the different practice dimensions of beekeeping, including the commercial realities but also the affective dimensions, which also allows learners to benefit from the additional service functions (Huntington, 2022b) of provider-based provision, for example career and learning support, or could support learners into employment having been exposed to the commercial realities.

Therefore, to summarise and answer the main research question: understanding the practices and practice architectures of vocational practices allows for a more acute understanding of how learning arrangements availed through the VET system correspond to and are valuable to different users. By identifying a more accurate assessment of the value of provider-based provision of apiculture qualifications to how the practices of beekeeping are reproduced and why, it is possible to rationalise these points of delivery through new meanings and conceptualisations of the practices themselves, for example, through explicitly learning about the affective dimension of care. This provides an added level of detail that illuminates or confirms feedback from the field to be considered in future qualification and programme development and planning. For example, this more thorough interrogation of practices gives tangible reasons why disparities between education and training and practice exist and locates the disinclination or indifference by employers towards the provider-based qualifications. However, I have also suggested this added detail provides new meanings, afforded by the arrangements of provider-based provision, to develop new and innovative programming that can be of value to learners and employers in the long term, bridging the voids between the need for an efficient VET system with a more relevant one, and which more closely aligns to the principles of the NZQF. One added dimension worth highlighting is that it also identifies the important role that “informal” arrangements of learning afford (and always have) towards acquainting newcomers with practices they have reasons to value (McGrath, 2023).

Evaluating the effects of best mixes of provision

Discussion 5: The work-based provision through the Apprenticeship in Apiculture is congruent to the needs of commercial beekeepers however could also be implicated by or further implicate beekeeping practices that are changing the practice landscape.

In the synthesis in Chapter 8, I suggested the pedagogical and curricular arrangements of the apprenticeship are most closely aligned to the forms of training that enable becoming and belonging in the community of beekeepers. This was evidenced by the time availed for newcomers

to spend in their respective and situated apiaries to develop hive work proficiency and SCM expertise, valuable to employers according to their commercial imperatives but also enabling newcomers to be inculcated into, understanding and developing the craft to become long-term guardians and stewards of bees. This latter point reflects the intergenerational ways that beekeeping was traditionally taught (Newton, 1999). Yet these traditions are also being challenged by changing commercial and environmental dynamics caused by the competitive commercial environment and the ongoing prevalence of pests and diseases that has been accelerated by untoward competitive commercial behaviour.

Arguably, the recent introduction of the apprenticeship is a symptom of these changing dynamics as evidence of the gradual erosion of traditional beekeeping practices that attracted newcomers through the informal arrangements of spending time with knowledgeable others in their apiaries as a part of a regional network and community of beekeepers. The advent of the popularity and demand for Mānuka honey and significant profits to be obtained has increased the productive value of beekeeping, nationally in terms of international exports and trade but also as a profitable investment opportunity for individuals and corporations, leading to a plethora of newcomers entering the practice. At the same time, this plethora of “new entrants” is straining human-bee relationships through overstocking bees and, in instances of unscrupulous and careless practitioners, increasing the prevalence of diseases. This challenging and changing landscape highlights the tension between the short-term commercial projects of profit over the long-term, affective dimensions and projects of care that have otherwise sustained beekeeping practice traditions. Thus, newcomers come into and occupy these landscapes of continual tension in which the apprenticeship can either be implicated in the promulgation of practices that lead to the long-term erosion of traditions, or alternatively, a catalyst for the types of transformation that can lead to more sustainable and ethical beekeeping practices moving forward.

In the analysis I suggested there is a correlation between those “bigger players” who have the resources to on board apprentices and their larger organisational imperatives for profit, posing a risk to the homogenisation of practices with an exclusively industrial focus on production moving forward. Unchallenged, this would lead to the further erosion of the heterogeneity of beekeeping traditions where smaller players are gradually subsumed into larger organisations due to their lack of competitiveness in a finite market, displacing the deep forms of local knowledge developed

over generations (“Exit Strategies”, 2023). In making this claim I am sensitive to the fact that beekeepers – as supervisors or operational managers in larger organisations who oversee training, as well as individual practitioners training or working with trainees in these sites – enact their own inherent pedagogical praxis that inevitably includes a dimension of care as they work their hives under pressure. Rather, the question is what might happen to this pedagogical praxis over time and how might the affective dimension of care be understood by future generations of beekeepers?

I have shown that VET is implicated in this debate at the point of qualification rationalisation, development and endorsement through the consultation process between WDCs (formally ITOs) and industry representatives, (e.g. ApiNZ). I do not believe the affective dimension has been intentionally overlooked in the development of the strategic directions and learning outcomes of the existing suite of apiculture qualifications and programmes. Rather, this is the result of industry prerogatives taking precedence in these curricular and administrative spaces, underpinned by unquestioned but nonetheless short-sighted imperatives for profit and industry growth and confirmed by economic imperatives for VET (Marope et al., 2015). These consultation “spaces” are distant from the fields of practice, confirming Billett’s (2011) suggestion that privileged elites have been and remain influential in shaping the purposes and functions of VET. As signalled in the earlier analysis, to qualify these suppositions requires further research in these intersubjective spaces. Nonetheless, it is indicative of VET’s complicity, intentional or not, in retaining capitalist relations and modes of accumulation that are arguably unsustainable and unjust moving forward (Avis, 2012, 2021; Langthaler et al., 2021).

On the contrary; I have also suggested this impoverished strategic vision for beekeeping can be addressed by including more accurate and nuanced descriptions of practices in the strategic purpose statements, graduate profiles and learning outcomes that signal these dimensions of care. This would formalise what most beekeepers already practice and highlight the imperative of this important practice tradition. Further, it would create less tension for tutors, aware of their pedagogical praxis (Edwards-Groves et al., 2018) but constrained by the strategic and practical arrangements of the institutions of VET (Brennan Kemmis & Green, 2013; Choy & Hodge, 2017), as well as align with newcomers’ inquisitiveness and shared concern about bees – similar to how beekeepers were drawn into keeping bees in the past (Crane, 1999).

Therefore, to summarise and answer the main research question: an analysis of the practices and practice architectures of vocational practices interrogates the changing practice landscape, to identify trajectories of changing practice and to evaluate the pertinence of different approaches and strategic visions for the education and training of vocational practices. This interrogation generates insights that are not readily considered or are overlooked in the consultation process of qualification endorsement, development and approval, or can be advocated for on behalf of others affected by changing practice landscapes, for example for “smaller players” in the industry. This introduces the political dimension of “really useful knowledge” (Avis, 2017, p. 188) as the lived everyday struggle that anticipates the transformation of societal relations as opposed to “useful knowledge” that normatively positions VET to develop the productive potential of workers through transformed work processes (Anderson et al., 2004; Avis, 2012, 2017). These insights illuminate VET’s extant and potential role in the changing practice landscape as well as how VET contributes to changing the practice landscape. As an evaluation tool to identify the most appropriate mixes of provision to serve stakeholders’ interests, analysing vocational practices using the TPA highlights tensions inherent in the commercial practice landscape to then advocate best types of provision not from the interests of elites but according to those conditions as they are identified in practices and that inform long-term and morally committed ethical vocational praxis.

Relevant beekeeping training for just transitions: a practice perspective

The final two sections of this chapter provide a commentary synthesising the analysis above with key debates presented in the literature review and providing some recommendations. In Chapter 2 the current policy discourse on just transitions was outlined. In that chapter, two “schools” were stated; on the one hand, “sustainability transitions” concerned with “the dynamics of structural change in light of socio-technical advances and ecological limits” (Swilling, 2019, p. 5), and on the other, those that envisage a “post-development, non-neoliberal, post/non-capitalist, biocentric and post-extractivist future” (Swilling, 2019, p. 5). The review of VET policy rhetoric for just transitions identified that it belonged to the former, “sustainability transitions” school, promulgated in a VET system that aims to address technical and practical approaches to change – where change is determined by changes to the system imperatives (e.g. technical) or requires independent, interpretative action among practitioners in their praxis (e.g. practical) (Kemmis, 2022b). This is evident, for example, in the context of the recent reforms of RoVE as a technical

solution to some enduring problems with New Zealand's VET system, and the practical challenges faced by stakeholders in VET to navigate the intended, enacted and experienced curriculum (Billett, 2011; Chan & Huntington, 2022a).

The other, "post-development" (Swilling, 2019) school however is less apparent although its foundation, I suggest, is evident in the aspirations of the korowai system and the possibilities it affords for new ways of interpreting the meaning, value and approaches to VET in New Zealand. This investigation has contributed to these new meanings through identifying how the sayings, doings and relatings of practices illuminate the conditions of possibility (Kemmis et al., 2014) of practices to overcome contradictions in the system – technically, practically but also critically – to suggest new meanings are entangled in the unfolding of vocational practices themselves that can be collectively drawn upon to transform practices towards sustainable and socially just practices, or otherwise interrogated for the reasons that constrain the realisation of these practices.

The analysis and findings in Chapters 6 and 7 suggest that beekeeping practice traditions are aligned with a "post-development" sensitivity through the affective dimension of care enabled by the unique human-bee relationships sustained over the past 150 years through the advent of the Langstroth system. While the analysis identified that this relationship is being challenged, for example through the competitive commercial environment and global threat of invasive pests and diseases, a pedagogical praxis remains poignant in the projects of care, concern and actions to sustain colonies on a day-to-day and seasonal basis. Unfortunately, this has now become an obligation; colonies can no longer survive the scourge of *Varroa* on their own. In this way, beekeepers are not only emotional guardians and stewards of bees but are also now custodians of their very existence with a very important responsibility to undertake.

The practice perspective of beekeeping therefore suggests that what is relevant to learn and why can be understood from the technical, practical and critical lenses (Kemmis, 2022b). Technically, the demand generated by the global consumption of bee products and horticultural products produced through pollination requires beekeepers who can sustain their colonies to be productive. In turn, the commodification of bees and what they do (e.g. production) support the livelihoods of beekeepers. For VET, this links to the notion of "skills for work, jobs for growth" (Anderson, 2009a; McGrath, 2012) and variations of the purposes of VET described by the political economy of skills traditions (Oliver et al., 2019). Therefore, improving an understanding

of the conditions of possibility (Kemmis et al., 2014) of vocational practices identifies disconnects that can improve the efficacy of the existing VET system. This is important for VET for just transitions that aims to improve social outcomes through offering training that leads to ongoing opportunities for employment throughout an individual's life and life circumstances (UNESCO, 2022).

However, this technical approach was not the only identified meaning and value of learning to become and be a beekeeper. Practically then, a range of pedagogical and curricular approaches were identified in the analysis. What was relevant to learn was both to be productive in the apiary – working and managing hives in the apiary throughout the day and week and over the season, however also being inculcated into the way of life of being a beekeeper – the long and irregular hours, strenuous working conditions and physical requirements entailed in shifting and lifting hives and honey. Here, the affective dimension of care was pronounced as it was the propensity for beekeepers to work under pressure however diligently and methodically with attention to care and developing a full sense regime and deep local knowledge of the environment of each apiary that beekeepers contributed to the completion of tasks and the continuation of those traditions and idiosyncrasies of those operations, and broader practices of beekeeping. This required unique, situated pedagogical approaches entangled intricately with each hive, in each apiary that were also regionally specific, to harness New Zealand's unique flora and conditions for beekeeping. In other words, the “lifeworlds” (Dall’Alba & Sandberg, 2010) that beekeepers occupy are snuggled in the valleys, fields and workshops scattered around the country – with their own local histories, contributing to the ongoing broader global histories of beekeeping practices.

Extending this line of inquiry, the findings suggest that critical approaches are also necessary to understand the dynamics involved in trajectories of large-scale production and global consumption of bee products and the horticultural industries they support through pollination that have similar production imperatives and capacities. The “industry perspective” captured in the strategic purpose statements and graduate profiles was identified to offer an impoverished account of beekeeping practices and practice traditions, creating tension between the intended, enacted and experienced curriculum and dissonance between the expectations of newcomers and employers. Contentiously, the industry perspective ignores the dimension of care and on the contrary makes explicit those projects that reproduce practices that can be untoward, for example, in focusing on

forms of productivity generative of the competitive commercial landscape, eroding trust and friendships, overstocking the landscape with bees, and not taking care of colonies that increases the prevalence of pests and diseases, and so forth. These contentious issues are not reflected in the qualification or programme settings, raising questions about how newcomers might come to know and experience them.

Thus, while the language and content of qualifications and programmes are congruent with some aspects of practices observed in the field, the projects in which they are framed are different. Critically then, stakeholders located in the various “cogs in the system” can reflect upon, collaborate and consider alternative conceptions of what it means to be, know and do, and become and belong in beekeeping, by understanding those traditions from the past that sustain meaningful practice and interrogating those changed practices that contradict these traditions and are challenging the practice landscape. Taking a backwards-facing approach to informing the future of VET and vocational practice could also disrupt the legacies of “productivism” (Anderson, 2009a) and interrogate the conditions informing how sustainability transitions without a post-development lens unfold in the sites of practices (Swilling, 2019). This confirms the need to reconceptualise VET and “seek to fit it for a better purpose while also potentially expanding its focus and reach and/or reimagining its purpose in ways that can respond more substantively to shifting conditions” (McGrath, 2023, p. 160).

Therefore, in summarising the notion of “relevance” of beekeeping for just transitions from a practice perspective, the findings identified the challenges facing the traditions of beekeeping in New Zealand that are changing practices and practice arrangements. However, the traditions of care, deep local knowledge, and importance of relationships remain embedded (and embodied) in beekeeping practices, the landscapes where these unfold and in communities of beekeepers that manifest as forceful resistances to the singular projects of the commodification of bees for the narrow projects of profits. A practice-theoretical account and the TPA makes visible these conditions of coming to practice differently through the commensurability found in the site (Kemmis, 2022b). By utilising the practice-based approaches proposed in this investigation, collective and critical reflections on the meaning and value of beekeeping and beekeepers can be made, to highlight beekeepers not as entities that produce but rather as guardians and stewards of bees protecting the productivity of bees to survive. This provides a valuable resource to inform

strategic, pedagogical and curricular responses contributing to a relevant VET that supports sustainable livelihoods while interrogating the consequences of unsustainable productivity.

Recommendations for apiculture education and training

1. Apiculture education and training needs to incorporate the affective dimension of care in its qualifications and programming.

The findings support the recommendation that what I have termed the “affective dimension of care” captured in Chapter 6 is inherent in the traditions and longevity of beekeeping practices. It was observed in the doings – how beekeepers worked methodically and diligently with their hives while maintaining a high degree of focus and attention to care; sayings – in how colonies were talked and thought about in terms of their wellbeing and long-term seasonal care; and relatings – how care for bees was an important dimension bringing communities of beekeepers and others together in the care for their personal colonies, regional colonies and wider global populations of bees.

The explicit industry focus on the production of bee products and pollination prescribed in the various outcome statements makes implicit the affective dimension of care. Therefore, how the affective dimension of care can be moulded into existing qualification descriptors requires consideration. This can occur through the consultative process during qualification development, review and approval to include new ways of conceiving this dimension and to redefine the strategic meaning and focus of the qualification. For example, it can be supported by language that communicates the role of beekeepers as guardians and stewards of bees. This is reflected in some existing documentation, for example, in Career New Zealand’s use of the term “Kaitiaki Pī” (Careers New Zealand, 2023) where kaitiaki means a caretaker of pī or bees. In addition, mātauranga (Māori worldview) and kaupapa Māori (Māori agency) perspectives and the principle of kaitiakitanga (spiritual and material guardianship) could be incorporated into the various qualification and programme content as a form of culturally responsive VET that celebrates a future vision for beekeeping enjoining principles of production/productivity of beekeeping goods and services with ecologically sustainable practices and an ethics of care. This more closely aligns with the “lifeworld’s” (Dall’Alba & Sandberg, 2010) of beekeepers identified in the analysis. It could also contribute to the transformation of beekeeping practice arrangements that are commercially and ecologically sustainable moving forward.

2. VET programming needs to emphasise the long-term commitments and dedication required to contribute successfully to the continuation of the traditions of beekeeping practices.

The findings identified a disconnect with the strategic purpose statements and employment pathways published in the apiculture qualifications, where the assumption is made that completing the programme or apprenticeship will lead to limited supervision or supervisory roles. On the contrary, the findings identified that the practices entailed in these roles requires significant time in one organisation and the situated contexts of its apiaries to develop the types of hive work proficiency to complete tasks under pressure and local knowledge generative of effective SCM planning and decision making. This further requires commitments and dedication from newcomers/novices into that organisation to justify the socialisation of these learners by more experienced beekeepers into their organisational practices.

The NZQA recognises that employers have more specific and immediate requirements that require consultation in the development of programmes (NZQA, 2023d), however the qualification and graduate profiles alone do not reflect the types of proficiency and long-term development of expertise that warrants employer investments in training. Rather these investments occur when employers identify newcomers' proclivity, dedication and commitment to work in their operations and apiaries. This points to the importance of writing more accurate strategic purpose statements and employment pathway prescriptions that serves an important information tool to learners and employers, reducing the likelihood of disparate experiences between training and work, and improving understandings of the relevance of the qualifications in developing occupational identities of becoming and belonging in beekeeping practices.

3. There will always be a demand for experienced beekeepers however in ways that do not correspond to the logics of the existing VET architecture.

The dissonance between newcomer expectations of practice and employer-driven demand for dedicated beekeepers motivated by the craft suggests there are reasons for becoming a beekeeper that do not correspond with how beekeeping is narrowly positioned in the current suite of apiculture qualifications and programmes. Rather, the infatuation with bees, what they do, and the lifestyle of beekeeping, is an appeal that cannot be adequately quantified in strict measures of education outputs or labour market analysis. On the contrary, the appeal of beekeeping as a way

of life from the conception of guardianship and responsibility for bees can be a catalyst for transforming the industry towards more sustainable modes of production. Celebrating the role of beekeepers as kaitiaki or guardians in qualification language and the formal careers support and advice services of providers to prospective learners would lead to more aligned outcomes between newcomers and regional communities of beekeepers. This can further highlight the unique long-term dimensions of sustainable productivity, inherent in the traditions of beekeeping practice, to be advocated for and included as a prospective view in broader national industry planning for education and training.

The role of introductory beekeeping courses held by regional beekeeping clubs or local communities of practitioners already serve this purpose by providing opportunities for newcomers to experience working with hives. Micro-credentials, recognised on the NZQF and delivered through TEOs within the formal system, could support this type of entry-level provision however would also consider the how the tensions between the commercial realities and affective dimensions of the beekeeping practice landscape can be included in any formal specifications. This can help to link the informal with the formal and through a critical reframing of the curricular outlined above, lead to innovative, regionally-led and contextualised approaches to teaching and training for apiculture, similar to the informal family-style apprenticeship arrangements that traditionally supported initiating newcomers into beekeeping.

Chapter summary and conclusion

The purpose of this chapter was to bring together the findings and present a synthesis of these to address the main research question. Five discussion points were presented and elaborated. The synthesis suggests remedies to some of the disconnects and disparities identified between VET, as it is positioned in the qualifications and programmes, and practice perspectives of beekeeping are possible. However, for these remedies to occur requires recognising the tensions between the different perspectives of beekeeping as they are entailed in the strategic vision, language and content of the qualifications and programmes against the practices and practice arrangements of beekeeping. This concludes the case study. The next and final chapter provides conclusions to the investigation, summarising key ideas and highlighting broader contributions.

Chapter 10 – Conclusions

This final chapter brings together and concludes the investigation; talking back to the premise outlined in Chapter 1 and summarising the findings and discussions raised. I first summarise how a practice-based approach allows for an inversion of the dichotomy between VET and vocational practices to understand an alternative vision of VET as being entangled in the history(ies) of vocational practices. I then summarise the key ideas raised, overview the contributions of the investigation warranting further research, and outline some identified limitations before offering concluding remarks.

Vocational practices as VET

In Chapter 1 the thesis was made that two visions for a transformative VET exist: the first is the normative and aspirational vision however one tied to its legacies of productivism (Anderson, 2009a) carried over into the uncertain future as a socio-technical imaginary (Avis, 2021). The second vision that formed the basis of this investigation was to understand a vision for VET informed through an exploration of its symbiosis and tensions with vocational practices.

The accumulation of the research activities and findings suggests the disparate arrangements between VET and vocational practices can be inverted and reframed to emphasise that vocational practices always shape VET through their histories of learning and change and in doing so, navigate or entangle VET in their own way. This provides opportunities to re-conceptualise VET from one tied to its legacies of “productivism” (Anderson, 2009a) promulgated in its own “imaginary” (Avis, 2021) to one of a historical symbiosis running through practices – vocational practices as VET. By identifying and understanding vocational practices according to their own logics, it is possible to challenge the various moving parts or “cogs” of national VET systems to align with concrete understandings of how VET, learning and change is encountered between people and things in sites of practices.

Similarly, through a better understanding of vocational practices it is possible to identify how VET shapes vocational practices in novel and transformative ways. This approach brings

practitioners' praxis into focus, to understand how people and communities navigate the contradictions posed between the dilemma of social mobility, economic growth and livelihoods in a finite world. Arguably, as the world continues to confront scales of unprecedented change, it is the gradual unfolding of this praxis and the opportunities afforded by critical and reflexive practitioners, in VET and in vocational practices, that the aspirations for just transitions will be realised. This investigation contributes to an understanding of these complexities and justifies this approach to exploring these complex relationships further.

Summary of the key ideas

1. Understanding the practices and practice architectures of vocational practices locates the tensions and contradictions between system imperatives for VET and how a vocational praxis is understood and unfolds in daily practices.

Through a detailed empirical account of the practices and practice architectures of beekeeping practices as one example of a vocational practice, the investigation provided a nuanced account of what was relevant to learn and why according to the projects, practice traditions and changing practice landscapes of beekeeping. This enabled an analysis of the symbiosis and tensions between practice perspectives of beekeeping and how beekeeping practices are positioned in New Zealand's recent VET reforms through a review of the current apiculture qualifications and programmes specifically.

Critically, the findings detailed in Chapter 8 identified a disconnect between the strategic focus of an industry perspective that promulgates projects of production for profit over affective dimensions and projects of productivity for care that are crucial in the ongoing reproduction of beekeeping practices and unique human-bee interactions and relationships. This tension was identified to manifest at the point of qualification endorsement, development and approval through the consultative process between WDCs and industry representatives. Therefore, identifying tensions and their causes allows for further analysis of the impacts such disconnects can have on the efficacy of VET to realise just transition objectives, discussed below.

2. Understanding the symbiosis between vocational practices and different elements of a national VET system, for example qualifications and programmes and the different mixes of provision, can address disconnects and disparities that diminish the efficacy of the

system in realising its transformation aspirations, while also evaluating the impact an effective VET can have on the future trajectories of those practices.

The tensions established in an analysis of the different perspectives of beekeeping practices (i.e. industry focus versus practice perspectives), enabled closer scrutiny of how these tensions unfold in sites of VET provision and the effects of these on the purposes and functions of the different elements of the VET system. While much of the curricular was identified to be congruent with some aspects of practice, other important dimensions of practice were missing and it was questionable whether the curricular and institutional arrangements of provider-based provision could meaningfully and accurately account for the complexities of those practices under consideration. In this instance, this diminishes the intended efficacy and value of this mix of provision (e.g. provider-based provision) and is congruent with examples of enduring deficiencies with VET.

An exception however was the Apprenticeship in Apiculture programme. This mix of provision was identified to be more aligned with the learning arrangements that expose learners to the time pressure to develop hive work proficiency and time allocation to develop deep local knowledge and seasonal colony management expertise. It was also more aligned with how newcomers are inculcated into the idiosyncratic practices of an organisation/operation and their geographically specific apiaries. A wrinkle with the apprenticeship however is that the arrangements of the competitive commercial landscape may consolidate the practices of larger firms whose resources enable them to on board apprentices but whose imperatives are for industrial scales of production and profit. This can have a long-term effect on the homogenisation of the practice landscape, creating new practice traditions at the expense of sustaining other traditions, especially problematic if the affective dimensions of beekeeping practices are further eroded or lost as indicated by the changing practice landscape. Thus, in ways that VET can shape vocational practices vis-à-vis vocational practices shape VET, critical pedagogies and praxis can (or could) emphasise the notion of *kaitiakitanga* or guardianship and stewardship at the strategic level of qualification development and the practical levels of curricular design as a means of encouraging the reproduction of these important affective dimensions. Understanding fuller accounts of vocational practices and practice architectures, in other settings, would reveal different dimensions of practice but possibly similar tensions and possibilities.

3. Recognising tensions and working towards resolving them provides opportunities for new meanings and relationships between vocational practices and VET in ways that have yet to be understood or formalised, that can further encourage critical and collaborative transformations in those sites that also contribute to a new vision for VET.

The investigation identified that while provider-based provision did not simulate the working conditions of the commercial practice landscape, it did nonetheless provide the arrangements for learners to develop their own pedagogical praxis outside of the pressures caused by the competitive commercial work environment, foregrounding opportunities for new ways of conceptualising provider-based contributions or other provisional arrangements for the meaningful reproduction of vocational practices. This stands as a disconnect to the instrumentalist imperatives of the “cogs in the system” rationalisation of VET provision and productivist “training for growth and skills for work” (Anderson, 2009a) logic. However, it does align with the aspirations of the korowai system to offer a holistic, learner-centred vision for New Zealand’s future VET system.

Therefore, through the process of identifying and addressing tensions and deficiencies between vocational practices and VET, it is also possible to identify and implement new approaches to learning as “coming to practice differently” (Kemmis, 2022b). This allows for opportunities to develop new theoretical-conceptual understandings to learning the substantive practices of vocations that can generate new strategic visions and practical approaches in the positioning and delivery of VET. This works back to the above two points about the value of using practice-theoretical approaches and the TPA as an approach to understanding and addressing disparities and disconnects between VET and vocational practices. It also points to the value of this approach in delineating a new vision for VET as a conduit for transformative possibilities for the learning and reproduction of vocational practices that are ecologically sustainable and socially just moving forward.

Contributions and further research

Theoretical

In Chapter 2 current theoretical debates in VET research were outlined (Langthaler et al., 2021; Lotz-Sisitka, 2023; McGrath, 2012, 2023; McGrath & Deneulin, 2021; McGrath & Powell, 2016a; McGrath et al., 2020; McGrath & Yamada, 2023; Powell & McGrath, 2019; Ramsarup et al., 2023), suggesting a “hybrid approach” is under way bringing together engagements between

political economy accounts and critical realism, the capability approach, and geographies of skills and political ecology (McGrath & Yamada, 2023, p. 7). However, they also highlighted the disparity of these approaches with others will lead to continued tensions over matters such as “the interplay between structure and agency; questions of scale; and the degree in which analysis should move beyond the formal frames of education and industry” however sharing “in common with the constructivist account the importance of context and need to eschew simplistic structuralist or agentic accounts” (McGrath & Yamada, 2023, p. 7).

Where a post-political economy framework using a critical capabilities approach as a critical analytical framework to researching contemporary issues in VET have been proposed (McGrath, 2012, 2023; Powell & McGrath, 2019; Ramsarup et al., 2022; Ramsarup et al., 2023; Tikly, 2013, 2015), this investigation proposed the TPA provides an additional and robust theoretical resource to “slice” (Schatzki, 2016, 2019) observations of social phenomena through empirical analysis of the sayings, doings and relatings that underline the practice architectures that sustain them. This contributes to a distinct ontological account of practices generative of novel entry points into understanding normative, epistemic and social possibilities (McGrath, 2023).

Identifying these practices is an interpretative exercise (Kemmis, 2022b), a claim critical realism aims to eschew, however these analyses are (in)formed or carried through the intersubjective spaces that give social phenomena practical intelligibility (Schatzki, 2010, 2019) or meaning and are therefore a valuable and valid resource to be investigated, especially if this invites or leads to collaborative and collective consensus and action. In addition, the methodological issues of representation that researchers in the field aim to overcome (Tikly, 2013) are handled in practice-based approaches through an eclectic “toolkit” (Nicolini, 2013) of methodological resources and tools researchers can critically reflect upon, select and deploy to observe social phenomena from multiple lenses, an approach I suggested could be enhanced through a collaborative “workshop” approach.

Hence, the use of the TPA provides both a heuristic device and valuable resource to analyse social-cultural and social-material relationships in the sites of social and material reproduction, such as vocational practices, but to also identify the “conditions of possibility” (Kemmis et al., 2014) that shape (and are shaped by) practices, to understand those practices that are untoward to broader social justice or sustainability concerns, or to illuminate and advocate the transformational

possibilities inherent in them. Thus, as a form of philosophical-empirical inquiry (Kemmis, 2022b), further research using the TPA can contribute empirical accounts of vocational practices in different geographical and occupational sites of practices generative of new theoretical accounts of these practices (e.g. beekeeping) and their respective practice architectures and landscapes. The approach could therefore support political-ecology-economy of skills (Lotz-Sisitka, 2023; Ramsarup et al., 2022) analysis in different regional/national contexts and enhance the contributions of critical capabilities approaches (McGrath, 2023; Powell & McGrath, 2019; Tikly, 2013, 2015) or other post-development accounts in the context of just transitions (Swilling, 2019).

Strategic

Many of the deficiencies with VET systems globally and in the New Zealand context were detailed in Chapters 2 and 3. Allais's (2012, 2014) research, for example, identifies the limitations and untested success claims of qualification frameworks. This falls under a broader critique that the commodification of skills – the “skills fetishisation” – generated through the promulgation of narrow economic imperatives for VET, stands to distort education and its potential to support human flourishing (Wheelahan et al., 2022), an argument supported by McGrath's (McGrath, 2012, 2023) critique of the toolkit approach to national VET reforms.

The findings confirm contradictions remain between the aspirations of New Zealand's recent reforms and the expected impact they are to have on the ground, presented analogously in Chapter 3 as the dichotomy between the learner-centred vision of the korowai system and the more mechanical and instrumentalist “cogs in the system”. This dichotomy further confirms the thesis that two visions of VET exist. In responding to these contradictions, this investigation highlighted the strategic and provisional arrangements that are likely to generate desired results for targeted stakeholders (e.g. learners and employers). This included, for example, an analysis of the types of situated provision that develops hive work proficiency and the multi-season, time-bound commitments required to develop deep local knowledge and expertise in specific apiaries. It also included an analysis of the arrangements that provide opportunities for newcomers to be adequately socialised into the wider arc of the competitive commercial environment, to build the relationships that will sustain the development and progression of an occupational identity of “becoming a beekeeper”, either as a learner-employee or in starting an independent beekeeping operation or enterprise.

However, the investigation illuminated that these conditions were not, at present, enabled by the more rigid structures of the cogs in the VET system and in other instances constrain the realisation of meaningful praxis through a strategic industry focuses that overlooks the affective dimensions that are equally if not the most important factors in the ongoing reproduction of meaningful and sustainable beekeeping practices. These factors are amplified when considering the role of human activity in a finite world and on fragile ecosystems. Therefore, the strategic contribution of this investigation exposes contradictions and encourages reflection on deficiencies with VET system imperatives so that VET interventions align more closely with how vocational practices unfold but to also recognise how VET interventions can or do implicate the ways practices come to be practised differently (Kemmis, 2022b). This extends beyond the notion of relevance and VET too. The findings suggest that improving outcomes for other notions in the transformation agenda for VET, such as the need to improve the inclusivity and equity of provision and opportunities for lifelong learning (UNESCO, 2022), can also be informed through an analysis of vocational practices and their practice architectures. These additional policy areas fell outside the scope of analysis in this investigation but warrant further attention.

Therefore, as a research approach and theoretical resource, the TPA can be used to address issues of VET efficacy in other geographic, disciplinary or industry/occupational focus areas. This aligns with the purposes and functions of advisory bodies such as CoVEs or RSLGs. Similar investigations of other vocational practices, for example forestry work, dairy farming, or other occupations that fall under the respective remits of the different WDCs or industry bodies, could be undertaken to ascertain the conditions that shape and are shaped by those practices. These investigations would yield very different accounts of practices; their symbiosis or tensions with VET or their inherent transformative possibilities that can be harnessed to address strategic deficiencies and realise principles of just transitions. In summary, there is substantial potential for the use of the TPA and practice-based research in improving strategic outcomes for VET in new and encompassing ways, in New Zealand and globally.

Practical

Throughout the investigation, the practical dimensions of VET provision and research on vocational pedagogies and curricular has been signalled. This includes research on the importance of workplace (Avis, 2014), work-based (Billett, 2001b, 2004) and practice-based learning

(Vaughan, 2018) and the notion of learning as becoming as important in the subjective occupational identity formation that informs how learners are socialised into vocational contexts and learn, as becoming and belonging in their vocational journeys and the variations of learning that unfolds in this process (Chan, 2020; Filstad et al., 2019; Hager & Beckett, 2019).

In ways that support the sparse literature on vocational pedagogies (Lucas, 2014; Lucas et al., 2012) and developments in understanding a vocational curricular (Billett, 2011), this investigation provides further empirical insights using a comprehensive theoretical approach to understand the reasons why pedagogically rich activities (Billett, 2023) and vocational thresholds (Vaughan, 2018; Vaughan et al., 2015) are realised and the conditions that enable (or constrain) this learning in different contexts. While Chan (2020) has noted the novelty and complexity of this approach among other practice-based research approaches “will require time and effort to understand and apply in future VET studies” (p. 194), this investigation provides an entry point into this promising way towards understanding the complex nature of learning in VET and vocational practices.

Finally, another contribution is how the TPA can be used to identify and promote culturally responsive pedagogies. Culturally responsive pedagogies are founded on dialogue as a two-way, dynamic interaction that opens possibilities for change in people and the contexts of learning, respecting diversity and “understanding the potential for learning and growth through the exploration of those differences” (Berryman et al., 2018, p. 7). Through a site ontological account of worldviews and standpoints entangled in distinct landscapes of practice, it is possible to explore how the symbolic (cultural-hermeneutic), substantive (material-embodied) and critical and emancipatory (social-political) dimensions of vocational practices are arranged meaningfully and transformed in perpetuity in these sites. Therefore, the gradual, ongoing iterative process of dialogue in the relational sites of VET provides opportunities for culturally responsive pedagogies and curricular to find their way into and transform vocational practices, either as forms of resistance to the dispossession and destruction of Indigenous lands and ecological and spiritual relations to them (Stewart-Harawira, 2018), or as a form of communicative action and power (Kemmis, 2022b). This investigation provides an entry point to further explore how the practice arrangements of vocational practices and VET support culturally responsive pedagogies as local

forms of resistance and collective action to realise socially just and ecologically sustainable transitions.

Some caveats

Two limitations were identified through the progression of the investigation, highlighted here as limitations of the approach in general with some suggestions on how these could be overcome to support future research projects utilising this approach.

The first limitation, identified in Chapter 5, was that access to a wider range of practices in the beekeeping case study was unavailable, often for unknown reasons. Similar to how beekeepers must navigate the competitive practice landscape, I found difficulty in navigating the research landscape of securing access to some research sites. I cannot speculate why this may have been, but can form some suppositions. It is possible the participants approached were simply too busy in their work to on board a researcher as a worker in their space. Some communication indicated as such. Others allowed the wasting of time to clearly signal my research requests were unfeasible. Yet other requests were ignored entirely despite unforced but nonetheless repeated efforts through formal communication with known official contacts. Therefore, it is possible there was hesitancy, scepticism, disinterest or resistance to the objectives of the research and the approaches proposed in entering their field or sites of practice. If this is the case, approaching an ethnographic research project with the intention of full participation may be an insurmountable challenge and a considerable limitation of this approach moving forward. The researcher's nuance in navigating access to sites of practice is therefore an important consideration. On this point, the "workshop" logic is useful because it allows for the flexibility of approaches. For example, another approach could be to utilise critical participatory action research (Chan, 2020) so that practitioners whose practice is under view suggest, buy into, and collaborate in the research activities as a "practice changing practice" (Kemmis et al., 2019). This would also require navigating these sites to build trust however on the assumption that there would already be mutual value in doing so.

The second limitation is whether the approach can be practically applied under the arrangements of research conditions not encountered or availed in this investigation. The benefit of time availed through the year-long observation afforded by the conditions of my doctoral research allowed me to be socialised appropriately into the research setting to confidently make situated generalisations of the sayings, doings and relatings in the field. Therefore, it is unclear

whether the approaches used in this investigation are applicable or appropriate or could be realistically undertaken in other settings under different conditions. Again, the “workshop” logic is useful here. For example, Lizier et al.’s (2023) research using the TPA to explore changes in workplace learning used the “interview to the double” technique (Nicolini, 2009a) to have participants reflect upon and communicate their work(ing) processes through interviews. This provides one promising example to capture rich details of practice while managing brief or distant encounters in situated practice-based research contexts.

Another related factor is whether it is safe to undertake practice-based research in sites of vocational practices that have a high degree of risk to personal injury. Beekeeping had its dangers, for example in shifting and lifting heavy equipment, however none that required special health and safety training or licensing that impeded the research activities. On the contrary, practice-based research in vocations that are dangerous and require obtaining the requisite health and safety training or licensing, if practical to do so, can also provide rich accounts of those practices. Therefore, in summary; access to quality sites of researching vocational practices that capture the rich and complex details of practices however done so in a way that is mutually wanted, feasible, and safe, are all considerations with a practice-based approach.

Concluding remarks and postscript

As this thesis was being finalised in December 2023, the newly elected coalition government confirmed a post-election priority that Te Pūkenga was to be disestablished, bringing to a premature end the progression of the most significant change in New Zealand’s VET system since the neoliberal reforms of the late 1980s and early 1990s. The reason given for the disestablishment was to return ITPs back to their regional autonomy and remove centralised administration, although given the unsustainable viability of this previous model it is unclear how many ITPs will be retained (Gerritsen, 2023c). There is also uncertainty whether other RoVE initiatives will be affected, such as repeals to the unified funding system or the dis-establishment of WDCs and RSLGs (Gerritsen, 2023a, 2023b). There is also no indication nor guidance by the new government on how ITOs shall operate when Te Pūkenga is disestablished (Schwanecke, 2023) assuming these shall revert back to operating separately as work-based training within the hybrid model.

These recent events are indicative of the numerous debates backgrounding the thesis. Arguably, the disestablishment of Te Pūkenga is an opportunity lost to build a new identity for

VET in New Zealand, for example, through working towards realising the korowai vision for VET that could have improved the status and standing of VET in New Zealand and internationally. As Billett (2020) notes, the success of VET in terms of improving participation relates to its standing and parity of esteem, not just in the minds of prospective learners and employers but also those privileged elites who traditionally and continue to influence VET systems (Billett, 2014, 2020). On this point I see the repeals as a step away from giving more voice to learners and their tutors.

In addition, discontent that Te Pūkenga lacked a clear operating model (Schwanecke, 2023) was indicative that the entirely new organisation was always a work in progress, finding its feet through new relationships with other stakeholders, notably WDCs and RSLGs, that were yet to transition to effectively serving the regional and industry functions of the previous hybrid system, while creating something completely new and untested rather than maintaining the status quo (Leslie, 2023). In this way Te Pūkenga was always very ambitious and reliant on the unfolding of time to realise any successes. On the contrary, once repealed it is uncertain how the remnant patchwork of RoVE entities that supported the vision of Te Pūkenga will now function other than to return to the operational certainty for VET that has developed over the past 30 years however without addressing the same underlying problems that RoVE attempted to resolve (Kerr-Laurie & Schwanecke, 2023).

This investigation has shown, echoing Maurice-Takerei (2016), that despite these contestations and perennial cycles of reform, the education and training of vocations will continue, navigating the uncertainties posed by the complex and competing interests of different stakeholders in VET through variations of the “cogs” in the VET system. This investigation has argued new meanings of the relationship between vocational practices and VET are possible when attention is given to understanding the practice architectures that hold these practices in their course that further provides insights into possible trajectories for VET in ways that have come before but might also agitate for new directions moving into the future.

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Appendices

Appendix A: Participation information sheet

Project Title: "Vocations as practice traditions: symbiosis between vocational practice and the aspirations for Vocational Education and Training in Aotearoa New Zealand".

Research Information Sheet – Participant Observation

Tēnā koe,

My name is John Howse. I am conducting research on Vocational Education and Training as a part of my Doctoral studies in Education through the School of Education at the University of Waikato. The aim of this research project is to understand how everyday vocational practices, such as beekeeping, unfold in the workplace and how by learning more about this we can also improve vocational training outcomes for existing and future New Zealand students and employers.

As part of my research, I would like to be a part of your workplace or training programme for a period of time to observe and discuss some important aspects of your work practice and/or training. For this research I am interested in issues of:

- Technology and the future of work (e.g. automation or digital technologies affecting the vocation)
- Inclusive participation (e.g. inclusion of different groups of people in your profession)
- Sustainable practice (e.g. practices that are sustainable or could be changed to be sustainable)

During my placement I may ask some questions about these issues as well as write notes or take some photographs either of the environment (zoomed out photo) or of specific work tasks (zoomed in photos) to help me recall information that will be careful never to capture faces or features of individuals. All research activities will be conducted outside of working and study hours or during any breaks and questions will be asked when it is appropriate (e.g. when we're driving to different locations). No research activity will interfere with work or study or the tasks at hand. In addition, I will be working and studying as your employee or student, unless I have stated otherwise, and therefore hope to be treated as such. A diagram of some key timelines for my research is presented on the next page.

Importantly, my research will not make judgements about you or your organisation and your names and the places where your organisation operates, except for very broad references (e.g. "somewhere in Taranaki"), will remain confidential. Your confidentiality in all aspects of this research will be respected and should any names be used, 'false names' (pseudonyms) will be used unless you expressly wish for your name to be used. It should be noted that while I will do my best to protect your anonymity, there may be some instances where identity could be inferred or complete confidentiality cannot be assured, in which case I am happy to discuss this issue with you. All other contractual obligations, operating standards and health and safety will be adhered too. If you agree to being a part of this research project, your details will be collected on an informed consent form and this will be kept confidentially by me.

I will record my observations and feedback in a daily work/study journal that I will write after working hours. You have the right to among other things:

- Refuse to answer any particular questions I may ask (e.g. "nah, I don't want to talk about that").
- Ask any further questions about the study that occurs during your participation.

- Withdraw your material and participation at any time until the end of the research period (e.g. “Hey, I would rather I withdraw from your study). This date is 12am 15th April 2023.
- View, change or comment on any work provided by you and recorded by the researcher. If you would like to do this, you may ask me in person or writing and I will present you with a summary of any notes I have taken that reflects your participation within three days of your request.
- Be given access to a summary of the findings from the study, when it is concluded.

When my research is complete it will be written into a research report of about five chapters and presented as a discussion in relation to the issues outlined above. It is also possible that the information could be used for other scholarly publication or presentations but only ever in relation to the topic outlined above. Should there be any disputes or concerns, please raise these with me, or in the case you are not comfortable with this, please raise these with my supervisor whose contact details can be found below.

If you are happy with me conducting this research then I shall get you to sign a **Participant Consent form**. By signing this it shows that we have an agreement in place for me to do the research, as outlined in this information sheet.

If you have any more questions or concerns about the possibility of me conducting this research, I am more than happy to discuss these with you.

Thank you very much for your time and help in making this study possible. If you have any queries or wish to know more please phone me or write to me at:

John Howse

Email: *howseitgoing@gmail.com*
Phone: 02040808079

For any queries regarding ethical concerns please contact my supervisor:

Pablo Del Monte

Te Kura toi Tangata-School of Education
Te Whare Wānanga o Waikato - The University of Waikato
Private Bag 3105
Hamilton, New Zealand
Email: *Pablo.delmonte@waikato.ac.nz*
Phone: 078384945

Appendix B: Informed consent form

Project Title: "Vocations as practice traditions: symbiosis between vocational practice and the aspirations for Vocational Education and Training in Aotearoa New Zealand".

Consent Form for Participants

This form is for you, the participant, to indicate consent for John to include your responses in his research. Please read it carefully and sign when you are ready.

I have read the **Participant Information Sheet** for this study and have had the details of the study explained to me. I have read and understood how the research shall keep my identity and information anonymous and confidential and that the researcher may use this information for other scholarly publications or presentations about this topic. My questions about the study have been answered to my satisfaction and I understand that I may ask further questions at any time.

I also understand that I am free to withdraw from the study at any time up until 12am 15th April 2023 which is the final day of the research period, or to decline to answer any particular questions in the study. I agree to provide information to the researcher under the conditions of confidentiality set out on the **Participant Information Sheet**.

I agree to participate in this study under the conditions set out in the **Participant Information Sheet**.

In addition, I understand it is my right to request a copy of any information provided by me before the end of the research period outlined above as 12am 15th April 2023, and that this would be presented to me in a summary form (Please circle the option below to indicate whether you would like this or not):

- a) Yes - I would like any information about what I have provided presented to me
- b) No - I do not want or need any information presented to me

(Please circle what applies). **I consent / do not consent** to the information collected for the purposes of this research study to be used.

Participant's signature: _____ Date: _____

Participant's name: _____

A copy of this form shall be given to you and a copy kept by me, the researcher, in a safe and secure way to ensure your confidentiality.

If at any time you seek further information, please contact me or my supervisor on the following details:

Researcher's name and contact information: John Howse: *howseitgoing@gmail.com* | 02040808079

Supervisor's name and contact information: Pablo Del Monte *pablo.delmonte@waikato.ac.nz* | 078384945

Appendix C: Sample email correspondence

Re: Seeking permission to conduct research with your organisation

Dear Sir/Madam

Tena Koe,

My name is John Howse. I am conducting research on Vocational Education and Training as a part of my Doctoral studies in Education through the School of Education at the University of Waikato.

I have received your contact from (where) and I am writing to see if it might be possible as a part of my research to come into your organisation and observe some of your work practices in relation to the beekeeping industry. Details of the research can be found in the attached information sheet and also provided below this email.

If this may be a possibility, please do let me know which other offices/persons I may need to seek permission from or feel free to get in touch for us to discuss further. If permission is granted and you are okay with this, an informed consent form will need to be signed between us as per University of Waikato policy and approved by the Human Research ethics Committee.

I look forward to hearing back from you.

Kindest regards,

John Howse
02040808079

The aim of this research project is to understand how everyday vocational practices, such as beekeeping, unfold in the workplace and how by learning more about this we can also improve vocational training outcomes for existing and future New Zealand students and employers.

As part of my research I would like to be a part of your workplace or training programme for a period of time to observe and discuss some important aspects of your work practice and/or training. For this research I am interested in issues of:

- Technology and the future of work (e.g. automation or digital technologies affecting the vocation)
- Inclusive participation (e.g. inclusion of different groups of people in your profession)
- Sustainable practice (e.g. practices that are sustainable or could be changed to be sustainable)

During my placement I may ask some questions about these issues as well as write notes or take some photographs either of the environment (zoomed out photo) or of specific work tasks (zoomed in photos) to help me recall information that will be careful never to capture faces or features of individuals. All research activities will be conducted outside of working and study hours or during any breaks and questions will be asked when it is appropriate (e.g. when we're driving to different locations). No research activity will interfere with work or study or the tasks at hand. In addition, I will be working and studying as your employee or student, unless I have stated otherwise, and therefore hope to be treated as such. A diagram of some key timelines for my research is presented on the next page.

Importantly, my research will not make judgements about you or your organisation and your names and the places where your organisation operates, except for very broad references (e.g. "somewhere in Taranaki") will remain confidential. Your confidentiality in all aspects of this research will be respected and should any names be used, 'false names' (pseudonyms) will be used unless you expressly wish for your name to be used. It should be noted that while I will do my best to protect your anonymity, there may be some instances where identity could be inferred or complete confidentiality cannot be assured, in which

case I am happy to discuss this issue with you. All other contractual obligations, operating standards and health and safety will be adhered to

If you have any more questions or concerns about the possibility of me conducting this research, I am more than happy to discuss these with you.

[Ends]

Appendix D: DEREK Ethics application approval

Te Wānanga Toi Tangata
Division of Education
The University of Waikato
Private Bag 3105
Hamilton,
New Zealand, 3240

Division of Education Research
Ethics Committee (DEREC)
fedu.ethics@waikato.ac.nz
www.waikato.ac.nz



3/9/2021

Dear John Peter Howse

Division of Education Research Ethics Committee Application Approved FEDU050/21

I am pleased to advise you that your ethics application for the project entitled "Vocations as practice traditions: symbiosis between vocational practice and the aspirations for Vocational Education and Training in Aotearoa New Zealand" was approved by Te Wānanga Toi Tangata Division of Education Research Ethics Committee on September 3rd, 2021.

Please be aware that the Te Wānanga Toi Tangata Division of Education Research Ethics Committee must be advised (by memo) of any changes to the details recorded in your ethics application. Please send any such advice to fedu.ethics@waikato.ac.nz. You will receive a memo of approval once the change(s) has been considered.

Kind regards

Co-chairs

Te Wānanga Toi Tangata Division of Education Research Ethics Committee (DEREC)