Stage One Addendum: Description of Research Methods

This report is a supplemental Research Methods document for the Scoping Phase of the PhD research titled **'Researching Transition Design in Practice:** *How might the uptake of regenerative agriculture in NSW be increased, by design?***'**

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This research seeks to contribute to the practice base of Transition Design by offering a case study in a new area (agricultural sustainability) and reflections on the implications of the case study for the methods and practices of Transition Design.

1. Researching Transition Design Practice

The emergence of Transition Design

Transition Design is an emerging area of research and design practice that was framed by Terry Irwin, Gideon Kossoff and Cameron Tonkinwise in 2014 (Irwin et al 2015) with the explicit goal of forming a design practice dedicated to designing for the transition of human behaviour to sustainable ways of living. Since the inception of Transition Design, the following milestones have been marked (Irwin, 2019):

2014   Transition Design was first launched at The School of Design (SoD) at Carnegie Mellon University as part of its 2014 roll-out of all new programs and curricula. The launch included the program (curriculum) framework and the Transition Design framework

2015   Knowledge dissemination & sharing begins
First Transition Design Symposium is held at CMU
Transition Design Monograph published

2016   Transition Design short course + Symposium (100 people/12 countries)

2017   Third Transition Design Symposium: Barcelona
Short course: Majorca

2018   4th Transition Design Symposium, Short Course and Increased Awareness
Transition Design offered as a track at the Design Research Society (DRS) annual conference

2019   Publication of Cuaderno 73
Emergence of a Global Network and Plans for an Institute

Transition Design (TD) names many movements and disciplines as inspiration and potential partners, including: Transition Research, Transition Towns, transitioning economies, the Great Transitions network, organisational transition, personal transitions, cosmopolitan localism, Socio-Technical Regime Theory, Post-Normal Science, Social Practice Theory, Human Scale Development, Social Ecology, Social Psychology, Critique of Everyday Life, Living Systems, Complexity theory, and more (Irwin et al 2015).

The term 'transition' connects TD to Transition Research, which "[originated] in Northern Europe within the academic fields of Innovation Management and Technology Assessment", with a focus on technical transitions like sustainable energy (Irwin et al 2015). In this context, the term 'transition' refers to the conviction that cumulative human endeavour is endangering our own

future and that "whole societies and their infrastructures must transition toward more sustainable states", and that it is expected that "that these transitions will require systems-level change" ([https://transitiondesignseminarcmu.net,](https://transitiondesignseminarcmu.net) Loorbach et al 2017).

From the Transition Research perspective, design is valued for how the complex human, behavioural, cultural, social as well as technical dimensions of change (etc.) are taken together in context so that we can better make sense of and act upon a wicked challenge:

> "Design…observes humans and the systems they interact with in their context and using the insights acquired during this phase frames the problem with due emphasis on human experience and the meaning derived through that experience…It has been argued widely and for long that, design is suitable for addressing wicked problems (Dorst, 2003; Goldschmidt, 1997; Rittel and Webber, 1973). It is a unique attribute of design problems that definition of them accommodate technical as well as socio-cultural and behavioural issues resulting from the dynamic interactions between humans and systems, which together create system behaviour…and meaning derived from that" (Gaziulusoy & Ryan 2017).

Qualifying the problem as 'wicked'

TD challenges fit into the class of challenges known as 'wicked problems'. Citing Dubberly, Irwin et al pinpoint the naming of wicked problems and the evolution of design practice to address wicked problems,

> "In 1972, planner Horst Rittel identified a class of complex 'wicked' problems that traditional design process was inadequate for addressing (Rittel and Webber 1973). Since then, design practitioners, theorists and researchers have worked to develop tools and methodologies better suited to these 'unsolvable' problems. In particular they have sought to integrate design's core competencies (visualization, prototyping and form-giving) [to which Dorst (2015) would add framing] with user-centered, social and generative research methods that continually evolve in parallel with a deeper understanding of the dynamics of social complexity (Dubberly 2008)" (2015).

Once Rittel named 'wicked problems', a habit developed in literature and among practitioners to first qualify how the challenge at hand is 'wicked' and then to explain how the practice in question hopes to (make a modest contribution to) address the wicked problem. Accordingly, I assert that the challenge I have selected, contributing to the transition of agriculture through increasing the uptake of regenerative agriculture, is indeed a wicked problem, because this specific transition is simultaneously a social, cultural, political, behavioural, technological, ecological and economic challenge that is hemmed in by the pressures of a powerful dominant regime.

Transition Design is explicit intervention for social change to sustainability: Transition Designers are change agents

Traditional forms of design, like product and graphic design do not have an explicit focus on social change and/or sustainability. This is not to say that designers don't bring that focus themselves; the point is that the discipline is not explicitly directed at those aims – unlike Transition Design which has sustainability built into its name. Transition Design draws from the lineage of Design for Sustainability (e.g. the design of products for sustainability), but the object of design may be different. Whereas the object of product design is a product, the object(s) of Transition Design may include products but are more likely to include structural and systemic interventions. These could include new businesses, policies, supply chain arrangements, processes, public campaigns, etc. – whatever intervention is deemed needed, by design.

It its explicit advocacy goal, Transition Design has much in common with and draws from the lineage of Critical Design Ethnography and Participatory Action Research. Barab et al, who wrote about critical design ethnography from the point of view of their instructional design practice (the design of materials to help people engage in learning), define critical design ethnography as: "a process that sits at the intersection of participatory action research, critical ethnography, and socially responsive instructional design" (2004). Although they have defined it in relationship to their own design practice (e.g. instructional design), critical design ethnography could be conducted from any socially responsive design practice that intersects with participatory action research and critical ethnography. This is where the lineage thread traces to Transition Design:

> **Transition Design is a form of participatory design that is informed by an exploratory, generative practice (inclusive of design and ethnography) and is guided by a socially responsive approach to activating a change agenda – in this case, sustainability.**

Unlike traditional forms of sociological research that seek to observe but not change and even unlike design (despite its interventionist nature and although some acknowledge that design is never politically neutral), critical design ethnography is deliberate about holding a social change agenda:

> *"The question of how to engage groups in collaborative work is central to participatory research, in which the researcher advocates an empowerment agenda while seeking to understand and build relationships with the community under study. In this type of work – what some refer to as participatory action research – the ethnographer's goal is to empower groups and individuals, thereby facilitating social change. In contrast to traditional ethnographic research in which the researcher seeks primarily to understand (not change) the conditions of the community being studied, participatory action research assumes a critical stance, in which the researcher becomes a change agent who is collaboratively developing structures intended to critique and support the transformation of the communities being studied"* (Barab et al 2004).

Barab et al hold three focal points, or criteria, that the designer must consider – trust, interventions and sustainability:

"Building <u>trust</u> is a necessary component of any relationship...We view trust as evolving based on many factors, including adopting a participatory posture, developing multi-tiered relationships, and having an evolving as opposed to an imposed agenda...

The second focal point is the designed <u>intervention</u>, capturing the assumption that critical design ethnography involves building a socially responsive design with the goal of supporting change. In our case, the intervention evolved over time as a dialectic between building a critique and designing online spaces; the design itself is continually being remade as specific structures are adapted to local contexts…

The third focal point involves <u>sustainability</u> and addresses the necessary commitment of the design ethnographer to support sustainable change. The goal is that the plan and the implementation are innovative but sustainable" (Barab et al 2004).

There are risks and ethical considerations associated with acting as a change agent, and these will be discussed in Section 5, Ethics and Risk Management.

Transition Design draws from a range of disciplines:

The goal of TD is clear – to design ways to transition to sustainability – but the methods to get there are not specified. To form a TD practice, there are a broad range of disciplines that offer useful theories, methodologies and practices, for instance:

- **Transition Design & closely related disciplines** – e.g. Strategic Design, Systemic Design, Service Design, Systems Thinking, Action Research (including Participatory Action Research, Community-Based Action Research and Critical Design Ethnography), Participatory Methods, Futuring

- **Transition Research**, Transition Management & Governance, Strategic Niche Management and social practices Adaptive Management and Social Learning

- **Collective Impact** (CI), including Place-Based Initiatives, Place-Based Collective Impact

- **Agriculture & Environment** - This reading focused on research into adoption of innovation in agriculture, as well as the contribution of agriculture to climate change

Table 1 catalogues lineages of reading in the literature review. Disciplines and practices are organised by topic and ordered by the level of complexity they are intended to help address. Assessment is subjective.

SOCIO-TECHNICAL

Transition Research
Adaptive Management, Governance & Social Learning
Strategic Niche Management
Multi-Level Perspective

Transition Management
Multi-pattern approach
Multi-functional transition
Modelling Transitions

Design practice
Transition Design
Social Innovation
Design Futures; Speculative Design; Deliberative Design

Strategic Design; Design for Systems Innovation
Co-Design; Participatory Design
Critical Design Ethnography

Design Ethnography
Service Design
Experience Design
Industrial Design
Communication Arts

Product design for sustainability
Living Labs
Urban eco-acupuncture
Cradle-to-Cradle

Design for the base of the pyramid
Products as services
Biomimicry
Design for sustainable behavior
Emotionally durable design,
Design for product attachment
Green Design & Ecodesign

Disruption
Futuring: *Backcasting, Scenarios*
Strategic Risk

Commercial Innovation, Research & Development
Business Model Innovation
Social Entrepreneurship

Built Environment
Critique of Everyday Life
Cosmopolitan Localism
Human Scale Development

Built Environment & Infrastructure
Urban Planning & Architecture

SOCIO-ECONOMIC   SOCIAL

Transdisciplinary Research
Transdisciplinarity

Systems Research
Systems Thinking
Complexity Theory
Systems Mapping

Organisational Management
Organisational Systems Renewal
Managing Transitions

Organisational Psychology
Soft Systems Methodology
Change Management

Human Behaviour
Social Practice Theory
Social Ecology
Social Psychology

Neuroscience
Human Psychology & Behavioural Science
Action Research

Economics & markets
Great Transitions Network
Alternative Economies
Sharing Economy
Antifragility

Outcomes-based commissioning
Impact Investing

Anthropology
Ethnography

SOCIO-ECOLOGICAL   SOCIO-POLITICAL

Agriculture
Regenerative Agriculture

Holistic Management
Cell Grazing
Pasture Cropping
No-Till, Low-Till and No-Kill Cropping
Natural Sequence Farming
Agroforestry
Participatory Rural Appraisal

Land & Ecosystem Management
Governance of Ecosystems Services

Carbon Farming
Sustainable Land Management
Bioregionalism

Science
Planetary Boundaries
Post-Normal Science

Ecosystems Resilience
Living Systems

Community Development
Community Development
Collective Impact
Place-based Collective Impact
Transition Towns

Community Organising
Place-based initiatives

Politics
Traditions of Rhetoric, Dialogue & Deliberation

Collaborative Governance, Co-Governance & Participatory Governance

Deliberative Democracy

Table 1. Literature surveyed. Ordered by level of complexity anticipated to impact

Methodological approach: participatory research to co-design interventions

The objective of my research is to enable more and more farmers to transition to regenerative agriculture. This represents a social transition as much as it is a technical transition. As designer-researcher-practitioner, I cannot influence these transitions on my own – influencing transition is also a social, collaborative act. The interventions that are developed in the course of my research will likely not be developed by me, but rather will be (hopefully) informed or sparked by my work and implemented by others. If the end result is to be a social change, then the methods also must be social in nature.

For this approach to work, I cannot hold myself as 'separate' from the environment that I am researching. I require methods that "[enable] both the…researcher and the people in the field to learn from each other", methods in which "the researcher is actively engaged with others in a future-oriented way: [co-]designing, creating, innovating and improvising" interventions "that may affect the cultural and social values under study" (Baskerville & Myers 2015, originally describing the use of design ethnography to design artefacts).

To this end, I will draw from the lineages of action research, participatory research and design, design ethnography, critical design ethnography, co-design and co-production to construct a participatory approach to designing interventions.

In my approach I will need to attend to "three key elements that distinguish participatory research:

> (1) *people* -- it is "people-centered" in that critical inquiry is informed by and responds to experiences and needs of people, especially those belonging to traditionally disenfranchised groups;

> (2) *power* -- it supports empowerment through the development of common knowledge and critical awareness… it involves a critical awareness of the personal-political dialectic… and

> (3) *praxis* -- it recognizes the inseparability of theory and practice and the commitment [to] improving both" (Barab et al 2004).

Practices outlined in the Transition Design framework

Since 2014, researchers and designers have been critiquing and adding to the articulation of TD thus far, naming additional practices, and sharing case studies.

The TD framework is shown in Figure 1 below.

TRANSITION DESIGN FRAMEWORK

Four mutually reinforcing and co-evolving areas of knowledge, action and self-reflection

Visions for transitions to sustainable societies are needed, based upon the reconception of entire life-styles that are human scale, place-based, but globally connected in their exchange of technology, information and culture. These visions are based upon communities that are in symbiotic relationships to the ecosystems within which they are embedded.

Visions for Transition

New ways of designing will help realize the vision but will also change/evolve it. As the vision evolves, new ways of designing will continue to be developed.

Transition visions must be informed by new knowledge about natural, social, and built /designed systems. This new knowledge will, in turn, evolve the vision.

The transition to a sustainable society will require **new ways of designing** that are characterized by:

• Design for 'initial conditions', • Placed-based, context-based design, • Design for next level up or down in the system, • Network & alliance building • Transdisciplinary and co-design processes. • Design that amplifies grassroots efforts, • Beta, error-friendly approach to designing

New Ways of Designing

Theories of Change

Theories from many varied fields and disciplines inform a deep understanding of the dynamics of change within the natural & social worlds.

• Living Systems theory, • Max-Neef's theory of needs, • Sociotechnical regime theory, • Post normal science, • Critiques of everyday life • Alternative economics, • Social Practice theory • Social pyschology research

Changes in mindset, posture and temperament will give rise to new ways of designing. As new design approaches evolve, designers' temperaments and postures will continue to evolve and change.

New theories of change will reshape designers' temperaments, mindsets and postures. And, these 'new ways of being' in the world will motivate the search for new, more relevant knowldege.

Posture & Mindset

Living in & thru transitional times requires a **mindset and posture** of openess, mindfulness, self-reflection, a willingness to collaborate, and 'optimistic grumpiness'

• Shifting values: cooperation over competition, self-sufficiency, deep respect and advocacy for 'other' (cultures, species etc.) • Indigenous, place-based knowledge, • Goethean Science/ Phenom-enology, • Understanding/embracing transdisciplinarity, • Ability to design within uncertainty, ambiguity, chaos and contradiction, • A committed sense of urgency (grumpiness) along with optimisim in the ability to change

Figure 1. Transition Design Framework

The following foundational practices are intended to build the capacity, conditions, capability and possibilities for transition among participants and stakeholders. This list is synthesised from the TD Framework (Irwin, et. al., 2015) as well as my own practice:

- Exploring, mapping and (re)framing the wicked problem from a systems perspective, but also from local, place-based and contextual perspectives
- Engaging a range of stakeholders around the challenge
- Facilitating mindsets and postures
- Building community capacity and leadership
- Creating visions for sustainable futures, e.g. through futuring and foresighting
- Building theories of change to identify what would need to be true for transition to occur
- Examining these theories of change through the lens of social practice theory and social psychology to understand what supports people to transition
- Facilitating the design of interventions that have the potential to create systemic impact and that people can enact in their role or place
- Equipping participants to try, test and learn as their interventions unfold
- Observing and learning from interventions over time

The literature points to a range of disciplines that may inform the project approach, such as behavioural psychology, strategic niche management and Collective Impact. A case study called 'Future of Fish' articulates design's role in enabling a sector to be more sustainable – and this is the most closely related example I have found to the project I have chosen (Dahle 2019).

However, there is not yet a case study or suite of design practices for taking a TD approach to the uptake of a niche agricultural practice, such as Regenerative Agriculture. The task is to 'bricolage' a suitable practice from the literature, my own professional experience and anything promising that might emerge during this research (Yee 2010). Documenting, articulating and reflecting on the rationale that goes into crafting a practice for a specific challenge is another way this case example will contribute to practice.

Design process

Based on the practices named above, core activities of my research will feature *cycles* of the following, as time and scope allow:

- Discovery – e.g. participatory research to build (shared) understanding, immersion in local context, culture and life "to see familiar settings as 'anthropologically strange'" (Genzuk 2003)
- Sharing back, validating
- Framing – e.g. developing different ways to see the 'problem' or the opportunity, e.g. developing frames (Dorst 2015) or frameworking (Baskerville & Myers 2015)
- Creating and testing theories of change
- Co-designing interventions
- Prototyping, testing and iterating interventions

- Tracking interventions and assumption testing (e.g. with an evaluative eye but not formal evaluation)

In design practice, the sum of these is referred to as the '**design process'** and is emphasised as non-linear, although it is commonly depicted in linear forms.

Methods (when engaging participants through Transition Design practice)

The following methods will likely be used when engaging participants:

- Semi-structured interviews
- Participatory small-group sessions
- Participatory group workshops
- Action research (Discussed in the ethics paper)

Constructing a toolkit: Design techniques that may be used

My professional experience in various forms of design tells me that to do TD I will need to be prepared to pull from a broad toolkit, and/or find, adapt and develop tools as well in a nimble, adaptive, bricolage approach, as described by Salvador et all:

> *"Managing this type of ethnographic work requires an understanding that there are no cookie-cutter recipes for getting results. One cannot predict the "deliverable" before it happens; this is the work of discovery, regardless of product, service, or country. Moreover, ethnographic design methods change depending on the question or problem and the country or region. Not all studies require the same set of methods and practices; indeed, not all studies require the same intensity. As design ethnographers, perhaps even more so than our academic colleagues, we constantly experiment with new methods and practices. In fact, you must experiment if you are to get at the issues relevant to your particular company or client" (Salvador et al 1999).*

The following techniques are common in a designers' toolkit:

- "Interviewing (structured and informal), genealogies, social mapping, demography, photography, documentary film making and videotaping, observation, archival research, and "deep hanging out" to shape our sensibilities, knowledge, and understanding of the fragments of life we study [Renato Rosaldo]. We also draw on a range of theoretical paradigms and interventions, as well as pay particular attention to popular culture, to help shape the questions we ask and the conclusions and insights we draw." (Salvador et al 1999)

- "Traditional ethnographic methods of participant observation, semi-structured interviews, and document analysis, as well as some less commonly employed methods" including activity analysis, talking diaries, personal documentaries, researcher biographies, and team ethnography (Barab et al 2004)

- "Additional tools need to be used along with intervention. Aside from co-planning and codesigning, Kilbourn (2013) suggested perceptual synthesis (forms of conceptual association and synthesis through visual means), experience juxtaposing (comparing experiences through games or other means) and potential relationing (forms of performance as ways to explore the social embeddedness of possible future practices)" (Baskerville & Myers 2015). In professional practice we might refer to these simply as synthesis, visualization or visual synthesis, gamification and acting

- Visual analysis methods such as visualizing information, developing heuristics, systems mapping, and visual storytelling

- Many forms of prototypes, including storyboarding, mockups (e.g. paper prototypes), table-top prototypes, framework prototypes

- Futuring methods such as backcasting, scenario-based design or prototyping, etc

The quality of being 'generative'

One key aspect of a co-design approach and the methods, process, techniques and tools that are used is the generative nature of the approach. Design is inherently generative; the purpose of design is to generate - e.g. produce or create - (in this case) new interventions. In order to co-design (e.g. design with others), everything that I offer to the participants must have a generative quality: I must create space for others to add their views, develop their own ideas and have ownership. For this reason, in practice we often refer to our tools (e.g. the materials we bring into interviews and workshops) as **generative tools**.

2. Overall PhD Approach – Practice-Based Design Research

The overall approach for this PhD is practice-based design research: The goal of the PhD is to research the practice of Transition Design. In order to research Transition Design, a project is required. I have chosen 'Increasing the uptake of Regenerative Agriculture' as the Transition Design project for this PhD.

The below articulation of practice-based design research is informed by Vaughan 2017 (p. 4-12), Tonkinwise 2017 (p. 30-32), and Frayling 1993 as well as diagrams describing practice research in Goldkuhl, 2011.
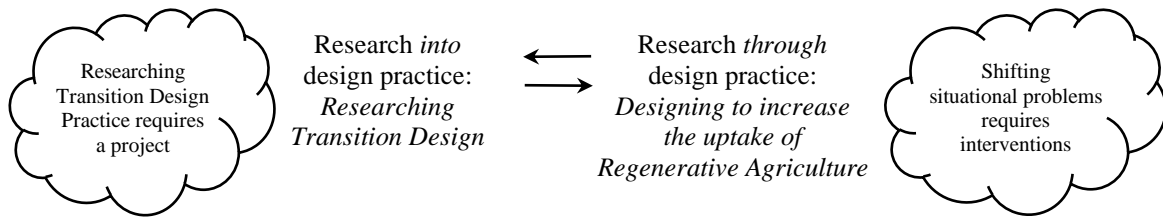
Outcomes of the Transition Design research project

It is anticipated that the application of Transition Design to the uptake of Regenerative Agriculture will provide insight for systems stakeholders into:

- The paradigms, situation, challenges and opportunities that shape the problem

- What interventions (have potential to) address the problem

- Insight into how the dominant paradigm might be shifted long-term

Outcomes of the PhD practice-based research

Through a structured process of reflecting on the applied practice, the designer-practitioner-researcher (Vaughan 2017, p. 9) will gain insight useful to practitioners and researchers into transition design practice, including:

- specific methods and practices,

- the practice framework, and

- theory.

Research Plan

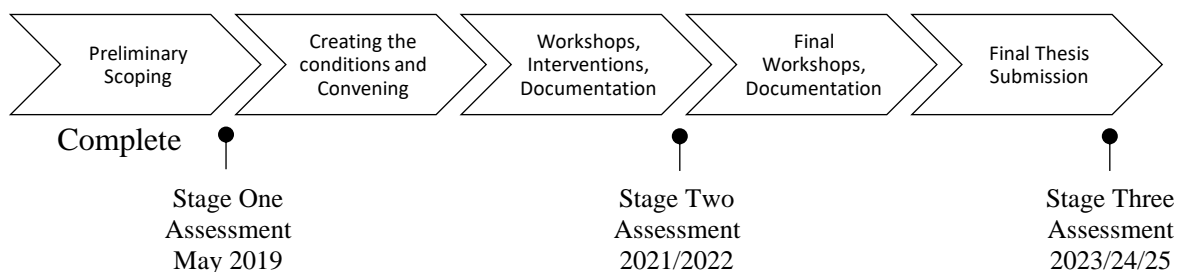As shown in Figure 1, a series of stages are anticipated and aligned to the PhD thesis assessment milestones:

Figure 1. Stages and milestones of the project

3. Case Study – Methodology for documenting practice

Considerations for a practical and productive overarching research methodology

In order to research Transition Design, I require a methodology that will enable me, the *designer-practitioner-researcher,* to seek feedback and reflect on *doing* the practice in a way that is practical and productive (Vaughan 2017, p. 9; Frayling 1993). An ideal methodology for this research:

1. Enables reflection on practice along the journey in order to contribute to practice
2. Sets a clean structure for the research *into* practice
3. Is not so cumbersome or complicated that it makes the project unwieldy

Choosing a case study approach

Creswell and Poth define a 'case' as "the bounded system…to be studied", and a Transition Design project does meet the criteria for a bounded system. It falls into the category of 'instrumental case', which has "'a research question, a puzzlement, a need for general understanding'" for which "'we may get insight into the question by studying a particular case'" (Creswell and Poth citing Stake, 1995, p. 98). By undertaking a transition design project and progressing it as far as practicable within the bounds of PhD research, it is feasible to gain insight that contributes to Transition Design.

A Transition Design project as a case study aligns with the concept of treating a design practitioner's work as a case. In Vaughan's '*Practice-based design research'*, Blythe and Stamm raise the idea of taking a case study approach, with the 'case' "[referring] to an individual practitioner's comprehensive research into his practice: each practitioner as such represents a singular case study" (2017, p. 56). It is not possible for me develop a contribution to Transition Design through 'comprehensive research into [my] practice' as it stands because I am new to Transition Design. Comprehensive research into my practice through a Transition Design project such as the one I am proposing, is practicable.

A case study also should make the practice accessible to anyone who reads it, and therefore meet the academic goal of enabling productive dialogue and research into a practice. Design projects can be opaque to people from the outside, and one goal of a case study is to make the subject of research comprehensible, to "[pare] down…the case's parts to be studied and the research issues…to what can be comprehended…Counterintuitive though it may be, the author has some responsibility for the validity of the readers' interpretations" (Stake 2005).

Analysis of the case

It is proposed that the project documentation and reflection data will be structured with in three layers at every step:

1. Project Description – A detailed, step-by-step description of the case will be captured through project and process artefacts.

2. Explanation – At each step I will document my explanation of the practice, including design options, choices, impacts, feedback and learning. Themes will be drawn from this.

3. Exploration – After each step and in a summative discussion at the end I will provide the final *case assertions* - my interpretations of the implication for Transition Design, including framework, methods, tools and theory.

Thesis documentation

The thesis will be comprised of the following outputs of the research process:

- Project documentation – step-by-step, project and process artefacts will be documented;

- Case study – a highly visual written narrative of the research, including reflections at each step, rationale for key decisions, learnings, participant feedback, relevant literature and theorising.

- Exhibition (tentative) – visual artefacts will be presented in an exhibition to coincide with the delivery of the case study

4. Data collection, analysis & documentation

The methods for data collection, analysis and documentation are drawn from sociological traditions of qualitative research as well as design practice.

Philosophical Orientation – Ontology, epistemology and axiology

Creswell and Poth, provide orientation to the philosophical assumptions typical of qualitative research, which are relevant to the proposed practice-based design research (p. 20).

The ontological stance in qualitative research typically holds that "reality is multiple as seen through many views" (Creswell and Poth, p. 20). Social Constructivist theory asserts that "human development is socially situated and knowledge is constructed through interaction with others" (Wikipedia). The idea that reality may be different depending on our perspective and the idea that our understanding of reality and knowledge is formed through interactions with others is very important in the proposed research, in particular to Transition Design Methodology. To give an example, for this research project to be successful in supporting transition to regenerative agriculture, the researcher will have to respect the reality that others see and still also believe that this reality can be shaped by others. It is important to respect that some people do not believe in climate change – that a LOT of farmers do not believe in climate change. And yet it is also valid in

social constructivist theory to believe that, through influence, minds can change and agricultural paradigms can change.

Epistemology, according to Creswell and Poth, is concerned with "What counts as knowledge? How are knowledge claims justified? What is the relationship between the researcher and that being researched?" (p. 20). Epistemology comes into play in a number of ways in my research:

- Taking a Social Constructivist stance toward the question of 'what counts as knowledge?', when engaging participants (such as farmers who are sceptical of 'airy-fairy' farming methods), it will be important to share knowledge in a way that they respect and understand, for instance through soil data and property financial performance

- In seeking to build knowledge of what interventions are successful in a situation, a Pragmatist approach looks for what works

- In data collection, it is important to capture the words of participants in order to avoid issues of representation

- In analysis, will be important to endeavour to reflect meaning in the way participants would have intended. This may be referred to as an 'Interpretivist' approach.

The role of values in research, axiology, will be a consideration in this research and is discussed in 'Section 5. Ethics and Risk Management'.

Categories of data

The categories of data available to inform a rich description of the case will include:

- **Design research project materials** – communication, process and design artefacts developed with, for and by participants (e.g. prototypes, mindmaps, heuristics, etc.)

- **Situational data** – news articles and social media; publicly available statistical data

- **Evaluative data** – information provided through the project evaluation processes, such as interviews, surveys and group reflection documentation

- **Literature** – Academic and practitioner literature

Data analysis

As the case data will be qualitative, research will be analysed thematically based on sociological traditions (Gray 2004, Saldaña 2009, Guest et al 2012, Miles & Huberman 2012, Bryman 2016, Braun et al 2018). The process is as follows:

- Individual transcripts, generative tools and workshop materials will be documented, and then analysed for key quotes and codes that emerge.

- Codes will be tracked and iterated systematically across all of the interviews, and tools such as a file-based codebook, Mendeley and (potentially) nVivo will be used.

- Themes will be determined inductively, based on an interpretivist approach and an iterative process.
- Participants will be invited to validate the themes and quotes as appropriate.
- Project data will be analysed, documented and communicated through methods used in professional practice.

One of the outputs of this analysis process, in the tradition of ethnography, is the development of '*thick descriptions*' of the case. A thick description is a rich picture of the case and "a coherent analytic account", "in terms that the setting's members know and recognize" (Crabtree et al 2012). Crabtree et al, who are concerned with 'practical sociology' for developing computer systems as compared with the philosophic, sociological and anthropologic ethnography traditions, trace the origin of the term:

> *"This notion has frequently been invoked by ethnographers following Clifford Geertz's assertion that "ethnography is thick description" (Geertz 1973). The term was not coined by Geertz, however, but by the philosopher Gilbert Ryle (1968), who wasn't remotely interested in ethnography but with a "curious feature" of what is involved in "doing something" (Crabtree et al 2012).*

Barab et al describe the process of getting to a thick description that is validated by participants:

> *"…we work with local participants to identify needs, social commitments, and possible interventions, engaging in a participatory design process that involves shared voice and commitment. A core challenge is not to let our preexisting perspectives or social commitments become funnels through which all data are interpreted. As such, formative concepts/ theories and designs are constantly tested against the empirical evidence and with the multiple voices of our collaborators. As interpretations are built, we debrief with participants to determine the extent to which our characterizations resonate with their views (Lather 1986; Lincoln and Guba 1986)" (2004).*

Research validity: Transferability of research, not repeatability

It is the intent of this research to draw out insight that is transferable to other Transition Design initiatives and/or to Transition Design theory more broadly, not to set up a repeatable experiment.

Qualitative rigour will be judged by internal validity, external validity, reliability, objectivity (LeCompte and Goetz, 1982). Disciplined project documentation and identification and discussion of case themes will avoid claims that the research findings can be transferred, generalized or applied any further than is realistic and practicable. Validity will be assessed by the trustworthiness of the study, the quality of the understanding gained, and the usefulness of the insight – also described as the credibility, transferability, dependability and confirmability of the research (Wolcott 1994, Lincoln & Guba 1985). Validity will also be assessed by participant feedback and input, e.g. through 'testing' and 'validation' with participants. This process will also be helpful in locating the value of the research to participants.

Sufficiency of sample size

This research is informed by qualitative approaches from sociological traditions (Bryman 2016) and is closely related to action research. When looking for themes and patterns among a research cohort, typically qualitative research requires 8-15 participants from each cohort in order to obtain sufficient data (e.g. pattern finding) for the given topics. For this reason, 20 participants during the scoping research was sufficient to understand major patterns in the perspective of proponents of regenerative agriculture (currently working as farmers, extension officers and/or researchers). As only 5 people were interviewed who expressed skepticism of regenerative agriculture, the numbers were insufficient to determine patterns in their perspectives. Further research would be required to be able to express confidence in the validity of data regarding their perspective.

From an action research and transition design perspective, sufficiency of sample size depends on the phase and activity being pursued. In phases of testing, the sample size can be quite small (e.g. 1-3 participants testing an idea) so that evidence can be built regarding how promising and effective an idea might be. Sufficiency of sample size in influencing and implementation stages depends on the goal. If, for instance, one of the influencing strategies is to further a movement, then the number of people engaged will need to be significant at the scale of the NSW population (of farmers in a given sector).

Participant recruitment and consent

Participant consent will be obtained per UTS standard ethical requirements, and all participation will be voluntary and opt-in (non-mandatory). Recruitment approaches may include:

- Contacts provided via supervisors
- Snowball sampling
- Outreach to the Regenerative Agriculture Facebook Group, of which I am a member
- Cold calling, e.g. through info online

Privacy, confidentiality and handling of data

- Data, electronic/digital recordings and transcripts of recordings will be stored on a password-encrypted computer hard-drive and password-encrypted online data-storage facility (e.g. Dropbox). Handwritten notes will be stored in a secure location with limited access. Participant data will be de-identified, e.g. via code or pseudonym. The list of original contacts and the code or pseudonym associated with participant details will be retained in a separate file that will not be published or shared beyond myself and my supervisors.

- In published data, participants will be identified by a pseudonym and/or type of group that they belong to. Effort will be taken to eliminate information that could be linked back to individuals.

- Some participants, particularly the 'gurus' in the field who are well-published and well known to be vocal, may be asked for permission to be identified. In this instance, I will obtain explicit written permission for what will be shared, including exact wording and photos.

5. Ethics and risk management

Researcher bias

The role of values in research, axiology, is critical to this research. Designers are not a neutral party. Our values, beliefs and worldviews are embedded into every artefact, intervention and written output. In the words of Zabolotney, "there is no such thing as benign design. Even design relegated to the superficial and simply 'aesthetic' works on a political level" (2017, p. 26). And from Vaughan, "design is political, even when it isn't engaged in formal politics" (2017 p. 1-2). In this case, the research is explicitly activism.

To this end, I acknowledge my bias: I believe climate change science; I believe that chemically-based agriculture depletes our soils and food quality and is ecologically and financially unsustainable; and I believe the data that regenerative farmers and researchers have shared.

This being said, I am aware that these very beliefs and values could compromise the project if these values come across to farmers as evangelizing, as people telling them they're bad farmers, or simply irrelevant. But, through scoping research, I have learned that there are values and needs I share with the participants I've met so far: love of the land and the basic human need for farming to remain viable. In engaging with participants (particularly those who are not proponents of regenerative agriculture), I will need to centre around these commonalities and not presume more but also look for ways to create a shared vision for the future.

Ethical risks and risk management approach

Whereas the scoping phase was deemed low-risk, there are additional ethical considerations for the remaining research: participant commitment of time; the increased exposure of the researcher as activist; the ethics committee's perspective on the use of a design research approach; and the potential to approach the Aboriginal community to understand their wisdom with respect to transitions. The role of drought must also be considered in this research. Risk mitigation strategies

will be identified and managed through UTS standard processes and tools, including a research risk management plan and a fieldwork risk assessment.

<u>Participant commitment of time</u> – The extent of participation will be established through the consent process as an opt-in opportunity, with no requirement to participate for the full course of the proposed research.

<u>Exposure of the researcher as activist</u> – The researcher and participants are looking to shift entrenched power, even if gently. Social Theory and social psychology will inform design activities, and a risk management plan will be followed.

<u>Ethics for design research</u> – Typically, ethics committees require that all research questions and instruments are developed prior to giving ethics approval to engage in research activities, which contrasts with a design approach. I am not yet sure of the precedents at UTS or other academic institutions ethics requirements for social design processes.

<u>Potential to approach Aboriginal community</u> – It has been suggested that Indigenous wisdom regarding transitions should be engaged. If and when the time is right, separate ethics approval will be sought for this aspect of the research.

<u>Duration of drought</u> – If the drought becomes too severe, this research may be inappropriate to continue.

6. Scoping Research – methodology

As at August 2019, this research has been informed by a literature review as well as a phase of scoping research. This section describes the approach used for scoping research.

Purpose of scoping research

In my first stage of PhD research, after some exploration and testing of topics, I identified Transition Design (TD) as the form of design that I wanted to research. I was also interested in increasing the sustainability of agriculture, and so I went looking for projects where Transition Design could be of use to agriculture in NSW.

My first line of research uncovered the emerging area of governance of ecosystem services, e.g. collaborative management of the 'services' that the landscape provides such as water, temperature control, wind and weather protection, climate regulation, etc. Preliminary research revealed that there were a few regions in NSW that might be ready for such an approach, but I needed to validate the feasibility of my research out in the field. I prepared research questions and materials for a phase of scoping research, and obtained ethics approval mid-2018.

My first handful of interviews didn't invalidate the idea of governance of ecosystem services, but they turned me to a more direct route to influencing sustainability in agriculture: the growing movement of regenerative agriculture. Regenerative practices have been around for 20-30 years, and are growing, but it remains a mystery why more farmers have not transitioned their properties to this more ecologically and financially sustainable approach. I was urged to take this question on as a focus.

With this shift, I went back to the ethics committee and obtained approval for a revised approach to scoping in early 2019.

The purpose of scoping research was to:

1. Validate and refine the PhD topic
2. Determine an appropriate region, agricultural sector(s), scale of agriculture and key stakeholders for research
3. Begin to get to know the region, key stakeholders and the transition challenge from their perspective
4. Obtain buy-in from key stakeholders to the research process
5. Inform the design of the full research
6. (Re)focus the literature review and proposal in preparation for assessment

Scoping research approach: qualitative methodologies

Qualitative methods from sociological traditions and design practice were drawn upon to inform the scoping research. The references for these choices are discussed in Sections 3, 4 and 5.

The following methods were utilised in the preliminary scoping research:

- Semi-structured interviews and generative tools (qualitative)
- Literature review (academic and grey)
- Visualisation & system mapping (system in focus, stakeholders, dynamics, barriers and opportunities, etc.)

Participant recruitment

Participants contact details were obtained through the following methods:

- Follow up on personal contacts as well as the contacts of supervisors and other researchers
- Contacting community and government stakeholders based on information available online

The following strategies were used to recruit sufficient participants:

1. Begin with contacts that are already known to myself, my supervisors, fellow researchers and colleagues

2. Reach out to these contacts through the means provided (email or telephone). Determine if it is worth a conversation, or if another referral is required. Follow any referrals (snowball sampling).

3. Conduct online research to map out key stakeholders in local regions. Contact these stakeholders through the means provided. Follow any referrals (snowball sampling).

4. Line up preliminary conversations and/or interviews as appropriate.

5. Visit the regions identified over the course of a 20-day trip through regional NSW. Through snowball sampling, make additional contacts during this visit.

6. As needed, repeat this process until sufficient participants are obtained.

Participants / Research cohort

Initial scoping focused primarily on proponents of Regenerative Agriculture, including innovators (the 'gurus') and early adopters. Many of these people are actively working to influence the uptake of Regenerative methods, but there are others working in the sector who may have greater influence on the levers that will be chosen. Participants were sought from the following cohorts:

- Farmers who have already transitioned to regenerative methods or mixed methods

- Farmers who seek to transition

- Farmers who are averse to transitioning to regenerative methods

- Agriculture extension officers and consultants who are working to support transition

- Land care organisations

- Commercial organisations, such as insurers, banking and agricultural suppliers

- Research and technology development organisations

- Entrepreneurs and innovators who are proponents of regenerative methods

- Others deemed appropriate by interviewees (e.g. recruited via snowball methods)

During scoping research, 12 properties in NSW were visited, of which 8 used regenerative methods. 32 people were engaged, and 25 agreed to participate in the semi-structured interviews. Participants included:

- 8 'gurus' of regenerative farming

- 3 newer regenerative farmers

- 3 industrial farmers

- A range of extension officers, consultants, sector stakeholders and researchers

- 5 of the participants (from the above total) were skeptical of regenerative agriculture

Interview set-up and format

- Participants were invited by email, phone-call or in-person introduction
- Participants were supplied with an information sheet and consent for (for signature)
- Semi-structured interview and farm tour if relevant
- 1-1.5 hours requested
- Interview commenced with initial rapport building, an overview of the project, an overview of the interview purpose, format and topics, a reiteration of how the participant's data will be used, and a discussion of any questions that the participant may have

The interview question guide that was used for scoping research can be provided upon request.

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