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Towards a unity of ecology and ordinary ethics: On everyday life and aspirations to live sustainably in a permaculture community

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A minor dissertation submitted in partial fulfillment of the requirements for the award of the degree of Master of Arts

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COMPULSORY DECLARATION

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Signature: Signed by candidate Date: 28 March 2013

Signature Removed

If we had a keen vision and feeling of all ordinary human life, it would be like hearing the grass grow and the squirrel's heart beat, and we should die of that roar which lies on the other side of silence.

- George Eliot

It is of the essence of life that it does not begin here or end there, or connect a point of origin with a final destination, but rather that it keeps on going, finding a way through the myriad of things that form, persist and break up in its currents. Life, in short, is a movement of opening, not of closure.

- Tim Ingold

While I agree that ignorance of history condemns us to repeat it, I believe it is hard for us to proceed very far with ethical frameworks without at the same time acting in the real world to develop ourselves as whole persons. The dangers of isolation of philosophical thought from an integrated existence are as great as the dangers of ignorance of the history of philosophy and ethics.

- David Holmgren

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Abstract

Conventional agriculture is a significant contributor to climate change, itself a socially driven ecological phenomenon. Until recently, however, social science has only just begun to engage intensely with the relationship between agriculture and global climate change and also on developing a viable sustainable response thereto. Following, this dissertation is premised on the understanding that sustainability requires an integration of human settlement patterns and sustainable agricultural practices.

The dissertation uses ethnographic data about a permaculture community that practices such an integrated existence as a demonstration of permaculture's primary ethic to take responsibility for one's own existence. By asking what it means to say that the residents produce their own lives, the dissertation traces the theoretical and environmental context and structures that shape and are shaped by the intentional community that has formalised itself as a nonprofit organisation with an educational mandate. It explores how these two meet and provides a demonstration of the residents' community-based lifestyle as infused with aspirations to sustainability.

This dissertation argues that the residents integrated human settlement patterns with sustainable agriculture through internalising design and building costs, and decentralising agricultural energetic inputs and outputs; and that these activities inserted an ethic of care at the core of the labour activities that constituted the everyday lives of residents. Further, that everyday life there exhibited an aspiration to living sustainably as the grassroots implementation of permaculture's pedagogical ethos of living an integrated existence as a positive response to climate change.

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Abbreviations

EV	Ecovillage
IC	Intentional Community
LCS	Land Custodianship
LRC	Legal Resources Centre
NBC	Natural Building Course
NPO	Nonprofit Organisation
PDC	Permaculture Design Course
PP	Permaculture Project
UCT	University of Cape Town
WWOOFer	Willing Worker On Organic Farms

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One ~ Introduction

1.1 Preliminaries: Secularism, ethics, fieldwork and discarded research questions

> Dancing on a tightrope requires that one maintain an equilibrium from one moment to the next by recreating it at every step by means of new adjustments; it requires that one maintain a balance that is never permanently acquired; constant readjustment renews the balance while giving the impression of 'keeping' it. The art of operating is thus admirably defined, all the more so because in fact the practitioner himself is part of the equilibrium that he modifies without compromising it (De Certeau 1988:73).

I went to the Permaculture Project (PP) to do fieldwork research towards a University of Cape Town (UCT) Masters minor dissertation in Social Anthropology. My research proposal's expressed goal was to understand 'belonging'. I proposed that 'belonging' amongst a set of people, as complicit in any understanding of social and cultural interpretations of relations between humans, has been taken for granted by anthropologists. Reading an anthropological text one finds the word 'belonging' often used indiscriminately, without due care to describe what 'belonging' actually may look, sound, smell, feel or be like. Some subtle ways in which this taken-for-granted notion of 'belonging' manifests include assumptions that people belong, and it is thus not questioned; or that it is naturalized by assigning denominators of belonging such as 'citizenship', 'nationalism', 'community', 'family', 'kin', 'gender', and so forth. Furthermore, it is often legitimized by anthropologists claiming that particular sets of people self identify as specified denominations or categories. Finally, 'belonging' is often indicated by describing how some people do not belong – and built on an assumption that, by referring to a negative and excluding some, those who remain on the positive side do 'belong'.

I had sensed that being able to describe 'belonging' might be possible in an intentional community (IC) – a set of people with a common intent and commitment, usually toward a lifestyle often considered 'utopian', harmonious, and/or sustainable

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(Questenberry 1996:np)[1] – and I thus chose one as my field research site. By focusing on 'belonging' in an IC I did not, and still do not imagine or wish to imply that such a community necessarily forms a bounded, homogeneous and static entity. My research question when 'entering the field' was whether 'belonging' can be said to rest on a common commitment to create and maintain a 'utopian' community, and/or on the actual act/ performance/ experience of 'belonging', and how such aspirations and failures manifest in the everyday social relations between self-defined members of an IC.

In the field, however, I soon discovered the veracity of Schweder's (1997:154) statement that fieldwork is a creative and dynamic process determined by 'discovery', 'imagination' and 'intuition', and decided that I needed to change my research question. These preliminaries consider the reasons for that change and introduce the question driving the rest of this dissertation.

1.1.1 About a discarded research question

One[2] reason for changing my research question is that I 'found' belonging. I use the verb 'found' here not to suggest that 'belonging' is an end in and of itself. Perhaps, 'dancing on the tightrope of belonging' is a better description since it indicates a diachronic and persistent non-teleological process. That phrase indicates a process going beyond the reductive binary of 'straddling' two poles or worlds: professional and private; objective and subjective; secular and spiritual; self and other; human and technical/natural. An analogy for an aspiration to achieve balance and equilibrium in 'belonging' might be anthropology's key disciplinary method of participant observation. Normally, the terms 'participant' and 'observer' refer to mutually exclusive statuses. Yet anthropologists

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[1] Questenberry's article, published by the Fellowship for Intentional Communities (FIC), is based on a survey of North American intentional communities. It includes definitions of what members of intentional communities, from 186 communities in North America at that time, said constituted an intentional community. Butcher (1991:14) and Questenbury (1995:5) both suggest that the term 'intentional community' was coined at a Community Service Conference in 1949. A more detailed definition was printed in the 1959 Intentional Communities Yearbook and Newsletter, which 'specified a minimum size of three families or five adults, the sharing of land and housing' and made reference to a statement discussing the essence of community (Butcher 1991:14). Some of these characteristics have been further narrowed down to specify that 'bonds between members are not only limited to those between family members'; and that 'membership is voluntary' (Meijering et al. 2007:42). Necessarily, an element in all of the definitions stresses a shared intent amongst community members.

[2] The order in which I present the reasons for having changed my research question does not follow the order of events that informed my decision.

using participant observation aspire to bring the two together in what might be regarded as an operational or functional equilibrium; a delicate balance of tightrope dancing, a conversation not only between two poles, but with the line beneath one's feet creating harmony between the apparent poles on either side (Reich 1998).

Were I to have kept the question of belonging and attempted an honest answer, there would, however, have been a risk that, in a self-reflexive moment, my dissertation might have turned out to be all about me; a dull prospect. I allude here to the process of 'going native': upon completion of my dissertation, I will formally be joining the community with my partner, Phillip,[3] an established member.

A second reason I changed my research question rests on two ethical concerns and derives from the expectation that I should write in ways that avoid harming my research participants. The first concern is that one cannot ever predict or foresee when one's responsibility to research participants may end or to what point it may stretch into the future; 'our responsibilities toward research participants may extend in time and space well beyond the completion of the research project' (ASA 2004). That I will continue to be intimately involved, on a day-to-day basis, with those who have been my research participants reinforces that ethical responsibility to their future. The second concern derives from my having recognized that 'a sense of belonging' can be transient, fluctuating from moment to moment. Writing about 'belonging' and its transient character in a small community, such as that where I conducted my fieldwork and where I am already now an unofficial member, may thus cause harm, disrupt and 'antagonise groups of people against one another' (Boonzaier et al. 1985:68) – both at an individual and also at a communal level.[4]

A third reason for changing my research question is that, during my time on the farm I here call Mooiplaas, I have recognized the potential for harm arising from my emphasising Mooiplaas residents' community qualities rather than those qualities associated with their operating as a non-profit organisation (NPO), what I here call the

[3] Pseudonyms have been used

[4] For an example of the harm that can follow from fieldwork and ethnography in a small South African community see the discussion of Vincent Crapazano's book *Waiting* (1985) between Boonzaier, West, Gordon and Skalnik (1985).

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Permaculture Project (PP), with its educational mandate. The PP is, among many things, an intentional community and a NPO. I address how these two meet later.

1.1.2 Going native and a 'reasonable distance for critique'

Various anthropologists have been known to 'go native', as reflected in the term describing the phenomenon; an example of the balance between participant observer leaning towards the participant pole. I would argue that my 'going native' has not compromised my ethics or my ability to critique. In *Critique of Everyday Life*'s foreword (second edition), Henri Lefebvre asks 'What is a reasonable distance for critique?'(1991 [1958]:20)):

> To see people properly we need to place them at a reasonable, well-judged distance, like the objects we see before us. Then their many-sided strangeness becomes apparent: in relation to ourselves, but also within themselves and in relation to themselves. In this strangeness lies their truth, the truth of their alienation.

Who determines whether a researcher has achieved a reasonable distance? Or what a reasonable distance may mean? Can one make a meaningful contribution to anthropological critique if one is unable to achieve a perceived distance, let alone a reasonable distance?

Before I entered the field, my understanding of critique was based on a common misunderstanding of its goal – to 'unveil error' (Brown 2009:9). A result was my personal disenchantment with critique which seemed destructive rather than constructively valuable for understanding the world. Critique seemed akin to deconstructive analyticism, which Latour (2004a:231) considers an outdated approach to data: 'The mistake we made, the mistake I made, was to believe that there was no efficient way to criticize matters of fact except by moving away from them and directing one's attention toward the conditions that made them possible'. Critique to my mind not only required an unnecessary distance; it also seemed to adopt an approach and interest in topics to reveal what was wrong with the world, rather than what was, or had the potential to be right. The potential to be right, like dancing on a tightrope has an emerging and aspirational quality.

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Brown (2009:9) argues that it is a common misperception to regard critique as secular and thus removed from its subject in ways resulting in its revealing particularly truthful, objective, rational and scientific data, and thus ultimately being a superior epistemology:

> At times today the term [critique] is taken to convey polemical rejection, at other times to signal immanent or deconstructive analytic practices, and at still others, to identify the search for a secreted truth within a tissue of mystifications. In all of its uses, however, critique would seem to carry a tacit presumption of reason's capacity to unveil error. Therein lies part of the problem.

Before entering the field I had conflated critique and deconstruction. I was consequently determined to avoid critique in my own writing. I did not want merely to 'unveil errors' amongst research participants, but to write in a positive style about a topic that could, I believed, have a positive impact on the planet.

An added incentive to do research amongst people who aspired to live sustainably came in 2010 when, Laura Rival, an Oxford-based anthropologist who has conducted research amongst Amazonian people, presented a paper to UCT's Social Anthropology seminar. She mentioned how her Oxford colleagues from the sciences that were studying Amazon valley climate change and deforestation actually deforested in order to study its effects. She added that she had teasingly recommended that they rather study reforestation. Rival's anecdote struck home in that I entered the field aspiring to add theoretically to a reforestation of the social sciences and also practically to the planet.

Having completed my field research, I attended seminars about research ethics at UCT's Institute for the Humanities in Africa. Some discussions seemed to promote a greater ethical obligation to our profession than to our participants, thus implying a need to separate professional and private ethics. The ethical obligation to colleagues seemed to take the form of critique of research participants, as if critique were a superior way to advance knowledge of them. After my personal experiences in the field, I was left questioning the need for distance in order to undertake critique, and the asserted superiority of the ethical obligations we have as researchers toward our profession and

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our discipline at large as opposed to ethical obligations toward our participants and also toward our personal and private lives. According to Mahmood (2009:90-91),

> It is customary these days to tout critique as an achievement of secular culture and thought. Key to this coupling is the sense that, unlike religious belief, critique is predicated upon a necessary distantiation between the subject and object and some form of reasoned deliberation. This understanding of critique is often counterposed to religious reading practices where the subject is understood to be so mired in the object that she cannot achieve the distance necessary for the practice of critique... such a conception of critique not only caricatures the religious Other but also, more importantly, remains blind to its own disciplines of subjectivity, affective attachments, and subject-object relationality...

Following Mahmood, I do not believe that my initial approach to fieldwork affected my going native. Rather, my process of going native is founded in the belief that an anthropologist's separation of public and private self is not necessarily prior to her ability to gather data; and that an anthropologist-as-human's ethical responsibility extends beyond a professional self to incorporate the private self's and the planet's ecological wellbeing. I therefore question the often asserted need for distance, whether reasonable, temporal and/or spatial, in order to offer critique. I also question its ethical basis and suggest that common conceptions of critique as secular may do more harm than good, not only to research participants, but also to our ability to gather data.

In her questioning the need for secularism in anthropology, Lesley Green (2005:92) has argued that the separation between the anthropologist's professional and the private self in the field is an epistemological construct rather than a necessarily ethical dilemma:

> Similarly, epistemological commitments – the philosophy of how one produces knowledge – shape notions of what constitutes an ethical presence in the field. Where objectivist epistemologies are dominant, professionalism necessarily entails the production of a public self that absents from the researcher anything that might be held to interfere with data.

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The most challenging ethical question I have had to face is whether revealing my unofficial membership of the PP, will place the PP and Mooiplaas' residents in a position which could, at any stage, harm them. Further, I have had to consider the possible implications and the value my research may have for the PP if its identity, its participants and/or its geographical location were to be revealed. I do not believe that what I have written here compromises either my ethical responsibility to social anthropology or to my research participants. I have taken care not to reveal the PP's location or name. Yet part of my argument is dependent upon a description of the landscape. Furthermore, there are only so many ICs based on permaculture design, principles and ethics in South Africa. Also, some of the PP's members are considered experts in their field and are well-known in certain circles. Simply put, it would not be impossible for a discerning reader to identify either the PP's location or the participants' identities. Moreover, even were I to write in a manner completely obscuring the PP and its members' identities and location, and to swear my friends and family to secrecy, my own future self on Mooiplaas may not be able to separate and disentangle myself in such a manner as to remain dislocated and missing from public view.

One must wonder whether using pseudonyms in an 'anthropology at home' context is not simply a way of inserting distance and thus protecting oneself, as researcher, rather than an attempt to protect research participants from harm. Throughout anthropology's disciplinary history, its protagonists have sought to understand, describe and instil in people not privy to the privileged lens of the anthropological worldview, that we are all complex multi-faceted beings deserving more nuanced attention than social analysts sometime offer. Yet, distance and separation relies on power hierarchies, which may become progressively difficult to achieve and manage as anthropologists' research participants become increasingly able to access their published work (Nyamnjoh 2007). Arguably the effects of globalisation, with the related blurring of boundaries and collapsing of distance that seem to follow, impress upon anthropologists a growing imperative to study 'at home'. Such effects could render anthropologists' ability to separate their professional and private selves increasingly difficult. Further, social media's pervasiveness, and research participants' ability to access them, may render anthropologists' attempts to protect their participants and themselves particularly

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challenging. Despite my not accepting that a reasonable distance is necessary for critique, I have nonetheless changed my research question in the face of an infinite ethical responsibility toward my participants. Furthermore, my decision to use pseudonyms for place and persons is not so much an attempt to obscure and thereby to protect, or separate; it is, rather, to honour my participants and their requests for privacy.

In summary, I have, in these preliminary comments, investigated my own understanding and the common misconception that 'critique', at its heart, is a search to unveil error; and I have questioned the asserted ethic of a professional distance between and from one's research participants and the supposed value that such distance adds to data gathering. The lines of professional and private, objective and subjective are blurred throughout this dissertation. Moreover, my appreciation of contemporary notions of critique, coupled to my own research and fieldwork experience, have led me to question both the claim to truth of the notion of secular knowledge production and, thus, also the suggestion that 'a reasonable distance is necessary for critique'. Ultimately, the dancing-on-a-tightrope analogy, aspiring to maintain but never quite to achieve equilibrium between two poles, is useful for understanding that elusive notion of belonging as well as to interrogate the apparent distance that is necessary for a professional self to gather data from participants in order to level critique. An ethical critique is like dancing on a tightrope, an aspirational practice that must itself be constantly readjusted in order to maintain and renew balance: '[W]hat always needs to be understood is the specificity of the response, which is not a judgment, but a practice' (Butler 2009:109).

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1.2 Introductory: Sustainability and the relationship between community and agriculture in the practice of permaculture

With the above in mind, I came to the following research questions: How do the residents of an intentional community, who aspire to live sustainably along the guidelines of permaculture, integrate permaculture ethics of care into their daily lives? Does their understanding of ethics, as located in what they call care activities, contribute to their being able to mobilise/realise a viable ethical social response in the face of climate change – itself a socially driven ecological phenomenon?

I begin to answer these questions as a means to start testing a simple proposition that approaches to sustainable living, in the face of climate change, need to have an integrated understanding of, and indeed actually to integrate sustainable agriculture and human settlement design.[5] My goal in this dissertation is to work out the implications of this proposition by engaging with permaculture and an ethic located in care activities and daily life, with particular attention to labour.

The dissertation is about the aspirations and efforts of a collective who have constituted a NPO – the 'Permaculture Project' (PP). Importantly, the PP's members live a community based lifestyle that they explicitly intend to be part of the PP's education based mandate. My interest is in their commitment, according to their constitution (Appendix 1), to 'investing [their] community and resources in developing educational models, rooted in Permaculture ethics and principles'. Although the PP's education based mandate is a key motivator underlying much of what its members do, how they educate is based on their vision: to create lifestyles that 'will reflect the dynamic ethics and principles of Permaculture' in order to 'create diverse working examples of community based sustainable dry land Permaculture systems, techniques and management methods that are ecologically sound and economically viable' (Appendix 1). That is why I have focused on the labour activities that constitute what permaculturists call earth-care and people-care activities, as expressed in the integration of human settlement patterns and sustainable agricultural practices that constitute the everyday lives of my participants who aspire to live sustainably.

I work from a premise that permaculture focused scholarship can address the dearth of literature and research on relationships between sustainable agriculture and human settlement design as a sustainable response to climate change. According to Veteto & Lockyer (2008), 'permaculture based scholarship' can also make a significant contribution to many social science disciplines.

There has been little social scientific discussion of sustainable agriculture or about permaculture as an approach demonstrating that integrating sustainable agriculture and human settlement design might be a sustainable response to climate change. Some social science fields, for example, cultural ecology, i.e. the 'study of the relations among

[5] I make that assertion in the context of a finding (Foley 2010) that conventional agriculture is the world's biggest contributor to climate change.

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the population dynamics, social organization, and culture of human populations and the environments in which they live' (Orlove 1980:235), have always used nature and the environment as hermeneutic devices whereby to 'explain the limitations upon social and cultural development' (Brown 1978:263). However, according to Netting (1974), anthropology steered clear of agriculture to address the relationships considered by cultural ecology. Many social sciences have, at least until very recently, avoided addressing the social challenges and effects of climate change (Leahy 2007; Lever-Tracy 2008a), and have thus been unable to propose any response to social concerns with climate change and sustainability, let alone an integrated response.

According to Leahy (2007:431), this may be due to differences between sociology's approaches to 'how humans relate to the environment and the social factors that influence that' and its approaches to 'how humans perceive their relationship to the environment'. Headland (1997:605) argues that all environments have a history and that 'the dichotomy between ''natural'' and human-influenced landscapes is a false one'. Further, according to Sayre, '[O]ur technology, consciousness, concepts, and the material world combine to produce an "environmental globalism" in which "it is virtually impossible to disentangle the social and the natural"' (2012:61): in short that an empirical binary of humans and nature is no longer tenable. The impact of past human activities on the environment and ultimately the climate, and the effects that these changes in turn have had and are having on human and social activities, in particular agriculture, highlight sustainability as a field for sociological investigation, not only an ecological phenomenon (Becker 1999:np). Yet, precisely because sustainability has been seen both as an ideal state eventually to be reached and as a process of seeking to act and live in an environmentally caring and non-destructive manner, it retains a strong sense of ambiguity (Pezzey 1992; Holmgren 2009).

In order to 'clarify and deepen our understanding of the ethical quality or dimension of the full range of human action and practice' (Lambek 2010a:11), we need first to engage with the 'nature of ethics', before engaging with the ethics of nature. Only that way can we understand what human engagement is required for a sustainable environment.

Drawing on Lambek's (2010) notion of ordinary ethics, and on my six weeks of field research, I argue that an ethics concerning the environment should not be located in abstract value judgments of reasons, but rather in daily life and in action underpinned

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by care. I locate the ethic of care in everyday life, of which labour[6] activities on Mooiplaas are a significant component (cf. Lambek 2010a:11). I try to make sense of how my participants responded to ethical challenges that they have faced, in the hope that this may provide clear understanding of how one's actions relate to a lifestyle that aspires to be sustainable.

I base my analysis on an assumption that 'environmental factors interact with social and cultural ones, and that neither operates independently' (Orlove 1980:254). I argue that, in attempting to achieve their vision of demonstrating an educational model for permaculture principles and ethics, members of the Mooiplaas community, aspire to, and work towards achieving permaculture's sustainability related goals, through integrating sustainable agriculture and human settlement design. Understanding how they achieve this integration, by infusing everyday life with labour activities that reveal an aspiration to sustainability, constitute it with care, and provides an indication of how practising an ordinary ethic might contribute to development of a viable ethical social response to climate change threats.

1.3 My research participants

I now introduce and briefly profile the people who were my primary interlocuters, that is, the resident PP members on Mooiplaas during June-July 2011.

Anna (42) hitchhiked from Cape Town to Zimbabwe in the early 1990s to do a permaculture design course there. She had since become one of the Mooiplaas Permaculture Design Course (PDC) facilitators and had proved to be passionate about participatory learning. She was also the secretary of the NPO and kept minutes of all meetings. She and Nathan, her partner of 11 years, had been joint members of the PP since 2005. She also did design work, training of trainers and had been involved with projects to establish home gardens.

Nathan (33) started out as a 'permie', but gravitated toward natural building as he considered dwelling places to be the most important parts of a permaculture system.

[6] I expand on what constitutes 'labour' in chapters three to five.

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Nathan was co-facilitator of Mooiplaas' Natural Building Course (NBC). He was also involved with building Joan's[7] Mooiplaas dwelling.

Michael (35), one of Nathan's childhood friends, had visited Mooiplaas many times after Nathan and Anna had joined. He then decided to become a member and, being a talented carpenter, was asked by Johan (below) to build him a house on Mooiplaas.

Ina (22) first visited Mooiplaas in 2010, while she was busy with a Masters degree in Environmental and Geographical Sciences with a focus on environmental governance and corporate social responsibility in the mining industries. She came to attend a Permaculture Design Course and then participated in the Natural Building Course. She and Michael became romantically involved and she moved to Mooiplaas. Subsequent to my field research period in 2011, Ina applied for membership and she and Michael have since become joint members.

Christopher (41) is one of the original members of the PP. He is also farm manager and, with Anna, a PDC co-facilitator. Christopher is involved with large-scale designs and is passionate about water infrastructure.

Leonie (32) is a chef. She initially came to do a PDC in order to develop her own farm, but she and Christopher became romantically involved and they have since married and have become parents of Alicia, a toddler during the time of my fieldwork.

Johan (42), a Dutch national, facilitates breath-work courses worldwide. He spends approximately six months a year on Mooiplaas. Initially, Johan was meant to set up a facility on Leonie's farm; but, when she moved to Mooiplaas, he came to visit and, he said, fell in love with the natural beauty of Mooiplaas' landscape, and applied for membership shortly thereafter.

Phillip (42) is one of the original PP members. He is a natural builder and co-facilitator of the NBC. Phillip learned his trade through an apprenticeship with an architect and worked around South Africa, with many different natural building materials and techniques over the course of two years. In recent years he became involved as a consultant for another South African NPO that wanted to advance natural building in its community development projects; and in training trainee architects in natural building.

[7] Joan was a non-resident member during my field research period. She has subsequently moved to the farm on a permanent basis.

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Mieke (38), like Leonie, is also a chef and caters for participants on the NBCs. She is also the PP's treasurer. She is a SEED[8] coordinator and was involved in environmental education at two schools in a nearby town. Mieke, along with Joan, was one of the participants of the first PDC held on Mooiplaas in 2006. She became a member shortly thereafter, along with her partner at the time, Donna, who later, after they broke up, became a non-resident member.

Roy (40) is another of the PP's original founding members. At the time of my research he had moved to Mooiplaas only recently after having taught English in south-east Asia for many years. At the time of writing he was training as a chef in a restaurant in the southern Cape and was thus no longer a full-time resident.

The above ten people were my key research participants during my June-July 2011 research period. At the time, they were all residing on Mooiplaas. Yet, they did not form the whole PP membership. I deal with the formal structures and membership of the PP in chapter three. Please see Appendix 3 for a complete breakdown of the PP's membership.

1.4 Methods

According to MacClancy (2002:4), ethnographic fieldwork means total immersion and 'trying, as much as possible, to live like the locals: participating in daily activities while at the same time observing and asking questions'. The main method I used was participant observation. Although my participants were aware that I was doing research towards a dissertation, and understood my research interests at the time, I participated in the everyday life on Mooiplaas as a volunteer or WWOOFer.[9]

I lived and worked on Mooiplaas for six weeks, working eight hours a day, five days a week, with weekends off. My status as a WWOOFer – for the first four weeks I was the only WWOOFer there – gave me access to, and opportunity to create rapport with residents. At the time of my fieldwork, when my goal was still to investigate the notion of 'belonging' as it applied to PP members, I suspected that contributing labour

[8] SEED (Schools, Environment, and Development) is a NPO that provides environmental education for South African schools.

[9] World Wide Opportunities on Organic Farms (WWOOF) is an international network of organic farms that, among other activities, enables people interested to work in organic farm contexts to travel and do so. Those people are called WWOOFers: individuals or small sets of people from across the world who travel to work on organic farms in exchange for food and board, and the opportunity to learn new skills.

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facilitated a sense of belonging. For that reason, in the six months preceding my field research, I had tried to prepare myself for gardening labour and knowing what might be required by helping out (two hours per week) in the Oudemolen Community Garden in Pinelands, Cape Town. Both there and at Mooiplaas, I always carried my notebook and digital recorder with me. However, at times on Mooiplaas I worked alone; and at other times I worked with one or more PP member.

I often asked to participate in a particular member's existing work activities, that way creating opportunities to ask them questions whilst working together. During these sessions, I let the digital recorder run while we worked. The types of work in which I participated and provided assistance included, weeding, planting, sorting seed, building, carpentry, carrying rocks, repairing roads, and preserving vegetables. Rather than formal interviews (of which I did two), interviewing in such situations meant the process was relaxed, and questions emerged during the conversations. Typically these informal conversations revolved around how that member had come to be on Mooiplaas and why (arrival narratives and oral histories); how they knew other PP members; permaculture; life on Mooiplaas; and how the PP had been established and organised. My two formal interviews were with Leonie and Johan. Although I had worked with Johan on his building site, I had to organise a formal interview with him as he was about to leave Mooiplaas for a few weeks and I would have missed the opportunity. I also had to arrange a formal interview with Leonie as Alicia, her six-month old child with husband Christopher, took up much of her time.

I lived in a self-catering cottage at Mooiplaas' southern end. For the last two weeks of my winter 2011 fieldwork period, I shared the space with other WWOOFers who had come to work on a building project in which I did not participate.

Challenges I faced during fieldwork included: limited access to power for charging my computer to type up notes; freezing cold weather; and coming to terms with my own feelings of belonging and kinship with the PP's members. Further, with the change, since my field research, in my research question, I have had to revise my approach to my data, experiences and memories in order to translate them and make sense of the complexities of permaculture and everyday life on Mooiplaas.

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1.5 Chapter breakdown

I have thus far discussed the history of my research and the ethical concerns it raised. This has enabled me to focus on how, throughout my research process, I had found I had to question the truth claims and the ethical claims of secular knowledge production and the consequent separation of professional and private, objective and subjective, culture and nature. The chapter explains how a result of this questioning was my changing my research focus from understanding belonging to understanding the nature of the ethics my participants practised and how those practices reflected their commitment to a process of sustainability and aspiring towards such a process as it underlay the integration of the PP's dual functions as a community and an NPO. I also introduced my research participants and provided an overview of the methods I used.

The rest of the dissertation has been divided into two sections, Section A which consists of chapters two and three; and Section B which consists of chapters four through to six, followed by the conclusion. By outlining the contextual, relational and organising principles of permaculture and community life in the context of the NPO, Section A describes the overt social and environmental contexts shaping and being shaped by the PP's residents' intentions and aspirations to live sustainably, and seeks to set the theoretical, social and environmental context of the research question, both old and new.

In chapter two, I explain and contextualise the principles underpinning 'permaculture' and its practices, as well as its people- and earth-care activities, which extends to teaching permaculture to others. This ethos forms the basis of the PP's educational mandate as a NPO. Chapter two's goal is to relate and understand permaculture's theoretical underpinnings and how they have been translated into its principles and ethics. I review the limited scholarly literature available on permaculture to reveal permaculture's interdisciplinary application. Most of the chapter is concerned with the history of permaculture's definition and the value of practical experimentation in development of permaculture principles and ethics. It also relates the design principles and ethics that guide permaculture practice and its use of different zones of human and environmental interaction. The chapter's objective is to lay the groundwork for an

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understanding of permaculture as an approach to sustainability that integrates sustainable agriculture and human settlement design, and to recognising that a permaculture system is relational and that sustainability is dependent upon an integrated approach.

After providing the PP's context as an intentional community and a NPO with an educational mandate, chapter three continues with the theme of integration. It traces the social and environmental structures and relationships that constitute the farm Mooiplaas, the PP and the community of people who work for it. I reflect on how the environmental context of Mooiplaas interacts with the PP's social dynamics as regards membership and the allocation of LCSs. This in turn provides a backdrop to permaculture principles and ethics in the provision of educational activities that fulfil the PP's educational mandate that includes education as a component of permaculture's people-care ethos.

Section B is concerned with describing the integrated existence of the residents of Mooiplaas, my participants, and their ways of living. Following Ingold's (2011) impetus, Section B is concerned with the question: what does it mean to say that the residents are the producers of their lives? Its three chapters are intended to work towards an answer to that question.

Chapter four is concerned with my six weeks of fieldwork in June-July 2011, describing what my participants implemented in their everyday lives in order to live an integrated existence. I argue that their integrated existence hinged on a particular conception of labour as taking place in and around the home with a long-term perspective of time. I provide brief reviews of literature on ecovillages and sustainable agriculture to argue for the value of further research about permaculture as a type of sustainable agriculture that combines ethics, sustainable agriculture and human settlement design. By internalising and decentralising activities and processes that underlay both human settlement patterns and sustainable agriculture, residents' labour activities aspired towards crafting ways of living that sourced its life from its presence. In other words, the presence of sustainable practices in the present nurtured the emerging potentialities of a sustainable future.

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Following the question posed at start of chapter four, chapter five is concerned with asking, how do residents become the producers of their own lives? I draw on literature about ethics and everyday life to demonstrate how the integrated existence, as exemplified in chapter four's descriptions and the everyday lives of my participants, form their routine and quotidian labour activities and is indicative of an approach to sustainability that integrates sustainable agriculture and human settlement design based on an ordinary ethic, as opposed to an ethic that is located in abstract values and rules. Rather than follow a historical perspective, as Ingold (2011) does, this chapter builds on the notion of an integrated existence, aspiring to sustainability and locating it in an ordinary ethic (Lambek 2010) and labour in everyday life. Using Lambek's argument that ordinary ethics is not based in theoretical value judgements but is, rather, a property of action, I consider the implications of such a proposition through a literature review on the demarginalisation of ethics from labour and everyday life. My goal there is to interpret the labour activities that constituted the everyday lives within the ambit of a unity of means and ends; that residents' aspiration to sustainability was exhibited in their integrated existence of internalised human settlement patterns and decentralised sustainable agricultural practices.

Chapter six poses and answers the question, why do residents aspire to be the producers of their own lives. Working from a review of literature and an understanding that, as Foley (2010) has argued, conventional agriculture is presently the world's biggest contributor to global climate change, I explore the motivation of permaculturists for integrating sustainable agriculture and human settlement into a social movement addressing environmental concerns whilst striving for sustainability. With the application of Castells' notion of spatial logic of places within a glacial time perspective I expand on the conception of permaculture as a grassroots movement and a positivist response in the face of a custodial ethic of personal responsibility toward planetary wellbeing. I argue that permaculture's local conception of space incorporates an understanding of sustainability and an ethos of custodianship based in a globalist 'management of time' and a localist 'defense of space' (Castells 1997:127). The fact that externalization of conventional human settlement design and building costs as well as centralized practices as exemplified in conventional agriculture is the biggest contributor to climate change is an explicit expression.

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To summarize, Section B then, seeks to answer the question of (A) what it means that residents are the producers of their own lives. It does this by adding two supplementary questions dealt with in chapters five and six respectively: (B) how do residents become the producers of their own lives? and (C) why do residents become the producers of their own lives?

Drawing on the central argument of the dissertation, I argue that (a) the residents integrated human settlement patterns with sustainable agriculture through internalising design and building costs, and decentralising agricultural energetic inputs and outputs; and (b) that this integrating, internalising and decentralising was exhibited in the demarginalisation of an ethic of care from the labour activities that constituted the everyday lives of residents. Further, that (c) all of these revealed an aspiration to living sustainably as the grassroots implementation of permaculture's pedagogical ethos of living an integrated existence as a demonstration of sedition or a positivistic response to the global effects of climate change; and that this was in line with Castells' assessment of environmental movements' as displaying a spatial logic of places and a glacial time perspective.

It is important to note that although Ingold (2011) has provided a driving question for this dissertation – that is where he (Ingold 2011:11) sought to unite the approaches of ecology and phenomenology – this dissertation's primary concern is with an aspiration to living sustainably and that seeks to unite ecology, or what I have come to term an integrated existence, with an ordinary ethic. I have thus further developed Ingold's initial question, as restated in chapter four, to ask, in chapter five, how the residents were the producers of their own lives; and, in chapter six, why one might regard Mooiplaas' residents as producers of their own lives. I comment on these differences in chapter seven's conclusion.

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Section A
Shaping and Shaped: Definitions, contexts, structures and mission

Two ~ Understanding Permaculture

2.1 Toward a Definition of Permaculture

Permaculture is a contemporary global grassroots movement practised in over a hundred countries (Holmgren 2009:xx). It was launched in the 1970s with the publication of *Permaculture One*, by Bill Mollison and his student David Holmgren. Mollison and Holmgren coined the word 'permaculture' at the movement's genesis, as a shorthand for 'permanent agriculture'. According to Mollison (1996:ix), the term comes from two Latin words "Permanens" – to persist indefinitely… and "Culture",[10] which he defined as the 'practices that support human occupation of the earth'. Permaculture then, was defined as 'an integrated, evolving system of perennial or self-perpetuating plant and animal species useful to man' (Mollison & Holmgren 1978:1). Annual plants are understood to fall into an integrated system of normal gardening and permaculture systems (Leahy 2009:11).Ten years later, in *Permaculture: A Designer's Manual*, Mollison (1996 [1988]:ix) expanded the definition to:

> Permaculture (**Perma**nent agri**culture**)[11] is the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems. It is the harmonious integration of landscape and people providing their food, energy, shelter, and other material and non-material needs in a sustainable way.

Leahy (2009:11) added that permaculture constitutes 'an agricultural system that can be carried out in perpetuity – permanently, an idea that is often comprehended under the term "sustainable".' Delambre (2011:7) tied the origins of permaculture to the development of agro-ecology by Russian agronomist Bensin in 1928. Bensin, says Delambre (2011:np; original italics), proposed significant changes and '*applications to the study, design and management of sustainable agroecosystems*' based on laws

[10] To understand the etymology of 'culture' in relation to that of 'agriculture' see Fonlon (1965).
[11] Emphasis in the original

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governing natural ecosystems. Strange (1983:88), suggested that permaculture intends to demonstrate a system of sustainable agriculture 'that does not depend on finite resources or destroy its own base in natural resources such as water, soil and forests'. To achieve sustainability the system must:

1) produce more energy than it consumes.
2) not destroy its own base, i.e. the soil.
3) meet local needs.
4) gain its own nutrients on site.

In other words, permaculture's goal as sustainable agriculture is to capture and yield its necessary energy requirements on site and feed them back into the system, i.e. its practitioners try to minimise or, better, to eliminate waste. Kennedy (1991:210) defines permaculture as a:

> Design method which abandons the linear sectoral organisation of human support systems – such as: agriculture, energy and water management, architecture, urban planning, education, recreation, administration, etc. – in order to create linkages between the various elements needed for each specific task. Thus each element enhances the function of all others...

According to Kennedy's (1991:210) definition, permaculture design can be used in architecture, urban planning and sustainable planning of the built environment. That is because, as Mollison (1996:6) points out, permaculture aims to design cultivated ecosystems with humans at the centre. It is an interdisciplinary approach, combining 'architecture with biology, agriculture with forestry and forestry with animal husbandry' (Holmgren 2009:xxii).

Attempts to construct an interdisciplinary combination of sustainable agriculture and human settlement[12] systems have, however, offended various professionals 'who considered themselves specialists' (Holmgren 2009:xxii). Furthermore, says Holmgren

[12] Defined in the (1976:15) Vancouver Declaration on Human Settlements as: 'the totality of the human community – whether city, town or village – with all the social, material, organizational, spiritual and cultural elements that sustain it. The fabric of human settlements consists of physical elements and services to which these elements provide the material support. The physical components comprise; shelter, i.e. the superstructures of different shapes, size, type and materials erected by mankind for security, privacy and protection from the elements and for his singularity within a community; infrastructure, i.e. the complex networks designed to deliver to or remove from the shelter people, goods, energy or information; services cover those required by a community for the fulfillment of its functions as a social body, such as education, health, culture, welfare, recreation and nutrition'.

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(2009:xxii), people 'involved in large-scale agriculture and land use policy saw it as theoretical, utopian and impractical because it was difficult to apply within the prevailing social, market and policy environment' (2009:xxii). Permaculture can thus be seen as an holistic approach, a systemic and interdisciplinary science. However, unlike agro-ecology, permaculture not only concerns itself with agriculture and ecology but also with human social organisation and ethics (Delambre 2011:8).

2.2 Permaculture literature

Even though Mollison and Holmgren were, at its founding, both academics, limited scholarly literature has been produced on permaculture. Most permaculture focused literature has come from permaculture teachers and practitioners and from various national and international bodies promoting and overseeing the permaculture movement and its pedagogy. It includes topics such as ecological community design (Hirsch-Tauber 2011), how to include permaculture in teaching practices or learning synergy (Praetorius 2006), and defining permaculture and its principles (Strange 1983).

The limited academic scholarship on permaculture is broad-ranging. Blais (2006) deals with parallels in permaculture, indigenous culture and digital culture and how they relate to intellectual property and the Commons. Delambre (2011) offers an analysis of sustainable social-economic solutions in Brazil and France. Kennedy (1991) is concerned with sustainable city planning and design; Leahy (2009) with rural sustainable development; McManus (2010) with integrating holism and permaculture for sustainable development; Trainer (1997; 2000) with radical socio-cultural reform for sustainable development; and Hill (1998) with what he calls deep sustainability as a psycho-social approach to sustainability.

I have found only one South African post-graduate dissertation on permaculture – Stoffberg's (1998) MPhil dissertation, *Permaculture as an alternative to present commercial resettlement farming practices in Namibia*. Arguing that current designs are economically unviable because the social costs outweigh the benefits, he proposed that resettlement farms should be re-designed, by landscape architects and environmental designers, as ecosystems that can operate, at the very least, on a basic subsistence level.

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2.3 Permaculture Ethics

According to Holmgren (2009:xxii), the ethical aspect of permaculture resides in recognising one's personal responsibility, as a permaculturist, for stewarding the environment sustainably and in changing one's behaviour accordingly. According to Mollison (1996:1), taking responsibility 'for our own existence and that of our children' is the 'prime directive of permaculture'; indeed it is the only ethical decision. Mollison (1996:2) bases the ethics of permaculture in three maxims which he considers to be interdependent:

1. *'Care of the earth*: Provision for all life systems to continue and multiply.
2. *Care of people*: Provision for people to access those resources necessary to their existence.
3. *Set limits to consumption and reproduction, redistribute surplus*: By governing our own needs, we can set resources aside to further the above principles'.

Mollison's phrases such as 'continue and multiply', 'access to resources', 'governing our own needs' and 'set resources aside' indicate that sustainability is central to permaculture practice's ethical considerations. Holmgren (2009:5) argues that sustainability is integral to stewardship, or custodianship, when he says that one should constantly ask: 'Will the resource be in better shape after my stewardship?' He also (2009:5) cites Wendell Berry, an American writer, organic farmer and environmentalist saying that:

> The question which must be addressed ... is not how to care for the planet, but how to care for each of the planet's millions of human and natural neighbourhoods, each of its millions of small pieces and parcels of land, each one of which is in some precious and exciting way different from all the others.

Earth-care, says Holmgren, encompasses 'caring for living soil as the source of (terrestrial) life'. It also includes stewardship, protecting biodiversity and accepting that all living things have an intrinsic value; in other words, that humans are part of ecosystems and are therefore dependent upon the wellbeing of earth's life support systems; but, simultaneously, that humans are also stewards of ecosystems and therefore responsible for their wellbeing.

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Permaculture's people-care ethic can be understood to start with the self, thereafter expanding outward to include 'families, neighbours, local and wider communities' (Holmgren 2009:7). This is in contrast to conventional development practitioners whose efforts to address urgent calls for aid to persons stricken by great poverty and/or illness means that they focus on persons not necessarily of their own immediate circles. Holmgren's (2009:7) recommendation, to start with the self, is not an argument for self-indulgence but, rather, a suggestion that the self is where one has 'the greatest power and influence' and that one cannot contribute to the 'wider good' if one is not healthy and secure. Similarly, Mollison (1996:457) argues, as do many post-development theorists (Escobar 1997[1995]; Rahnema 1997) that many developers' top-down initiatives are based on an unequal distribution of power and not on a relational people-care ethic: '[T]o persuade people to accept an externally imposed design is a form of insult, an implicit assumption of superiority on the part of the planner'. It is only once a permaculturalist has been able to design and manage a system for him/herself; that s/he is considered ready to teach or demonstrate to others how the principles interact. Teaching permaculture design to others thus forms an integral part of permaculture's ethos as it creates an equality between people that permaculturists valorise.

Despite permaculture's people-care ethic starting with the self, it is relational and, according to Mollison (1996:506), integrated with earth-care activities. Mollison (1996:506) suggests that focusing on earth-care activities 'comes to naught if we, as a people, continue to invest in arms and destruction, to permit land abuse, and to fail to tackle the social and political impediments to reclaiming the desertified and abused lands, or even to prevent the poisoning of the land'. His final chapter offers practical strategies and suggestions for how to integrate people-care and earth-care structurally and organisationally. It also contains suggestions for specific people-care activities based on a conceptualisation of a 'harmonious world community' that share a common ethic (Mollison 1996:506):

> First we must learn to grow, build, and manage natural systems for human and earth needs, and then teach others to do so. In this way, we can build a global, interdependent, and cooperative body of people involved in ethical land and resource use, whose teaching is founded on research but is also locally available everywhere, and locally demonstrable in many thousands

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> of small enterprises covering the whole range of human endeavours, from primary production to quarternary system management; from domestic nutrition and economy to a global network of small financial systems.

Permaculture practice and design is said to be guided not only by a concern for ethics but also by several design principles that Holmgren (2009:xix) has codified and that I introduce in the next section. For Holmgren (2009), the importance of a codified set of design principles rests on the ability of those principles, once applied, to preclude inappropriate application and to ensure that permaculture practice and design are based on local conditions and allow for innovative adaptations to each particular local environment.

2.4 Permaculture Design Principles

Permaculture design can be equated with '*the use of systems thinking... that provide the organising framework for implementing* [permaculture's] *vision'* (Holmgren 2009:xix; original italics). An effective design is one that produces a self-regulating and sustainable system; where conventional organic agriculture requires much arduous work and is labour intensive, permaculture is design heavy and permits, indeed encourages, production involving far fewer external energy inputs, be they labour e.g. digging and weeding, or fertilizer (Holmgren 2009). In practice, when considering permaculture's principles, Mooiplaas' residents implement the following techniques and practices as examples of an integrated approach[13] to sustainable agriculture and human settlement design:

(1) '*Observe and Interact*': taking time to observe climate and weather patterns and to determine what the best area for cultivation is in terms of soil type, wind direction, sun exposure, and frost. All the residents either spent time in community accommodation[14] or on their sites in temporary dwellings such as wooden huts, before deciding where to start building their own dwellings and to plant their gardens.

[13] I refer to an integrated approach to sustainability throughout the dissertation, I intend the term integrated approach to mean an integration of sustainable agriculture and human settlement design.

[14] Before moving into their adobe (mixture of sand, clay and straw) brick house, Anna and Nathan spent five years in what had earlier been the farm's goatshed (see appendix 4 for a map), a communal asset and existing building before the PP bought the farm; Christopher spent 2 years in the main house while observing his site and building a house of rammed earth; Phillip spent 3 years in the cottage while observing his site and building a strawbale house; Mieke spent a few years in a wooden hut on her site; Michael and Ina have been living in the goatshed for two years before recently starting to build a dwelling on their site.

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(2) '*Catch and store energy*', can be seen in the PP members' use of solar energy as the source of household electricity and the practice of saving seed which, says Holmgren (2009:29), is a particularly 'potent storage of energy'.
(3) '*Obtain a yield*', means not only maintaining a level of self-sufficiency by growing one's own food, but recognizing the emotional and spiritual[15] rewards that gardening can bring, including a sense of connection with nature, a sense of food security, and appreciating food consumed moments after being harvested.
(4) '*Apply self-regulation and accept feedback*', by planting, weeding, watering, fertilizing and harvesting for oneself first, and then sharing the harvest, with any excess (in the form of mulch and compost) fed back into the garden; residents thus take personal responsibility for their own needs and accept the consequences and transitioning 'from dependent consumers of unsustainable products and services to responsible producers' (Holmgren 2009:82).
(5) Production of electricity from solar panels for lights and appliances as well as utilization of solar ovens to cook food is demonstrated in the '*Use and value of renewable resources and services*'; i.e. the sun.
(6) Through the use of grey-water from domestic use for irrigation, and hu'manure from compost toilets for compost in gardens, the PP's residents '*Produce no waste*'; and
(8) '*Integrate rather than segregate*' functions; thereby, maximising available energy.
(7) An example of '*Design from pattern to detail'* is in the establishment of food forests, which mimics the different vertical forest layers to stack edible perennial plants. Permaculturalists believe that forest ecosystems are energetically the most productive.
(9) The practice and implementation of '*small and slow solutions*' can be seen in residents' attempts to fix the road after rain through small interventions, such as fixing potholes with rocks; instead of using heavy machinery or bringing materials from outside.[16]
(10) '*Use and value of diversity*' is demonstrated by planting varieties that yield at different times of the year. This practice mitigates the threat of damage from weather

[15] Spiritual and religious beliefs vary widely among residents, for example, Christopher is a convert to the Sufi faith and is married to Leonie a non-practicing Jewess and spiritual healer. Phillip is an atheist. Anna won't expand on her religious or spiritual beliefs, except to say that 'God is in the garden'.
[16] Fixing the road in this manner allows for use of local and available resources, while simultaneously creating a road surface that, over time, will filter water into the earth rather than washing away topsoil as it erodes.

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events and pests. Furthermore, companion planting creates opportunities for incorporation of plant species that return nutrients to the soil, e.g. comfrey and yarrow for micronutrients, beans and other legumes for nitrogen; and for attracting beneficial insects such as bees whilst deterring other pests by using strong-scented plants such as citronella pelargonium and garlic.

(11) '*Use edge and value the marginal*', can be seen in the design and implementation of non-linear garden areas which increases the garden's edge area and thus maximizes the space available.

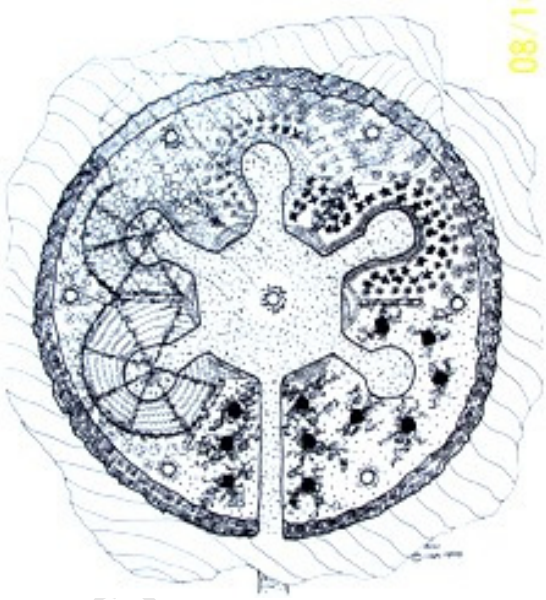

Figure one: Mandala garden designs are an example of a non-linear garden design; that typically have a centre plant bed, with other plant beds forming an outer circle. A pathway through the beds creates keyholes in the outer circle.

(12) '*Creatively use and respond to change*' refers to the ecological concept of succession. In a discussion with Anna, while I helped her planting garlic in her mandala garden, she explained succession:

> Basically what happens is you have a disaster or a clearing. What first happens is your pioneer species move in. So this is your weeds, very strong, very tolerant of harsh climates and they are changing the soil and the climate around them. Next season you might get a bit more diversity and that will allow other things to come in. So as succession proceeds, you get

> species accumulation. You get more animals, more birds, more plants, more trees and you eventually evolve into a more stable climax ecology, which has got a large range of species, but fewer numbers of each.

In other words, principle 12 recognizes, accepts and allows for change over time and space. The use of pioneer plant species, such as acacias, which are fast-growing and fix nitrogen, in the initial layout of a garden creates opportunities for less hardy species to grow underneath, protecting these slower growers from wind and the harsh sun, and improve the soil for succession by releasing its nitrogen when pruned. Christopher started removing large acacias from his garden systems once they had served their initial function of providing shade and protection for slower growing trees, and of improving the soil's quality.

2.5 Permaculture Zones

An especially well known permaculture design guideline is zoning. It is one of the most basic ways permaculture practice works to integrate sustainable agriculture and human settlement design. It aims toward a design in which five zones of human space and resource use are placed around a central dwelling (zone 0) so that they fit and flow around and into one another, as the proximity to zone 0 decreases outward to zone 5. A simplistic breakdown of the six zones, with regard to plant selection only, might look as follows:

(0) The dwelling, or key area of human interaction.
(1) Annual plants that need irrigation and regular harvesting, e.g. lettuces, spinach, and herbs.
(2) Perennial plants and herbs, grains and root crops.
(3) Orchards, broadscale farming and commercial crops.
(4) Border areas of forest or wilderness, that are still managed for purposes of gathering wild edibles, timber, firewood and other usable plant materials.
(5) Characterized as 'natural, unmanaged environment used for occasional foraging and recreation' (Mollison 1996:50).

The placement of a zone and what elements are contained within it is determined by the 'number of times you need to visit the plant, animal or structure, such as a chicken coop or nursery; and the number of times the plant, animal or structure needs you to visit it'

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(Mollison 1996:50). For example, poultry need daily egg collection and feeding whereas an established fruit tree needs to be visited only a few times a year, for harvesting and pruning. The level of management is different for each design, according to the requirements of the human(s) dwelling in zone 0 and of the species of plant or animal that s/he has selected.

2.6 Summary

That its protagonists adopt, as a core principle, an integrated design with humans at the centre suggests that a permaculture system is relational and dependent on its source – human design – for its life and its ability to source its own life from its presence. Permaculture is human centred and guided by a set of ethics and principles; it is anthropocentric which makes its practice unlike most other 'alternative' agricultural approaches, particularly those that are market related or that focus almost wholly on production levels. I suggest that this makes permaculture practice an approach to sustainability that integrates sustainable agriculture and human settlement design, which starts with care of the self and the local (zone 0) before spilling over and outwardly from there. As a sustainable agricultural production process, it may have started as a response to environmental concerns (see chapter six); but it is also a form of practical environmentalism (Holmgren 2009:69). In chapter three I reflect on the PP, its formal structure and mission.

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Three ~ The Permaculture Project: its formal structure and mission

3.1 Legal structure and vision

The NPO that I have here called the Permaculture Project (PP) is a registered company established under Section 21 of the Nonprofit Organisations Act (71 of 1997). In South Africa, a NPO is an organisation set up to advance 'the public interest or some common interest of their members' rather than for the members' personal gain (LRC n.d.(a):n.p.). NPOs are legally obliged to have a written constitution stating the objectives, the membership, structures and main procedures of decision-making, and the roles and responsibilities of the people that constitute the organisation's membership (LRC: n.d.(b):n.p.). The PP's vision, as outlined in its constitution (Appendix 1), is that:

> We are here to create a responsible, supportive, free and harmonious community and training environment. We are committed to investing our community and resources in developing educational models, rooted in Permaculture ethics and principles. Our lifestyles will reflect the dynamic ethics and principles of Permaculture to make conscious our connection to Spirit and Earth and our interdependence with the web of all life.

Most striking, during my six weeks of fieldwork, was that participants in the PP's activities were indeed practising what they were teaching. They were crafting a living example, not simply enunciating it. They explicitly worked towards demonstrating an 'ecologically sustainable lifestyle' that might serve as an example to volunteers and course participants through their permaculture and natural building practices, and as enshrined in their constitution. The ethics and principles defining permaculture were evidently drawn upon to determine the implementation and manifestation of the PP's members' living model. The evidence was there in the constitution and as I show in chapter four, in how residents used Mooiplaas with 'their social and cultural behaviour relating thereto' (Appendix 1): daily life on Mooiplaas thus exemplified permaculture in practice.

The PP and its members had also accepted an educational mandate as outlined in its mission statement (Appendix 1) which specifies that:

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> The PP is a training and education institution that aims to use the farm Mooiplaas to create diverse working examples of community based sustainable dry land Permaculture systems, techniques and management methods that are ecologically sound and economically viable. The project also aims to encourage diverse creative, cultural and healing pursuits that support a transformative educational environment.

The NPO structure and Mooiplaas' setting are together used to facilitate a community based lifestyle demonstrating community whilst also teaching permaculture focused programmes. In the rest of this chapter I continue to describe the PP's and Mooiplaas' history, structure and organisation. In the following chapter, I draw on my six weeks fieldwork to describe situations and activities that constitute evidence of a permaculture-style integrated approach to sustainability.

3.2 The farm – Mooiplaas

The courses, facilitated by PP members, take place on Mooiplaas, a farm the PP owns. In 1999, a collective intending to practise permaculture bought the land that is now Mooiplaas, having first registered their NPO. Previously, Mooiplaas' approximately 400 hectares, with four neighbouring farms along the same valley, were part of one larger farm. When the 400 hectare section was bought, it had reportedly been overgrazed, the soils rendered infertile through extended monoculture, and the aquifers leeched dry. The effects of the former owners' unsustainable land use were still visible, thirteen years later, with severe erosion, large patches of bare earth and moribund vegetation marking large portions of Mooiplaas.

The Western Cape region where Mooiplaas is located is semi-arid and well known for producing deciduous stone fruits, in particular apricots and plums, fortified wines, and dairy products. The valley in which Mooiplaas is located runs North to South with a mountain range to the north replenishing fresh water supplies each year from melting winter snows.

Mooiplaas is located a hundred kilometres inland of the Western Cape's south coast and set between the first coastal mountain range and the mountain ranges of the Great Escarpment. A characteristic of the area that reportedly appealed to the PP's members when they bought Mooiplaas was its location in relation to South Africa's coastal and

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onshore air pressure systems, and their interactions with one another which produce predominantly winter rainfall. High pressure systems, often lying above the Great Karoo, and coastal low pressure systems are drawn toward one another and typically meet and bring rain to the mountain range that defines the farm's northern horizon. Mooiplaas' climate is extreme: rainfall varies between 150ml and 450ml per annum and temperatures between -2C and 45C. During my field research, in the winter months of June - July 2011, the minimum temperature was -2C and the maximum 21C (Appendix 2, Mieke's weather log).

I arrived at Mooiplaas on Sunday 12 June, a few days after approximately 100ml of rain[17] had fallen within 24hours. The biggest dam on Mooiplaas can hold approximately 15 million litres. It had been built three years earlier, but drought had meant it had been empty until this rain event. On this occasion, the water had entered the dam from a keyline ditch as well as from the overflow of a smaller upstream dam. On the Monday, it was 'all hands on deck' to mitigate some of the damage caused by the swollen river to the dirt road winding between the five farms along the valley – crossing the river at five points from the southern access – and providing access to Mooiplaas from both north and south.

Mooiplaas being the second farm from the southern access, its residents typically use the road from this direction, it being the shortest and quickest route to the nearest town, six kilometres away. The first farm along the road has no buildings and has had no human inhabitants for many years. With only a fence, the road, and the river, the first farm resembles a protected area, with wildlife, including kudu and caracal, inhabiting its densely vegetated area. Mooiplaas residents have thus taken on the responsibility of maintaining that farm's road section. On the Sunday of my arrival, I had had to use the northern access to the road, as the southern part was badly affected by the rains, and impassable for most vehicles.

'All hands on deck' meant that all residents, labourers and the one anthropologist-WWOOFer were tasked with collecting rocks to fill gabions – wire baskets, filled with rocks – which in this case were used to stabilize the earth along the road crossing the river, to control the water flow and to keep the road passable. Michael made the

[17] See Appendix 2, Mieke's weather log.

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gabions, while the four labourers packed the rocks that the rest of us collected. Anna had an injured back and so, instead of carrying rocks, made lunch for everybody.

The northern access to the road was now the main route to and from Mooiplaas and for accessing the quarry across town for rocks needed to fix the road. Consequently, the northern access was used heavily in the short period after the rain, the southern part being in process of repair. Despite it being a public road, its now increased frequency of use became a concern for the neighbouring farmer.[18] Over the next few weeks the road became a regular feature of my participants' daily lives as it required additional labour to prevent the river from swallowing it further, and various meetings were necessary to assure neighbours that increased use of the northern access road was due to an emergency, and only temporary.

Over the next six weeks, I helped to repair the road, carrying and placing many rocks along various of its sections and along the waterline of the, by then, full dam.[19] Christopher explained to me that the line of rocks created habitats for seeds and amphibians that migrated downriver, and would grow to eventually form a small ecosystem that would help to filter the water and keep it clean.

I participated in a diverse range of labour activities during my fieldwork period. In some activities I did so as part of a larger set of residents, for example, the roadworks and helping to stitch and repair the nursery's shade cloth. I also spent time at the main house, weeding and pruning. In addition I worked on a one-on-one basis, on the sites of various residents, creating opportunities to get to know my research participants, Mooiplaas' residents.

3.3 Membership[20]

Climate extremes as discussed above placed limits on the PP's social structures. Mooiplaas' position in a water scarce region limits the number of people that can live sustainably off its own natural resources. Therefore, the PP limited its membership to just 21 Land Custodianships (LCSs), the holder/s of each of which has a single vote in

[18] This has now become a legal issue, and, to maintain confidentiality, I cannot refer to it further. The neighbour, fourth in line from south to north, had been there only a couple of months.
[19] The dam had a leak and slowly emptied over the course of a few months.
[20] Please see Appendix 3 for a full breakdown of the members of the PP.

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the NPO's executive committee. The executive committee is 'headed by two directors, PP members, on a rotating basis' (Appendix 1, Preamble).

Each LCS[21] is formed by an individual, also referred to as a 'full member', or a couple, referred to as 'joint members'.[22] A LCS constitutes a single shareholder with a purchased share in the PP,[23] and 'Each LCS amounts to one vote in deciding matters at meetings of the executive committee. In the case where two individuals have bought one LCS they must function as one entity when it comes to decision making, site allocation, levy payments and work levy obligations' (Appendix 1, section 11). However, whether any one person is an individual LCS-holding full member or a joint LCS-holding member does not necessarily affect that person's capacity to exercise power in the PP, as its stated decision-making method aims to be one of consensus although, where necessary, decisions are reached democratically by voting (Appendix 1, Section 21). Consensus among members was defined as an outcome to which 'no reasoned and paramount objections' were raised by members of the executive committee (Appendix 1, Section 21).

According to Anna, voting to reach a decision had occurred only once in the past 13 years. [24] Legally, the NPO's executive committee must hold four general meetings per annum. Decisions affecting policy, protocol, membership, development, budget, and so on are made at such meetings. During my 2011 winter field research, the then PP's chairperson, Gustav,[25] explained that the general meetings also serve to build and maintain community relations by often providing the only occasion when most if not all the executive committee members, i.e. resident and non-resident community members, are present.

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[21] See the following section.
[22] Some couples are both full members, for example, Christopher and Leonie, and Gustav and Nina.
[23] See sections 7-9 of Appendix 1 for more information regarding membership.
[24] In the period since my fieldwork, the PP has been engaging in a process of changing their decision-making model to an Integrated Decision Making Progress, based in holacracy. Holacracy is also founded on consensus, but is driven by a process which seeks to ensure clarity on the topic at hand and includes phases in which all tensions are integrated into the final decision. The process is perceived to be more effective by the members of the PP than other consensus decision making models, as tensions are considered to arise from the group regardless of the individual bringing it to consciousness of the group. Furthermore, most decisions are arrived at by recognising that they are 'good enough for now' and can change at any point in the future. The executive committee is engaged in a process of changing the constitution to reflect this new development.
[25] Gustav and his wife Natalie are non-resident members. Please see Appendix 3 for a full breakdown of the PP's membership.

A member can resign or be expelled from the executive committee at which point their decision-making power is annulled. However, members are still considered such until their status has been formally transferred to an incoming LCS. The rights and obligations of an outgoing LCS, with regard to 'site allocation,[26] levy payments and work obligations',[27] are transferred to an incoming LCS when the incoming membership application has been approved and its principle has paid the requisite new membership fee (Appendix 1, Section 11). In other words, the board always has a membership of 21 although sometimes there are fewer with actual voting rights. The cost of a share, for new members, is inflation related and re-calculated annually by the treasurer. At the PP's 1999 founding, each LCS paid R11 000 for their membership which covered the purchase price of the farm; by 2012, a share's value has exceeded R43 000. Of the original 21 PP members, only three were still members by 2012. Only one member has been expelled from the executive committee (Appendix 1, Section 40.5), reportedly following a situation of domestic violence and where the executive committee offered the female partner an individual LCS. [28]

Since June 2011, when I began fieldwork, two LCS holders have resigned, one new one has joined, and there are two membership applications awaiting consideration. Thus 19 people in total formed the then active executive committee of the NPO. Of these, 11 were then resident on Mooiplaas and were either full or shared (joint) PP members. I personally qualified as a non-member resident through becoming the life partner of an individual full member. There were, by mid 2012, two toddler children also residing on Mooiplaas.

The structural relations on Mooiplaas have three apparently separate elements: the NPO, its constitution and the PP members. However, the NPO's executive committee constitutes the PP's membership as well as the community. Furthermore, according to Phillip, the constitution is 'in process and always will be'. His assertion is in line with permaculture principle 12, to 'creatively use and respond to change'; and the newly adopted holacratic integrated decision making process (see footnote 24).

[26] I describe site allocation further on in this chapter.
[27] I describe the levy payments and work obligations further on in this chapter.
[28] She nonetheless decided to leave with her partner.

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The structural relations of the PP, as organised in the NPO and the community; the levies and its constitution; are complicit in serving to teach and manifest a sustainable livelihood for the farm land and each LCS; containing both labour and leisure.

3.4 Sites of custodianship[29]

Each LCS is designated a site, or area of Mooiplaas, of which it is the custodian. An LCS can be equated to a leaseholder of its particular site, as each LCS is required to pay an annual levy, and does not directly own any of the assets: they are the property of the NPO as a corporation, and each LCS has usufruct rights. Mooiplaas is sub-divided into two land-use categories: communal land and assets, on one hand, and LCS land and assets on the other (Appendix 1, Section 29). Collectively, the 21 LCSs are the custodians of Mooiplaas, and communal areas are deemed such, 'in the sense that all members have access to it' and are collectively managed and maintained.

According to Holmgren (2009:138), 'the 'site' concept used in permaculture is similar to the use of the term by the design professions to mean a limited parcel of land, often focused on a central point that is generally a dwelling or other building'. Three categories of site are available to members for custodianship, determined by their respective geographical location and the health of the ecosystem's fertility, soil and water resources in so far as these affect the possible uses to which the land can be put by a LCS holder. The conditions of use related to each type of site further include the level of agricultural development and whether a LCS holder intends to reside there permanently.

- 'Agricultural LCS's are those sites that have previously been utilized for agricultural purposes and are ideally situated by virtue of their suitability to produce primary resources required to sustain the community and to act as training models for ecological agricultural production'. (Appendix 1, section 33.1)
- 'Wilderness LCS's are those sites that are located in the wilderness areas of the farm as noted on the topographic design' (Appendix 1, section 34.1).

[29] See Appendix 4 for a map of designated communal areas and fixed assets of the PP, and the sites of LCSs, the holders of which were resident at the time of my research. Please note that large areas of the farm are not indicated on the map as they are considered communal but contain no fixed assets of the PP.

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'These LCS's are located in sensitive natural environments within which rare and endangered plant and animal species may be living'. (Appendix 1, Section 34.2)

- 'Co-housing[30] is defined as a multifunctional model of individual housing units that are clustered around common buildings where residents share cooking and other activities'. (Appendix 1, Section 35.1)

Each site category requires a specific level of care. For example, agricultural LCS site holders are required to develop an example of 'ecological agricultural production' and are thus available only to residential members.

Other than Johan's 'wilderness LCS' – Johan was not a permanent resident – all sites occupied by the residents introduced in the introduction, were agricultural LCS sites situated in the valley. The wilderness area, being more ecologically sensitive and having more limited access to water than the valley had been deemed suitable for non-resident members who needed to draw far less resources than residents. During the taught courses, the various sites, containing houses and different gardening zones, were used to demonstrate different interpretations and applications of permaculture's design principles, as implemented by the respective LCSs.

3.5 Levies

According to Mollison (1988:532), one of the primary ways to facilitate a 'sound community' is for individuals in a community to: 'recognize the need to subscribe to a group fund for maintaining roads, fences, and infrastructure, or to donate work in lieu of money on a regular basis'. To this end three levies are 'payable' to the PP by each LCS:

- An annual levy, a Rand amount,[31] which goes toward covering farm expenses, infrastructure, labourers' wages and maintenance.
- A labour levy (22 working days or 154 hours per LCS, per annum)[32] that can either be paid in currency, a convenience for most non-resident members, or worked off.

[30] No co-housing has been developed yet.
[31] The amount is due by the end of each financial year. For 2012/2013 financial year the amount was R2880. It is increased annually by 10%.
[32] This work levy calculation was lowered during the 2012 AGM to 11 days of 8 hours each.

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- A resident levy known as '1-in-7', i.e. community labour that requires every farm resident to work one day per week, or one hour per weekday that they are present toward general farm maintenance.

Every resident has, since early 2011, had a work book in which s/he indicates the date, the type and the duration of such labour. The work books provide a window into the amounts of labour residents give to the farm in general.

Combining the '1-in-7' and the labour levy meant each resident was expected to do 62 days of labour per annum for the community, about 17% of their total time, albeit 24% of a conventional working year.[33] Holmgren (2009:73) draws on Odum's (1971) notion of tripartite altruism'[34] to propose that one's time should be divided into thirds and allocated to the provision of material needs, i.e. earning a monetary income,[35] to self-development and reflection, and to the benefit of society at large.

Mieke was the only resident that received a regular income from her work with SEED in nearby schools. Other residents did not have regular incomes. Instead they earned their income from the various courses, outreach work, and private consultations. Private consultation fees ranged from R1000 to R2500 per day depending on the budget and income of the project. Anna and Phillip also received remittances from their family when needed.

The notion of dividing one's time into thirds was reflected in the everyday lives of residents as they recognized that developing and effectively managing their own sites and aspiring to sustainability there, helped improve productivity and created room for educational activities, both of which contributed to the PP's overall mission. The residents accepted that part of self-development and reflection was in the aspiration toward living sustainably and self-sufficiently on their own sites, and thus at the same time benefitting the community, and society at large.

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[33] 365 days in a year. 62 days is 17% of that. If one cuts out 104 weekend days and six of the 12 annual public holidays, one is left with 255 days of which 62 is 24.3%

[34] 'Approximately one-third of captured energy is required for metabolic self-maintenance (of an individual population); one-third is fed back to maintain lower-order system providers; and one third is contributed upward to higher-order systems controllers' (Holmgren 2009:73).

[35] The residents earned incomes through the provision of the PP's educational activities, professional consultation work and outreach activities for other NPOs.

3.6 Farm labourers

The PP employed two labourers, Robert and Jacobus, who were managed by Christopher in his farm manager role. Their pay, in 2011, was R90 for a seven hour day, including lunch.[36] They also received uniforms, three weeks annual leave, an annual bonus and seven days per annum of paid sick leave. Residents also contributed to buy the labourers annual birthday presents. Wages were paid out of the annual levies that LCSs paid and were not generated through PP activities per se. However, the LCSs' levies were generally earned by members working on and with projects relating to sustainability, permaculture, and natural building.

Robert and Jacobus were tasked with maintaining infrastructure. During my fieldwork, their daily work was ongoing road repair and included carrying heavy rocks and working with a pick in the hard earth.

Another labourer, Petrus, was employed jointly by Anna and Nathan, Phillip, Mieke, Michael and Johan. He rotated daily between their sites, and they shared the cost of his wages and uniform. Christopher and Leonie employed Pieter on a full-time basis.

Due to the extreme temperatures and differing periods of daylight on the farm, work hours differed dramatically between winter and summer. During winter, Mooiplaas' work day started at 8am and ended at 3pm; during summer it stretched from 6:30am until 1:30pm. This was in order to make the most use of the temperate hours of the day as summertime afternoon temperatures often reached highs in the 30s and even low 40 degrees Celsius, while in winter, the early mornings were bitingly cold.

Labourers lived with their families in rented cottages on farms to Mooiplaas' north. They lived there alongside other farms' labourers.

The extent of residents' involvement in the labourers' lives differed from one to another; but expressions of care seemed consistently there. For example, when Petrus and his wife's young baby had three back-to-back cases of pneumonia, despite being prescribed antibiotics by a clinic doctor, Anna took them probiotics and the child has

[36] Recently, labourers in the Western Cape participated in strike action to increase their minimum wage. At the time their minimum wage was R69 for an 8 hour day. Mooiplaas' labourers did not participate, as they were at the time being paid R95 for a 7 hour day. Since the new financial year, beginning March 2013, Mooiplaas' labourers are paid a wage of R105 per 7 hour day. This is better than the newly established national minimum wage which pays the same amount for an 8 hour day.

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since not had a recurrence. Robert's young child was born with a hole in the heart, and Mieke and Anna have taken Robert's wife and their young daughter to the hospital on several occasions.

I also saw how knowledge was transferred between the residents and the labourers in the course of their work and interactions in one another's daily lives. I noticed the influence on the four labourers' lives when I had the opportunity to drive along on the weekly 'towntrip'. Typically, the labourers travelled to Mooiplaas daily by bicycle, except on Fridays when, once work was completed they were all ferried to the nearest town, on the back of a pick-up truck, to buy groceries. On the day I went along I saw, once we had reached their houses, that they had various food plants growing, apparently from seedlings given to them when Mooiplaas' seasonal planting sessions occurred in the nursery. [37]

Since Petrus participated in more of residents' natural building, food growing and energy saving activities than did the other labourers, he had the greatest opportunity to learn and apply them in his own life. For example, residents had all bought energy-efficient Ecozoom wood stoves[38] for the winter months when solar ovens were less suitable; and late in 2011 Petrus had asked that his bonus be used to buy him such a woodstove.

Despite the cordial relations residents had with their contracted labourers, Phillip expressed unease about the relationship between an aspiration to sustainability and his own use of Petrus' labour. He suggested that his using Petrus' labour time incapacitated Petrus from working on his own house and in his own garden. Thus did Phillip reveal an at least implicit understanding that living and working at, in and around the home and in one's own food gardens leads to greater chance to live sustainably.

At the heart of his concern, I think, is a discomfort with living and working in the political economy of a post-apartheid South Africa in which employers are mostly white and from a middle-class background and employees are poor and, in this case, coloured.[39] Despite residents usually working alongside their labourers, there was still a

[37] I did not participate in any such session during my fieldwork as it was the wrong season but, since I have moved to Mooiplaas, I have had the opportunity to do so.
[38] Originally designed for the rural wood-using market, the stoves uses 60% less wood, and produce 70% less smoke and greenhouse gasses than open fires. See http://ecozoomstove.com/rem.php
[39] Jonathan is the PP's first and, at this stage, only member that is not white.

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social hierarchy between them as employers and employees. However, the PP had made efforts to pay the labourers they employed more than other farmers in the area, which suggests that its members' use of wage labour was not uncaring. Further, the labourers contributed to the overall mission of the PP as they had incorporated some of the practices that they saw on Mooiplaas into their own lives.

3.7 Courses and fulfilling the PP's educational mandate[40]

The PP fulfils its educational mandate in two ways, by running Permaculture Design Courses[41] (PDCs) and Natural Building[42] Courses (NBCs), and accepting volunteers or WWOOFers. At Mooiplaas these activities vary seasonally, and depend on what is required. Furthermore, volunteers can, as part of their educational exchange, either participate in particular community projects, such as working in areas that are considered to be communal,[43] or they one can volunteer to work with another member of the PP on their site, on their buildings and in their gardens.

The fees for the PDC[44] and NBC[45] were R6000 and R4000 respectively. This included two daily teas, vegetarian lunches and some evening meals. Organic toiletries were also provided. Accommodation was not included: the prices ranged from R55 to R90 for on-farm options.

Mooiplaas acts not only as an education and accommodation venue for demonstration of permaculture principles and ethics through PDCs and NBCs. Members themselves also facilitate, cater for, provide accommodation for participants and manage the courses. Income generated from the courses paid Mooiplaas a rental fee and four residents for their roles as facilitators, caterer, accommodation manager. Following

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[40] I have since my field research period completed a PDC in April 2012, and draw on the knowledge that I gained there throughout the dissertation. However, my research into the activities of PP is not to assess their education-based activities, i.e. the various courses that are organised and facilitated by the members of the PP, on the farm Mooiplaas. Rather, the dissertation focuses on the residents on Mooiplaas, persons who constitute a section of the PP's membership and members of its board.
[41] The curriculum for the two week PDC was codified in 1984 (Holmgren 2009:xx[20]).
[42] According to Phillip and Nathan, natural building is a building method and process that uses materials that are locally sourced, natural i.e. mud, clay and straw, and kind to the environment. Natural buildings typically produce much of their own energy through the combination of passive design features, such as placement, and smart use of materials to enhance insulation and thermal mass properties. As such natural buildings have a lower carbon footprint for the duration of its lifespan, and are more sustainable.
[43] See section 4.2
[44] See section 3.7.1 on numbers of participants in PDCs
[45] See section 3.7.2 on numbers of participants in NBCs

their mission statement, residents open their homes, all self-built from a variety of natural materials, and their gardens as demonstrations for the participants to learn from and engage with.

3.7.1 Permaculture Design Courses (PDC)

During PDCs, participants engage with permaculture, its principles and its ethics through a variety of learning methods (Praetorius 2006:2) that focus on 'teaching the whole person'. According to Anna, PDCs can greatly transform people's lives as they seek to create a learning organism in the classroom through effective facilitation, which Praetorius (2006:3) defines as 'a philosophy of letting go of control in the classroom. A good facilitator recognizes that students are their own best teachers, and that the primary role of the teacher is to make easy, or facilitate, the learning of their students'.

Many participants on the PDC I attended expressed dissatisfaction with their careers and expressed a wish to explore permaculture activities as a move toward finding greater fulfilment in their lives. For example, Matt, a designer who had lived and worked in Johannesburg, had left his design-firm job to start his own business as a sustainability consultant. He had already experimented with growing his own food and making compost before attending the PDC. Barbara, a freelance computer consultant in Johannesburg, had just bought a farm 100 kilometres from Mooiplaas. Joanne had worked in a bank, but had left her job and was, at the time unemployed; she and her mother had then bought a farm – in Mpumalanga. Neither Barbara nor Joanne had farmed previously; but both intended to develop their pieces of land according to permaculture principles and then to move and live there.

On a PDC, participants learn to identify vegetation systems and units; to design, select and manage plants, food gardens, small animal systems, orchards, and grain crops; to manage soil, water catchment, domestic water, and waste. They also learn skills such as land and ecosystem observation, mapping, sector and slope planning, designing for different climates, assessing infrastructure, resources, human needs, and ecosystem health. Since 2006, 13 two week residential PDCs have been held; which translates to over 200 participants (about 15 participants per PDC). Mieke, Leonie and Ina, all resident members, first came to Mooiplaas as PDC participants. Other past participants

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have gone on to establish their own permaculture systems and to facilitate PDCs of their own.

Barbara has, since April 2012, employed PDC co-facilitator, Christopher, as a consultant, and they have designed a large scale water infrastructure for her farm, and have received Department of Water Affairs' permission to implement. Joanne has similarly started developing her and her mother's farm and they have several donkeys, geese and veggie tunnels; and, with recycled materials, have also managed to build a nursery for indigenous plants; and have installed composting toilets.

3.7.2 Natural Building Courses (NBC)

The first NBC was held in 2010. With two week-long courses twice a year, five have been held thus far. The NBC also has a professional accreditation for architects. However, many of the course participants are owner builders, and some have since gone on to start building their own homes from natural materials. Others include people with a general interest in sustainability. During a NBC, participants, learn to test, make and then build with different natural materials, including cob, mud brick/adobe, rammed earth, strawbale, rock and so forth.

For Phillip, the most important thing for participants to take away from a NBC is the ability to recognize that every situation is different and that one needs to assess each site independently for the appropriate application of natural and sustainable building materials and methods. Nathan, in contrast, particularly stresses the permaculture orientation and integration of zone 0 with other zones.

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3.8 Summary

Permaculturists in various parts of the world have introduced two-week residential PDCs (Holmgren 2009: xxii). At a PDC, participants engage with both the sustainable agricultural aspect of permaculture and with an actual example of a sustainable human settlement, such as an ecovillage or intentional community, by residing there. Permaculture's two week residential PDC has been said to be particularly effective in creating an ever expanding sense of community (Van Schyndel Kasper 2008) and especially in 'galvanising fundamental change and new focus in the lives of participants, and in providing a sense of belonging' (Holmgren 2009:xxii).

The PP's pedagogical ethos, to 'encourage diverse creative, cultural and healing pursuits that support a transformative educational environment' (Appendix 1) and to do that by creating living examples of permaculture's principles and ethics to volunteers and through residential PDCs, demonstrates that permaculture is not just a benign gardening activity, but also that it undergirds a social movement that is potentially effective in creating change on both a social and an environmental level; a notion which I further develop in chapter six.

Chapters two and three have provided an outline of the principles and structures that are informed by and that inform the implementation of the PP's mission. The following chapter deals with how the Mooiplaas residents implemented these principles and structures through integrating human settlement patterns and sustainable agriculture; a practice that, I argue, is itself informed by permaculture principles and is implicit in the PP's aspiration that its members should live sustainably.

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Section B
Ordinary ethics of everyday life – Labouring toward Integration, Internalisation and Decentralisation

Four ~ Toward an integrated existence: Human Settlement Patterns and Sustainable Agriculture

4.1 Introduction

I start this chapter by asking: What does it mean to say that Mooiplaas' residents aspire to be the producers of their own lives; to live sustainably and to be able to source their own lives from its presence?[46] The argument of this dissertation is that Mooiplaas' residents live an integrated existence, and that this integration is based on a view that one cannot live sustainably without integrating human settlement patterns and sustainable agriculture. To understand what it means to say that the residents are the producers of their own lives, the following questions need to be answered: what does such an integrated existence look like? How does such an integrated existence take place? And why do the residents live an integrated existence? Or, more specifically, why do they aspire to be the producers of their own lives? I deal with each of these questions in chapters four to six, and add concluding thoughts in chapter seven.

This chapter, then, deals with residents' behaviour relating to the implementation of an integrated existence of human settlement patterns and sustainable agriculture.[47] First I describe some of their human settlement patterns as they sought to minimize their impact on the environment and rather to complement it. Following that, I review some literature on ecovillages before describing some of the sustainable agricultural practices the residents implemented. Although my argument is that the two should be integrated in practice and in understanding, I have to deal with them separately for heuristic purposes.

An underlying theme of this chapter is the implementation of permaculture's fourth principle, 'apply self-regulation and accept feedback' in that it aims to show that the

[46] See section 2.6
[47] I develop the ethical aspect of the residents' lives in chapters 5 and 6

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residents aspired to internalise and self-regulate as opposed to externalise[48] and centralise building practices, and decentralise food production and supply.

4.2 Human Settlement Patterns: Natural buildings to work with the environment

Except for the buildings that were on Mooiplaas[49] before the PP owned it, residents' dwellings covered an average 60m^2 and were self-built from natural materials, using various techniques including, adobe bricks,[50] cob,[51] rammed earth[52] and strawbale plastered with cob. The sand and clay they have used were sourced from Mooiplaas and often extracted when digging foundation trenches or through earthworks done to repair the surrounding landscape's eroded areas. The straw was sourced from farms within a 100km radius and, wherever possible, even closer.[53]

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[48] The externalisation of costs refers to a process in which the activities result in an uninvolved party being affected negatively and not being compensated or paid. Typically these activities are from pollution due to the mass production of goods in an unregulated market, and the producer is thus not held accountable.

[49] The Mainhouse, Goatshed, toolshed, and the old labourers' cottage i.e. the cottage in which I resided during my field research.

[50] Cob is a mixture of clay, sand and straw and the basis of many natural building techniques. It is made by adding water and mixing the materials with one's feet. To make adobe bricks the mixture is passed through a brick mould and left to harden in the sun.

[51] When building directly with cob the mixture is hand rolled into balls and thrown onto the surface before being kneaded into the material already on the wall. Because one uses one's hands to cob, the walls are rounded and sculptural. Adobe bricks and rammed earth, which rely on forms to hold the materials until it is rammed enough, create much straighter lines.

[52] Unlike other natural building materials, rammed earth is earth straight from the building site and not mixed with straw. It usually contains 5% cement as a binder. Instead of using water to align the earth particles, compression is used through a ramming rod which is dropped onto the surface of the earth repeatedly with a dull-sounding thud until the pitch of the rod hitting the earth reaches a somewhat higher-toned pitched to indicate that the earth is compressed or dense enough. This is typically done in 10cm increments around the entire building before adding another layer.

[53] Prior to the NBC in May 2012, a wedding party was held in the nearby town. The event organizer had brought a 100 strawbales for seating around the dancefloor. After the event he approached the residents to ask if they wanted to buy the bales from him at R10 a bale.

a. Mixing cob

b. Kneading cob balls into the wall

c. Removing mould to allow adobe bricks to dry

d. Ramming earth

Figure 2: NBC participants making cob, building a cob wall, making adobe bricks, and ramming earth

Other buildings were refashioned to suit the needs of the residents.[54] Dwellings' window and door frames and most fittings, i.e. sinks and baths were reclaimed and recycled. Nathan told me that his slate floor tiles used to be roof tiles of an old, since demolished building in Fishhoek, Cape Town. He was driving past when they were being removed and had bought them for R1 each.

During NBCs, many students asked about the difference between natural building and sustainable building practices. Phillip and Nathan explained it thus: Natural and sustainable building techniques avoid imported materials that have high embodied energy by recycling fittings; and they are initially labour intensive, having to first source

[54] The classroom had been an old corrugated sheet metal shed from which the walls were removed and replaced with various natural building materials.

the soils locally and make the materials before (adobe bricks) or during (cob, rammed earth) the building process. Furthermore, natural building means 70% of the budget is spent on labour and 30% on materials, while the inverse is the case in conventional building practices. Furthermore, according to Phillip:

> Cement [production] accounts for 5% of global carbon emissions and the fact that the producers do not have to pay for this pollution leads to a competitive advantage to conventional builders over those that choose a method that does not pollute. The reality is that externalized costs, such as these, do not just disappear but are paid for by the collective, the planet and future generations; whereas natural and sustainable buildings contribute to local job creation and training and have a greater positive impact socially as well as environmentally.

Through using recycled fittings and locally sourced natural materials, and training local labour, residents sought to minimize their impact on the environment. Further, as I show below, by relying on renewable energy sources, integrating the various functions and services provided by certain aspects of their dwellings with their gardens, and stewarding natural resources, such as water and wood carefully, residents worked with the environment to minimize their impact.

4.2.1 Towards integration

Mooiplaas was completely off-grid. Dwellings all used solar panels for electricity. As the batteries that stored solar-generated energy had a limited lifespan, most residents had installed several different systems to compensate for this weak point in their electricity provision systems. For appliances, such as laptops and washing machines, each dwelling had an inverter transforming the 12 volt current harvested from solar panels to 220 volts. These appliances were used or, in the case of laptops, recharged during daylight when the panels produced an energy excess, thus allowing the household's storage batteries to be used past their typical lifespan, increasing their longevity. LED lights and internet modems ran directly on 12 volts from the batteries, thus needing only a regulator to preclude power surges.

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Although thatching grass grew on Mooiplaas, all the dwellings had corrugated iron roofs from which rainwater was harvested. Given the rural location, that water did not travel through smog or air pollution before collection and was thus safe for consumption. Water for domestic use was supplied from the dam and stored in water tanks[55] on each residential site. One third of the bottom storey of Phillip's house also had a reserve water storage tank of 24 000 litres which, in case of drought, was intended to serve as a back-up for domestic and irrigation purposes. The water tank was also used to regulate the house's temperature. The bottom storey, where the water tank was located, was earth-protected[56] and used geothermal energy to passively regulate the whole house's temperature (Figure 3). Other passive energy design features employed by residents included, trombe floors[57] and small to no openings on dwellings' western faces alongside which deciduous trees provided shade from the harsh summer heat whilst allowing sunlight and warmth through in winter.

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[55] Capacity of the tanks themselves ranged from 2500 litres to 5000 litres. Each dwelling had several water tanks; at least one for rain water, and at least two for domestic including irrigation uses. For the latter, dwellings' storage capacity ranged between 7500 and 20 000 litres. For Phillip this figure excludes the water reservoir underneath his house.

[56] Earth-protected buildings are usually set partially into the ground and typically use the natural terrain to help form the walls.

[57] The use of dark floor covering, in this case the reclaimed slate tiles, of which large sections got full sun during the winter months, when the sun's angle sneaked in underneath the overhang. The floor provided thermal mass and released the heat after the sun has set.

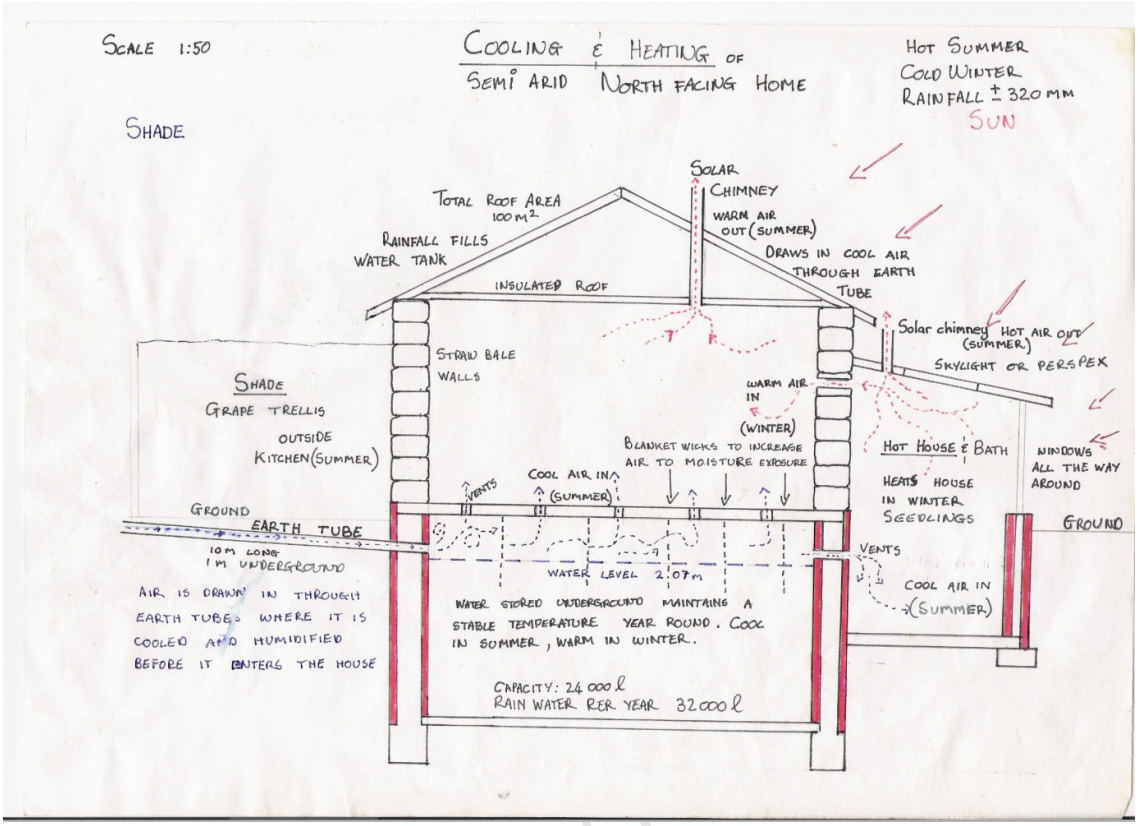

Figure 3: Phillip's house design, showing use of geothermal energy to passively heat and cool the house. (North is to the right hand-side of the diagram)

All residents had solar hot-water geysers attached to showers, with a wood fired 'hot-water donkey' as back-up for cloudy and wintery days. Hot-water donkeys were made from recycled geysers or retrofitted gas cylinders cobbed-in for insulation and placed over a fireplace. Even on cloudy days, the water would already have been warmed by the solar panels and needed only a small fire to heat it. Hot-water donkeys serviced showers and baths. Figure four, shows a homemade solar hot-water panel on the left attached to a hot-water donkey, and a firebath in the background. Firebaths were a luxury addition to all the dwellings. Using them required placing a little water in the bath before lighting a fire underneath in it a localised position from which it would take a couple of hours to heat up enough water to allow for submersion. During the courses, participants were advised to shower first before taking turns to use a firebath (no water change) which was outdoors and provided relaxation under a star-filled sky.

Domestically generated grey water was used for irrigating gardens, with supplementary irrigation water being drawn from the dam. For this reason, only biodegradable and

organic body and household cleaning products were allowed on Mooiplaas. The integration of these different systems, to serve similar functions, is an example of the permaculture principle 8: 'integrate rather than segregate'. It also provided a backup if one system did not function adequately.

Figure 4: Integrated hot water system: Home-made solar hot water panel on the left, insulated hot water donkey in the centre. A shower to the right could be serviced by either the solar hot water or the hot water donkey. The same goes for the bath (reclaimed and originally from 1911) in the background, which also served as a firebath. The acacia wood in the foreground was harvested on the site. In the background is indigenous vegetation forming part of that particular LDC's zone five.

Each dwelling had a composting toilet located outside. The hu'manure generated anaerobically, through a combination of faecal matter and carbon-based matter (primarily sawdust), was sifted and used for seedling mixes or added to gardens where earthworms helped to break down the nutrients into the soil. For baby Alicia, Leonie had used a method called 'Elimination Communication' in which she learned to respond

to Alicia's needs by identifying her bodily and facial cues, i.e. expressions or gestures. Leonie occasionally used biodegradable diapers which she fed to a worm farm in a recycled plastic drum[58] located just outside their bathroom and next to their garden nursery. Worm farms also produced vermicompost, a mixture of worm castings and organic matter used in the nursery and gardens. The bathroom's and the nursery's close proximity was also beneficial in the recycling of grey water, and the proximity of both to the dwelling indicated their frequency of use.

As indicated in section 2.5, each dwelling had several gardening zones around it. Not all dwellings were equally developed, as residents had started developing their gardens at different times, and implementation of the design inevitably depended on each resident's available time. Sites were sufficiently far from one another to allow each to develop its different zones, including a stretch of zone 5 which then interlocked with those of neighbours to form large passages along the agricultural valley which were left undeveloped. In total there was approximately 2000 square metres of the agricultural valley, which included the residents' and Mainhouse gardens, under irrigation, supporting a mixture of vegetables, herbs, fruit trees and indigenous vegetation that constituted the basis of a small-scale permaculture system. This I was told was sufficient to support much of the residents' dietary requirements. Their goal was not commercial production.

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4.2.2 Summary

Some of the systems described above, such as composting toilets and use of grey water for irrigation exemplify an integration of human settlement patterns and ways in which residents practised agriculture. Furthermore, it also reveals an ethos of internalising building practices and working with the environment.

In the following section, I briefly review some literature on ecovillages in order to make sense of the above human settlement patterns, before describing some techniques through which residents implemented sustainable agricultural practices. The review seeks to illustrate that the bodies of literature on ICs[59] and EVs[60] do not offer an

[58] Recycled chemical storage drums could be bought in the nearby town.
[59] The academic literature on intentional communities has focused on defining what an intentional community is, relations among members and different effects on those relations, including change and the

integrated approach to sustainability, i.e. an understanding that to be sustainable agricultural practices and human settlement patterns must be integrated. Nonetheless, that literature is useful for making sense of Mooiplaas' human settlement patterns.

4.2.3 Human Settlement Pattern Review: Ecovillages and Intentional Communities

Literature on 'community' is prolific, and the term's ubiquity and definition is contested (Rapport & Overing 2000; Thornton & Ramphele 1988). To make sense of what 'community' may mean in the context of the Mooiplaas PP, the field needs to be narrowed. The concept intentional community (IC) encompasses many types of community including co-housing, communes, urban housing cooperatives, community land trusts, student co-operatives and ecovillages (EV). With the PP's focus on ecological sustainability, it may be tempting to define Mooiplaas as an IC that is also an EV.

Robert Gillman (1991) first coined the term 'ecovillage' in 'reference to combining ecological design with a community-building design'. According to Ergas (2010:33):

> They [EVs] may use green building techniques, for example, constructing buildings that are made from earthen materials, and situate housing units around green space for subsistence gardening. Villages are purposefully laid out to maximize utility from the environment and to diminish excessive use of resources as well as to foster community interaction.

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individual at Findhorn (Forster et al. 2005), gender (Conover 1975), classifying various types of intentional communities according to economic, social and political structure (Butcher 1991; Crookston 2010), as well as the motivating factor or common intent behind the establishment of an intentional community, including religious, spiritual, economic and occasionally ecological. Utopianism, and the intention to live the good life (Smith 2002; Sargission 2012), utopian property relations (Sargisson 2010), the distribution of power and justice (Sargisson 2004; Kruger 2004) and the paradox of estrangement in utopianism (Sargisson 2007) have all also featured.

Background literature on intentional communities focuses on the historical establishment of so-called utopian communities in the United States including religious communities such as the Huttenites, Owenites, Koreshans (Adams 2010) etc. A recurring theme is that the communities wanted a better life; and that members seeking to critique mainstream society led to their being considered utopian. Much literature is concerned with the success of such communities, assessment of which, according to Sargisson (2004: 161) is often based on longevity (Bader 2006; Cock 2009; Fleischman et al. 2010). Generally, the literature deals with the intentional community offering a type of social activism or cultural critique and its success or failure.

[60] Ergas (2010) focuses on how a collective identity is created and maintained in an ecovillage as part of a larger social movement in the face of local political opportunity structures. Swilling et al. (2006) analyses the various developmental challenges that Lynedoch in Stellenbosch had to face. Miller et al. (2012), found that personal experiences and a sense of moral responsibility explained the sustainability motivation of residents that live in an urban ecovillage and that differing personality types determine whether living in an ecovillage makes sustainable living easier.

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According to Gilman (1991:np), 'ecovillages grow out of the needs and opportunities caused by new ecological constraints; new techniques and technologies; and new levels of consciousness and awareness'. According to Ergas (2010:33), members of ecovillages are 'actively engaged with their surroundings' in order to challenge zoning regulations; building regulations; and municipal service delivery; for example with regard to grey water infrastructure; rain water catchment; renewable energy; and waste removal or recycling. Bang's (2005, cited in Van Schyndel Kasper 2008:13) definition of EVs is concerned with their socio-cultural characteristics:

> An ecovillage is a human-scale settlement (usually between 50 and 500 members, though there are exceptions) that is intended to be full-featured – providing food, manufacturing, leisure, social opportunities, and commerce –the goal of which is the harmless integration of human activities into the environment in a way that supports healthy human development in physical, emotional, mental, and spiritual ways, and is able to continue into the indefinite future.

Even though the Mooiplaas PP shared many of the above-mentioned characteristics, it did not, for several reasons, meet all the criteria for regarding it as such. First, as I mentioned in chapter one, there is potential ethical harm that might result from emphasising the PP's community aspects above and beyond its members' capacity as a NPO with an educational mandate. During my fieldwork, I heard many Mooiplaas residents reject the PP being described as an EV. They explained that they preferred to be recognised as a legally formalised organisation i.e. a NPO, with an educational mandate. This was because they had heard of another intentional community, the members of which had represented their community as an EV but had had only an informal structure; and had then been evicted from the land they occupied. The PP had consequently started consultations with land zoning professionals in order to legalise its land-use practices. Having been advised that their aspirations for further developing their land-use activities did not fall within the ambit of any of the existing legislative frameworks the members were determined to ensure that they could continue doing what they and the zoning professionals considered ecologically sound; and they thus sought a land-use model that might define the PP's work as agricultural with departures for education and provision of accommodation for the course participants.

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However, the PP's members recognised the value of the establishment and successful implementation of other EVs to further their mission as a sustainability-minded organisation. This could be seen on the PP's website,[61] which contained information on effective EV design as based in permaculture and the promotion of educational activities to facilitate doing so.

The PP members' main concern was their vision[62] and mission to invest their community and resources in developing living models of permaculture principles and ethics through providing educational activities. Resistance to being called an EV was not, therefore, a rejection of the social relationships that informed community life. Rather it indicated an underlying recognition that bureaucratic processes related to human settlement design were not necessarily concerned with its social relationships.

Second, following Bang's (2005) emphasis on using socio-cultural features to characterise EVs, Mooiplaas was not really an EV since its members were not all resident. By Bang's criteria, EVs have mostly residential members, which by virtue of the numbers and presence of people, facilitates a diversity of skills which in turn enables economic interaction and exchange between EV members. At the time of my research, the extent of formal exchanges among the PP's members was very limited, and the skills of the non-residential members did not allow them to generate an income in the rural location of Mooiplaas which offered only limited opportunities for successful employment. There was, nonetheless some informal barter and exchange of talents. For example, I was able to participate in the April 2012 PDC through offering to video record and document one of the courses – the intention being to use the footage for promotional and educational purposes. Another example is Nathan's help to Mieke with natural building expertise in the design of her dwelling in exchange for her long hours of work as PP treasurer. For the same reason, Phillip helped her to hang her doors and install her alarm system. When the work levy hours requirement was reduced, [63] provision was made for members to trade hours, at least for those worked over the required minimum. These examples show that the assistance that residents gave one

[61] For ethical reasons I cannot reference the PP's website

[62] See Section 3.1.

[63] See section 3.5.

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another had the potential to be exchanged in a formalised manner. However, no formal talent exchange system had yet been established on Mooiplaas.

Had there been a greater diversity of skills among members, more economic interaction might have occurred and led to a greater sense of self-sufficiency among all members. Residents able to generate an income on and around Mooiplaas invested their time and money in developing their sites as they came to recognize that the aspiration to sustainability and their individual sites' development contributed to the PP's overall aspiration to sustainability and the internalisation of costs; and that it reflected the idea that permaculture's people-care ethic starts with the self.

4.3 Sustainable agriculture

We were working at the southern (bottom) end of Christopher and Leonie's garden, in a small fenced in area. Christopher was raking and levelling the soil, removing stones that surfaced and explaining that we were working in a chicken rotation yard. The chickens had spent a few months there, scratching and loosening the soil while fertilizing it with their nutrient rich manure. They were now happily scratching and clucking in the next fenced-in rectangle, preparing it for the planting that would follow a few months later: 'The idea [I was told] is that they spend six months in here and six months in there'. We prepared the soil to start planting broad beans, garlic and spring onions. The layout of the beds in the rotation yard was like a four-pronged fork, one long winding planting area with spaces in between as pathways. The layout was intended to maximize edge (principle 11); along the inside of the beds we planted garlic and spring onion, which were small and low and, with their strong scents, acted as a natural pest deterrent. On the outer edge, beans would be supported by the surrounding fence, and fix nitrogen for the vegetables along the middles of the beds. The soil would be heavily mulched and drip irrigation would ensure adequate water supply.

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The preceding narrative illustrates several ways in which residents practised sustainable agriculture, including organic polyculture, companion planting, mulching, and nutrient cycling. By finding natural alternatives for improving soil fertility and deterring pests, and a poly-cultural approach to crop design and layout, residents

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avoided the centralization of production and distribution of conventional agriculture with it multiple energy inputs and outputs.

Walking through their gardens, residents pointed to different plants and parts of the design and described how they interacted with one another. According to Whitefield (1993), permaculture is the design of beneficial relationships. In the previous section, I looked at how the human settlement patterns on Mooiplaas and the PP's institutional structures functioned together to benefit the PP's mission. This section, rather than assess whether the residents practiced a type of sustainable agriculture,[64] seeks to understand how and whether the criteria that might qualify agriculture as sustainable or not are met and integrated by the residents.

4.3.1 Criteria for and implementation of sustainable agriculture

According to Harwood (1990:4), sustainable agriculture 'can evolve indefinitely toward greater human utility, greater efficiency of resource use, and a balance with the environment that is favourable both to humans and to most other species'. Furthermore,

> (1) Agriculture must be increasingly productive and efficient in resource use; (2) biological processes within agricultural systems must be much more controlled from within (rather than by external inputs of pesticides); (3) nutrient cycles within the farm must be much more closed; and (4) crop nutrients must come from management of nutrient flow into and out of the soil. (Harwood 1990:15)

[64] Literature on sustainable agriculture covers a variety of topics and a comprehensive review is outside the scope of this dissertation. Glover et al. (2007) (2010) argue that shifting agricultural production from annuals to perennials can help to address environmental concerns while at the same time providing greater food security. According to Hongslo et al. (2009), different land-use management practices for agricultural and protected areas impacts differently on vegetation cover and biodiversity; and the potential for improvement is great if land-use patterns were to change. Hoffman et al. (1995) reviews various practices that could 'sustain the biological basis of agriculture', including, increasing soil fertility, selection of crops that are better suited to the environment including pests and diseases, and increasing the water table by using cover crops. Orzech et al. (2008) use a political ecological approach to draw links between pesticide resistance in agriculture and antibiotic resistance among humans. Di Falco (2012), reviews the use and value of biodiversity to farmers in relation to agriculture, for example, for the functioning of ecosystems and the services provided by interacting pollinators, pests and parasites; adapting 'crops to different and changing production environments'.
Schösler et al. (2012), argue that Dutch organic food consumers value organic produce for its association with a 'return to a more natural lifestyle, distancing from materialistic lifestyles, and reverting to a more meaningful moral life'; and that 'strengthening these cultural values in the context of more sustainable food choices may help to expand the amount of organic consumers'.

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According to Stinner & Blair (1990:124), 'sustainable agriculture differs from conventional, high-input agriculture in that it emphasizes long-term yield stability with minimal environmental impact – in contrast to focusing more on short-term goals, such as maximum yields. The goals of sustainable agriculture cannot be met by simply lowering inputs.' Mooiplaas' residents worked toward achieving these goals through the implementation of the following innovative practices with regard to (a) fertility, (b) water, (c) pest management, and (d) yield: [65]

(a) Fertility:

- Little to no tillage allowed micro-organisms to access all soil levels;
- Dynamic accumulators, such as comfrey and yarrow provided micro-nutrients in situ. Integration of acacias and other leguminous shrubs fixed nitrogen into the soil;
- Polyculture allowed for 'increased resource utilization in space and time. Because crop species vary in their resource requirements, including light, water and nutrients… more complex canopy structure may increase total light utilization, different water and nutrient requirements and different rooting patterns, reduced resource availability to weeds' (Stinner & Blair 1990:126);
- Incorporation of chicken manure, and the use of hu'manure, vermicompost and compost from kitchen waste to fertilize the soil;
- Integration of flowering plants attracted pollinators, i.e. bees, moths and birds to the garden;
- Proximity of indigenous vegetation through zoning provided habitats for natural pollinators.

(b) Water management:

- Recycling domestic water into the garden;

[65] According to MacRae et al. (1990 in Vandermeer 1995:202), sustainable agriculture should be classified according to the integration of pest management, soil management (which includes water management) and farm management. This includes 'nutrient and water cycles, energy flows, beneficial soil organisms, natural pest controls, and the humane treatment of animals, ... [to] ensure the well-being of rural communities, and to produce food that is nutritious and uncontaminated with products that might harm human and livestock health' (ibid.).

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- Drip irrigation bestowed small amounts of water directly to the plant root over an extended period of time; and, because the flow was continuous, water penetrated deeply into the soil, down to the root zone;
- Using mulch and living groundcovers kept soil moist as it inhibited evaporation, and prevented runoff and protected topsoil; it also inhibited weeds which compete with plants for water and nutrients;
- Planting on contour, in swales[66] and in 'net and pans',[67] prevented runoff and loss of topsoil.

A favourite maxim of Christopher during the PDC was, 'Plant the water'. To him, water infrastructure that helped to replenish ground water, by inhibiting run-off, erosion and loss of topsoil, was integral to sustainable agriculture practice.

(c) Pest management:

Practising organic agriculture, the residents avoided all chemical pesticides and used natural controls to inhibit insects from reaching the status of pests. These included:

- Increased proximity of indigenous vegetation to provide habitats for predators of harmful insects such as slugs and caterpillars,
- Integration of strong smelling plants to act as pest-deterrents.

(d) Yield:[68]

- Polyculture - Diversity of plant variety to protect against crop failures due to weather, pest or disease;
- Companion planting practices such as guilding, in which plants that benefit one another are planted in close proximity; for example, a classic guild is known as the three sisters and is made up of maize, runner beans and squash. Beans capture nitrogen for themselves, corn and squash; the corn acts as supporting

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[66] A shallow trough dug along contour to catch run-off and allow for effective infiltration.
[67] Net and pans refer to a pattern used in permaculture design for slopes. The pans, each containing a tree, are connected to one another via a network of shallow trenches that collect rain and runoff water.
[68] Gomiero et al. (2011:96) investigate the environmental impact of the different management practices used in conventional and organic agriculture, including soil health and fertility, carbon emissions, biodiversity, energy efficiency, chemical pollution, productivity, and water use. They conclude that, on a large scale, organic agriculture outperforms conventional agriculture as 'organically managed soils have a much higher water holding capacity than conventionally managed soils, resulting in much larger yields compared to conventional farming, under conditions of water scarcity'.

trellis for the beans; while the broad-leafed squash acts as groundcover inhibiting moisture loss and weeds.

Most companion plants provided more than one function, not only for the gardens, but also for the residents by virtue of their medicinal qualities: artemesia or *wilde als* tea was a popular addition in the treatment of colds and flu, or stuffed up the nose for sinuses; rose geranium or fennel tea was recommended for menstruation cramps; ginger and mint for digestive problems; and yarrow was poulticed onto open wounds to stop blood flow.

Through undertaking such practices, Mooiplaas' residents aspired to practise sustainable agriculture, and were able to provide much of their own nutritional and medicinal requirements. Residents were able to produce root crops such as potatoes, carrots, beets and turnips;[69] legumes; herbs; cucurbits; brassicas; alliums and other leafy greens such as a variety of lettuces and spinaches. Many of the herbs were also fed to the domestic animals for treating pests. Vaaltuin, the farm donkey, was rubbed with *wilde als* to help keep the flies at bay. Chickens were given herbs and other indigenous vegetation such as aloe vera for intestinal health; and their nesting boxes were lined with strong smelling herbs. Yet, it is important to note that at the stage of my research and in the eighteen months since, the residents were unable to produce all their dietary requirements. They still had to buy grains, cereals, dairy products, coffee, tea and some fruit; and, where possible, they bought these from organic suppliers.

The residents may not have been able to provide for all their dietary needs, yet there was an abundance of food in the community. For Mollison (1996:532) 'sharing' is the most important component of a 'sound community' which he defines as 'people assisting each other'. The residents shared more than the intentions expressed in the PP's constitution; they shared the resources available on Mooiplaas, their expertise to assist other members in the building of their dwellings, selecting the appropriate species of plant for particular areas of gardens, and their gardens' yields.

[69] Anna and I made 'turnipkraut' with her abundant harvest. Turnipkraut, Anna's own invention is 'like sauerkraut, but with turnips'. I sat at the kitchen table, grating the turnips that Anna had just scrubbed. She flitted about getting jars ready and amused me with anecdotes of previous attempts at preserving turnips, but all it takes is salt and the whole lot jammed into a jar.

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In 2011, Phillip's abundant tomato harvest was turned into jars of pasta sauce by Anna and Ina. During the PDC that I attended, Anna harvested more than 30kg of Jerusalem artichokes from her gardens, some of which she gave to the catering team to add to the menu, and some of which she gave to participants to cook at their various accommodations. The fruits harvested from the communal orchard at the main house were shared and either dried or turned into jams.

During my field research period Anna gave me daily bags of leaves of lettuce, spinach and herbs. When I left, I was given several seedlings and packets of seed to start my own home garden in Cape Town. In this way, through the provision of various educational activities for volunteers, WWOOFers and course participants, residents assisted others who shared their aspirations for living sustainably.

4.4 Conclusion

According to Katz (1984:37), sustainable agriculture is based on an approach to farming as a biological process with the sun as the main source of energy to cycle nutrients through the system with a particular focus on the soil's ability to hold water and sustain microbial life. Similar to the way in which residents used natural and sustainable building to 'internalize' or to minimize costs to the environment, their agricultural practices precluded dependence on external and chemical inputs, such as fertilizers, pesticides and herbicides. By working with nature and re-incorporating excess and waste into the system, residents tried to ensure their activities were part of the nutrient cycle. Furthermore, just as their agricultural practices were integrated with their human settlement patterns, the residents, volunteers and course participants were their own end-users i.e. the carbon chain typical of centralized production and supply methods[70] characterising conventional agricultural practices was absent. Through permaculture zoning in human settlement design, and ensuring independence of external energy inputs – through using particular designs and natural plant and biological controls – many energy inputs were self-regulating, for example, fertilizers and pesticides were parts of the design.

Labour activities, for example, building, planting, watering and harvesting, integrated settlement patterns and sustainable agriculture. In the following chapter I argue that

[70] As found in the production of processed foods, branded packaging and distribution to franchised stores.

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these activities were ordinary in that they constituted everyday life on Mooiplaas. Furthermore, with section 2.3 in mind these activities can be considered ethical in that they revealed in what way residents accepted responsibility for, and ordinarily worked towards the PP's overall success and sustainability in terms of permaculture's ethical principles.

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Five ~ Producing an Ordinary ethic

On day two of the PDC we were divided into two groups each of which was tasked with presenting a play the following day. The first group had to imagine a life without permaculture; the second a life with permaculture. The following day we performed the plays for one another. The first group had everyone laughing as the excesses of the life that they had imagined were easily dramatized and easy to recognize.

Ray and Holly sat in two chairs as if driving a luxury SUV. Their performance showed them going through a drive-in and buying fast food; which they scoffed down while steadfastly ignoring a man, Tai, begging outside their car window at a traffic light. Almost running over another man holding up a placard protesting the fracking of the Karoo, they sped away and threw the fast-food containers out of the window while pulling into a filling station. They treated the smiling petrol jockey with disdain as he washed their windows and put petrol into their car.

The second group, of which I was a part, followed and preceded to narrate and perform the story of a young woman waking up to take a solar shower, and brush her teeth with biodegradable body products. The grey water was directed at some bean plants, performed by Lara and Barbara, which proceeded to grow, smiling happily. The young woman went into her garden and collected eggs from her free range chicken before walking to her neighbour, Farah, to exchange the eggs for some apples from Farah's abundant harvest. They hugged to greet one another and admired a tall apple tree, acted by Thomas.

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5.1 Introduction

> The task is to recognize the ethical dimension of human life – of the human condition – without objectifying ethics as a natural organ of society, universal category of human thought, or distinct kind of human practice. In sum, it is preferable to see the ethical as a modality of social action or of being in the world than as a modular component of society or mind (Lambek 2010a:7).

In this chapter, I begin to answer the question: *how* were Mooiplaas' residents producers of their own lives? Following what the above anecdote describes, the PDC's participants had a conception of a permaculture focused life as a modality of being in the world infused with care for the earth, and people – otherwise seen as a permaculture based conception of ethics. That the participants in group two exhibited these ethics in a performance of everyday life not too dissimilar to that of Mooiplaas' residents suggests that they conceived of the ethical as a modality of social action, shaped and being shaped by their everyday lives.

Eating food harvested moments earlier from the garden outside the backdoor and abiding by Odum's (1971) tripartite division of labour in their everyday lives (section 3.5); I propose that the *how* is located in residents' everyday labour activities that integrated human settlement patterns and sustainable agriculture (chapter four) and that these activities revealed the residents' and PP's aspiration to sustainability, and displayed an ordinary ethic; thus uniting ecology and ethics (section 1.5). Similar to section 1.1.2, and my questioning the claim to superiority of a separate private and public self; this chapter argues that ethics should be demarginalised from theories of judgment and values to include everyday labour activities.

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5.2 Ethics as a property of labour

I draw a distinction between work and labour, one which is informed by Michael Lambek's (2010a:15) use of Hannah Arendt's distinction between the two:

> 'Work' refers to the production of finished products, durable 'works', notably works of art but also applies to the field of economic production more generally. By 'labor' Arendt indicates the daily chores characteristic of the private household or farm in contrast to exemplary productions and interventions in the public sphere. Labor refers to continuous or repetitive life-reproducing activities rather than marked spurts of work productive of discrete and durable objects.

For Ingold (2011:6) too 'the productive process is not confined within the finalities of any particular project'. Producing, building, making, planting, labouring are all similar to Ingold's (2011:14) notion of a thing 'launched in the current of time, [and that] has a trajectory of becoming'. This is similar to Lambek's (2010a:7) conception of ordinary

ethics as located in 'the moment of the creative act, insight, initiative, or coming into being' (Lambek 2010a:7). Lambek (2010a:3) likens these creative moments to Aristotle's concept of energeia or 'actuality' – a 'unity of means and ends'. Such a unity could be found in some of the life-(re)producing activities on Mooiplaas; or, rather, in activities caught up in the never-ending processes and cycles there of everyday sustainable living.

According to Lambek (2010a), an approach to ethics that conceives of it as a property of action rather than of reason is based on an Aristotlean as opposed to a Kantian view of ethics: 'Aristotle locates ethics as a dimension of action, whereas many philosophers,[71] not surprisingly, given their vocation, have preferred to see it as an aspect of thought ... portraying ethics as a set of values, rules, or conventions, and hence rais[ing] questions of their universality or correctness' (Lambek 2010a:14).

Based on Kantian and Durkheimian interpretations of ethics, anthropologists often locate the ethical in what Laidlaw (2002:312-3) calls the 'collectively sanctioned rules, beliefs, and opinions', and social, cultural and ideological paradigms that determine freedom, behaviour and judgment. However, Laidlaw adds, locating the ethical in the social leads to an incomplete understanding of 'how freedom is exercised in different social contexts and cultural traditions'. It leaves unanswered questions such as: 'If these are the rules, how and by whom are they formulated? How are they reinforced and transmitted through time, and how and by whom are they challenged? Who gets to say what counts as a breach of them?' (2002:313).

Permaculture theory's conception of ethics is concerned with care activities, implying, as indicated in chapter one, a relational notion of care in which the humans at the centre of an ecosystem are as dependent upon that ecosystem's sustainability as the ecosystem's sustainability is dependent on those humans. As I have also suggested, that in turn implies a need for a unity of ecology and ethics, one guided by a principle of custodianship rather than management and concerned with the relationship between the ecosystem's ecological, social and economic aspects.

When permaculture was first introduced in 1978 its protagonists made no clear statement about ethics. According to Leahy (2009:18), the first mention of ethics in

[71] Including the domain of environmental ethics. For an overview of environmental ethics as a discipline see, Keller (2010) and Light and Rolston III (2003).

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permaculture theory was in the 1988 publication of Mollison's *Permaculture Designer's Manual*: 'the only ethical decision is to take responsibility for our own existence and that of our children' (Mollison 1996:1). Leahy (2009:18) interprets Mollison to mean that 'we are to develop an understanding of how our actions have ethical impacts on others and that we are to act ethically to promote the good of others'. This, Mollison (1996) said, is accomplished through earth- and people-care activities.

Just because permaculture ethics were given expression only after permaculture's founding does not, however, mean that permaculture is not grounded in ethics. Rather, as the anecdote above revealed, permaculture ethics inhere in its practice and are gleaned from experience, rather than reason, rules and regulations. From such a perspective, ethics manifest in everyday activities.

Following chapter four and the anecdote at this chapter's start, I would suggest that residents conceived of ethics as a property of labour; the labour of integrating human settlement patterns and sustainable agriculture that constituted their everyday lives; and thus sought to unify ecology and ethics. Such an approach to ethics also emerged among participants on the PDC, as the enacted play discussed above reveals. Permaculture's approach to ethics was clearly a property of everyday life and the labour that constituted it.

5.3 Demarginalising the ethical in everyday life

The concept 'everyday life' has been scrutinized for its apparent universality, banality, ordinary and even mundane quality. However, anthropology has increasingly regarded everyday life as a site of disciplinary importance. For Das (2010:376) everyday life is not just a site of 'routine and habit'; rather, she says (2007:8), 'I think of the everyday itself as eventful'. Citing Cavell (1990), everyday life, for Das (2010:376), is ethical in its embodying aspirations or a 'moral striving' that is 'not premised on a pregiven, objectively agreed-upon idea of common good or on virtues that have a vocabulary of their own'.

The scholars whom I discuss below also argue for movement beyond their vocational ethics to argue for a demarginalised ethic; an ordinary ethic that can be located in their everyday aspirations. In anthropology, Spiegel (2005:138) has argued for an ethic of care to permit ethnographers to 'go … beyond a simple commitment to use one's

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disciplinary expertise in support of people struggling against the kinds of hegemonic discourses as mark the late modern world, with its decentred networks and global flows of power'. Drawing on Tronto's (1993) interconnected but sequential phases of care, Spiegel (2005:136) argues for the development of an anthropological ethic of care that is 'situationally and contextually guided by the particularities of contemporary circumstances' rather than by just 'structural political concerns', as was the imperative amongst South African social anthropologists during apartheid. This, he suggests, requires demarginalising care, professionally and privately, and recognizing it 'as a social process' (Spiegel 2005:138): 'The ethic of care is one which leads those who adopt it explicitly to refuse to stand outside the context of their lives as ethicists, analysts, researchers and, particularly, as social beings enmeshed in structures of floating (but not free-floating) and significant power'. Light (2011) connects the demarginalisation of ethics from everyday life to sustainability.

For Light (2011), 'refusing to stand outside the context' of his life, however, meant separating his work as a theorist and philosopher in environmental ethics from that of his work in environmental policy. Previously, Light had argued (1996; 2010) that environmental ethics had done 'little to produce a body of work that could be useful for helping to solve actual environmental problems' (2011:np). He consequently developed an approach that he called 'environmental pragmatism' which was meant to serve as an alternative to 'some of the theoretical debates that arose around the question of whether nature, or natural objects, could have nonanthropocentric intrinsic value and instead focused on more pluralistic claims for advancing arguments for environmental priorities which did not rely on arguments that nature has intrinsic value' (Light 2011:np). However, he added, he needed a channel for what he wanted to do 'on the front lines of the fight for policy solutions' (Light 2011:np): 'most of what I do on climate change is not recognized as ethics or philosophy by those in the discipline and that to be remotely successful I had to give up the idea of participating in the policy community as an ethicist but instead had to establish myself as a policy expert'. For Light (2011), action on the frontlines of climate change policy was more ethical than the frustrating theoretical work that he had done in the realm of environmental ethics.

Latour (2012) too attempts to cross the divide between acting in the real world and the theoretical minefields that precedes and may follow it. He argues for a need for long-

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term care; and an infinite responsibility, even for the unexpected consequences of our actions. He suggests that the modernist myth of mastery is flawed; that there is no such thing as 'pristine Nature'; and that dominance of man over nature does not imply emancipation from a responsibility to provide care. Rather, he says, it is a 'process of becoming ever-more attached to, and intimate with, a panoply of nonhuman natures' (2012:np). For Latour, it was adherence to a principle of precaution that crippled the environmental movement which 'dictated no action, no new technology, no intervention unless it could be proven with certainty that no harm would result'. He then argues for a notion of 'postenvironmentalism' which proposes that 'we should stop flagellating ourselves and take up explicitly and seriously what we have been doing all along at an ever-increasing scale, namely, intervening, acting, wanting, caring'. These activities designate actualities which, according to Lambek (2010a:3 citing Arendt 2008:206), consist of 'all activities that do not pursue an end and leave no work behind, but exhaust their full meaning in the performance itself'. This is life lived for itself'. Similarly, de Certeau's (1988:730) notion of dancing on a tightrope, when applied to aspirations to live sustainably 'requires that one maintain a balance that is never permanently acquired; constant readjustment renews the balance while giving the impression of "keeping" it'.

5.4 Conclusion

Care and custodianship, suggests Castells (1997), implies a sense of responsibility, a 'glacial' or long-term understanding of time, and a notion of place concerned with the local (Holmgren 1999). In the PP, this manifests in labour activities taking place in around the house (Zone 0), activities which are as ethically motivated as are those for all other zones. One can, as I have done, interpret everyday life on Mooiplaas as reflecting an aspiration to living sustainability. Moreover, as I have suggested, demarginalising care as a social process in the context of everyday life and labour extends the ethical beyond the confines of the prescriptions of theory, principle and philosophy and into life itself. What I have described in chapter four and here about the ways that Mooiplaas residents interact both with one another and with their environment shows how that is manifested within the structures and processes of the PP. This contrasts with environmental ethics which, as a subset of philosophy, locates

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the ethical in thought, reason and value – a philosophical, theoretical and academic domain.

Further, if and when care can be both universal and particular (Eves 1996:229), locating it as a property of micro-level action might come to serve to illuminate care at a macro level.[72] In this way, I have located an ethic of care in the residents' everyday life and as a property of the labour activities that constitute it. Arguably, this may be useful to enhance our understanding of - and developing an appropriate social response to climate change itself a socially driven phenomenon.

Finally, this chapter has been concerned to answer the question: '*how* did residents produce their own lives.' I have argued that the *how* was located in a unity of ecology and ethics; i.e. through a conception of ethics as a modality of being in the world and as a property of labour as the integrating action and as exhibitive of care that residents were able to build their own dwellings, and practice sustainable agriculture. Chapter six is concerned with *why* residents aspired to and sought ways to be responsible producers of their own lives.

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[72] It would be naive to pay attention only to those instances where an ethic of care is present; one also needs to develop a response to those instances that 'rupture the fabric of everyday life'. This is not to say that actions that lack a clear grounding in an intention and aspiration signify an ethical failure, or failure to care; but that they simply require a perspective of care that is relational and interconnected.

Six ~ Sustainable Environmentalisms

6.1 Introduction

I began this dissertation with a proposition that approaches to sustainable living, in the face of climate change, need to have an integrated understanding of sustainable agriculture and human settlement design. The proposition was based on an understanding of permaculture as an approach enabling such integration to be practised on the ground. In this chapter, I am concerned to explain *why* residents aspired and sought ways to be responsible producers of their own lives. I attempt to do that by arguing that their doing that derives from permaculture's status as a grassroots environmental movement concerned with creating micro-social responses to global climate change as a socially driven ecological phenomenon.

6.2 Approaching sustainability: A rationale for integrating sustainable agriculture and human settlement design

According to Vitousek (in Sayre 2012:58), 'most aspects of the structure and functioning of Earth's ecosystems cannot be understood without accounting for the strong, often dominant influence of humanity'. Environments that are often considered 'pristine nature' or 'wilderness' are, in fact, what Harris (in Flannery 1973) considers 'man-modified ecosystems'. Although humans' impact on nature goes back thousands of years, Sayre (2012:58) argues that a culture/nature dualism is becoming increasingly difficult to uphold, and that 'they are merging into something unrecognizable, or uncognizable, in terms of our inherited concepts'. Humans' impact (culture) on nature is not new. What is new is the pace of change. The climate is changing much more quickly than before, primarily because of human activities.

As Crutzen et al. (2000) argue, humans' impact on the planet since the industrial revolution has increased to such an extent that we have entered a new geological epoch,[73] dubbed the 'Anthropocene', which suggests '(i) that the Earth is now moving out of its current geological epoch, called the Holocene and (ii) that human activity is largely responsible for this exit from the Holocene, that is, that humankind has become

[73] An 'epoch' is distinct from an 'era' in geological terms. An era refers to a very large-scale unit of time span. 'Epochs' are much more modest, being subdivisions of geological periods. As well as duration, what is important is distinctiveness which reflects the scale of environmental change. (Zalasiewicz 2010)

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a global geological force in its own right' (Steffen 2011:843). The matrices for determining whether the planet has entered the Anthropocene are based on the scale of human change, as detectable in the climate. Examples are temperature increases and uneven biogeochemical or elemental cycles such as nitrogen, phosphorous and carbon, from chemical fertilizers used in modern agriculture, polluting soil and water (Steffen et al. 2011:843).

Agriculture of various forms has been practiced over thousands of years. However, according to Foley (2010), when comparing greenhouse gas emissions of the large scale, commercialised type of agriculture practiced today, with its dependence on land clearance, external inputs, i.e. chemical fertilizer and fossil fuels for production, storage and distribution; with transportation, electricity use, and manufacturing; conventional agriculture is the biggest contributor to climate change. [74] Similarly, Hansen (2011:11) asserts that human activities have resulted in an increase of climate extremes, outliers and anomalies. As he points out, whereas plant and animal 'biology and ecosystems on our planet are adapted to the rather stable climate of the Holocene, the past 10,000 years or so', the effects of global warming have already and will continue to exacerbate the 'extremes of the hydrologic cycle' resulting in increasingly 'intense droughts at times and places where it is dry and more extreme precipitation and floods at other times'. The consequent potential socio-cultural effects of climate change are also wide ranging. They include, changing land-use patterns due to desertification or rising sea levels; inability to access natural resources e.g. water and energy; increased risk and vulnerability of human health and well-being during climate extremes and threats to food security.

The relationship between modern agriculture and the climate is such that the planet's ability to support human settlement and culture is under threat:

> [W]e now face a global crisis in land use and agriculture that could undermine the health, security, and sustainability of our civilization. Our use of land, particularly for agriculture, is absolutely essential to the

[74] Despite the climatic impact that agriculture has had, the climate has also maintained its relative influence on agriculture, regardless of technological innovation (Hornbeck 2012:248). Some ways that such agriculture impacts on the natural environment and climate include land and tropical forest clearance, ecosystem degradation and biodiversity loss; freshwater quality decline; chemical pollution; and greenhouse gas emissions.

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> success of the human race. We depend on agriculture to supply us with food, feed, fiber, and, increasingly, biofuels. Without a highly efficient, productive, and resilient agricultural system, our society would collapse almost overnight (Foley 2010:1).

That said, Hansen (2011:11) also argues that human actions could have a positive effect were humans, in the face of their own culpability, to respond positively by working towards changing their practices and thereby reversing the direction of climate change: 'Actions to stem emissions of the gases that cause global warming, mainly CO_2, are unlikely to approach what is needed until the public perceives that human-made climate change is underway and will have disastrous consequences if effective actions are not taken to short-circuit the climate change'. However, the natural variability of climate makes the full appreciation of 'human-made climate change' particularly challenging to understand (Hansen 2011:11).

Further, says Lele (1991:618), sustainable agriculture cannot be about just 'maintaining growth in agricultural production'. And, Foley (2010:3) suggests, that to address the socio-cultural and ecological challenges that are expected to result from climate change, a revolutionary agricultural solution is needed – one that boosts agricultural production to provide for population growth and that simultaneously reduces the potential environmental impact of commercial agriculture. It should, Foley adds, include a combination of polyculture, organic agriculture and conservation. That is because, in Katz' (1984:37) terms:

> The welfare of the rural community, agrarian ethics and culture, human health, and the folklore of agriculture all are vital to a sustainable agriculture. A sustainable agriculture requires a society that deems these values worthy... The practice of agriculture should be one of stewardship, so that we pass the land on to our children whole, or if possible, even better than we found it.

To summarize, at the present pace of change due to human activities, planetary biological and ecosystems will not necessarily be able to co-evolve with or adapt to the climate. Furthermore, increased changes in climate also affect biodiversity as well as the ability of life-systems and cycles, including the hydrological cycle, to respond timeously. An expected consequence is impacts on human development and settlement, as we are

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dependent upon the availability of water, food and fibres to sustain us. It follows that a sustainable agriculture will have to develop in tune with climate change and be integrated with human settlement design.

6.3 Permaculture as a grassroots environmental movement

In his foreword to Holmgren's (2009) *Permaculture: Principles and Pathways Beyond Sustainability*, Hill (2009:v) writes: 'To a permaculturist, agriculture's growing dependence on [externally produced] resource inputs compensate for th[e]… progressive degradation of its resource base and associated need to control pests and diseases, its increasingly negative energy budget, and growing waste production problems and environmental impacts, are all obviously predictable'. Leahy (2007:431) and McKie (2012) regard Rachel Carson's *Silent Spring* (1962) as marking the birth of the modern environmental movement, at a time prior to any concern with global climate change. Carson's concern was with agriculture's impact on the natural environment, in particular the effects of various chemical pesticides. According to Leahy (2009:16;17), permaculture can be equated with environmentalism. Furthermore, according to Mollison (in Holmgren 2009:xv), permaculture is a 'positivistic response' to the environmental crisis: [75] '[I]t is about what we want to do and can do, rather than what we oppose and want others to change'. In this sense, permaculture is also a grassroots environmental movement with a mission to engender on-the-ground change through personal activities.

That the modern environmental movement's birth is tied, indeed arose in response to agricultural practice and malpractice is not coincidental. Leahy (2007:17) argues that permaculture theory and practice supplies an answer to 'how to organize agriculture and settlement design to fit within the goals of the environmental movement as a whole'. For Leahy, permaculture is, at its core a grassroots environmental movement concerned with both sustainable agriculture and sustainable human settlement design.

The 'how' that Leahy refers to is encapsulated in Mollison's (1996:ix) definition of permaculture, quoted earlier: 'conscious design and maintenance' and 'harmonious

[75] Despite the lack of academic research on permaculture as a counter-cultural, sub-cultural, social and/or environmental movement, I do not dwell on these possibilities. For an overview of how the social sciences have engaged with environmental movements in general, see Little (1999); Leahy (2007); Castells (1997); and Lever-Tracy (2008a).

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integration of landscape and people'. Holmgren (2009:6) also considers permaculture as necessarily anthropocentric; a 'human-centred environmental philosophy which places human needs and aspirations as our central concern'. Permaculture's ethical approach is important in taking permaculture beyond alternative agriculture in its various manifestations,[76] through its being an explicitly caring activity. That is because it focuses not only on sustainable agriculture as an environmental concern but also emphasises sustainability as a socio-cultural concern, especially in relation to sustainable human settlement design. According to Holmgren (2009:220), that concern is such as to create 'local cultures of place, which will eventually create new global biological and cultural diversity. This can only be done when we become rooted to place and community, rather than the global culture of no-place...' Permaculture is now practised and taught in over one hundred countries (Holmgren 2009) which translates to thousands of people with considerably different socio-cultural, economic, religious and political backgrounds participating in one environmental movement.

According to Castells (1997:124), the environmental movement has a spatial logic of places which 'privileges social interaction and institutional organisation on the basis of physical contiguity'. That contrasts with 'most dominant processes, [that] concentrat[e] power, wealth, and information' and are organised by a spatial logic of flows that 'organises the simultaneity of social practices at a distance, by means of telecommunications and information systems' (Castells 1997:124). Furthermore, according to Castells (1997:124), 'most human experiences, and meaning, are still locally based' resulting in a:

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[76] Following Beus & Dunlap (1990: 594), I distinguish between 'conventional agriculture' and 'alternative agriculture'. For Beus & Dunlap (1990) alternative agriculture includes 'organic agriculture, sustainable agriculture, regenerative agriculture, ecoagriculture, permaculture, bio-dynamics, agroecology, natural farming, [and] low-input agriculture'. He defines conventional agriculture as '[c]apital-intensive, large-scale, highly mechanized agriculture with monocultures of crops and extensive use of artificial fertilizers, herbicides and pesticides, with intensive animal husbandry' and 'alternative agriculture'. Despite subtle differences, the various forms of alternative agriculture all seem to share an emphasis on organic or near-organic practices, small land units for production and technology, 'reduced energy use, greater farm and regional self-sufficiency, minimally processed foodstuffs, conservation of finite resources, and more direct sales to consumers' (Beus & Dunlap 1990: 594). However, following Sofia et al. (2006), I would argue that organic agriculture should not be considered as the alternative. In order to distinguish between conventional agriculture and other ways of practicing agriculture, ala Beus & Dunlap, I give preference, wherever possible, to the concept of sustainable agriculture.

> … disjunction between the two spatial logics [that] is a fundamental mechanism of domination in our societies, because it shifts the core economic, symbolic, and political processes away from the realm where social meaning can be constructed and political control can be exercised. Thus, the emphasis of ecologists on locality, and on the control by people of their living spaces, is a challenge to a basic lever of the new power system.

According to Holmgren (2009:xxi), permaculture is both radical and benign: benign in its activity as a gardening movement, subversive (and thus radical) because, in Mollison's[77] words: 'I teach self-reliance, the world's most subversive practice. I teach people how to grow their own food, which is shockingly subversive. So, yes, it's seditious. But it's peaceful sedition'. However, as Sayre (2012:65) points out 'the fundamental problem is that, although the atmosphere is a genuinely global commons, both the sources of greenhouse gases and the effects of climate change are profoundly unevenly distributed in space and time'. Arguably, then, ecologists' insistence on locality comes to naught without the inclusion of a globalist time perspective on sustainability or what Castells (1997:125) calls environmentalists' 'glacial time' perspective of 'the relation between humans and nature [a]s very long-term and evolutionary. It moves back out of immediate human history into a wholly unspecifiable future'.

For Pezzey (1992:323), even though sustainability is a highly desirable goal, he does not consider intergenerational equity a necessary goal as, for him, its timescale goes beyond any current political timescale. Conceptualizing sustainability as a 'final state', rather than as a process that, I would argue, is best located in the labour activities that constitute everyday life, is often seen as the reason for governments' failure to develop appropriate policy (Holmgren 2009; Light 2011). That is because seeing sustainability as a state renders it utopian and idealistic and therefore unrealistic for governments in office for four to six year terms to aspire to, let alone to implement (Pezzey 1993). The problem is that sustainability remains a somewhat ambiguous concept.

6.4 Permaculture: An integrated approach to sustainability

[77] *Permaculture: A Quiet Revolution*. 2008. Vanessa Schulz. Filmed in Brazil: Produced by Global Reserve Bank and 21st Paradigm.

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The ambiguous character of sustainability, whether it is a state or a process, is relevant in permaculture (Holmgren 2009:xxx). The term's etymology suggests that an idea of perpetuity lies at the core of its practice and outcomes. Holmgren (2009:xxx) recognizes that 'the idea of permanence at the heart of permaculture is problematic' for any notion of sustainability: 'Permaculture is about the durability of natural living systems and human culture, but this durability paradoxically depends in large measure on flexibility and change' as seen in the twelfth permaculture principle that one should respond to, and use change creatively (Holmgren 2009:239). Holmgren also says that social sustainability refers to the long term capacity of culture 'to reproduce itself down the generations while providing human material needs'. However, he adds that (2009:xxx):

> In articulating Permaculture as the *Principles and Pathways Beyond Sustainability*, I am suggesting that we need to get over our naive and simplistic notions of sustainability as a likely reality for ourselves or even our grandchildren and instead accept that our task is to use our familiarity with continuous change to adapt...

For Holmgren (2009) then, change and adaptation should be key characteristics of any approach to sustainability – indeed they should be its essence; and, furthermore, that appropriate change is not necessarily to be found in technological development but should 'emerge from an intimate partnership with nature' (2009:108). Although Holmgren (2009:xxi) argues that a 'cultural revolution' is necessary for sustainability to be practised, the approach he advocates to change lies less in reform or radical restructuring than in recognizing that 'the apparent illusion of stability, permanence and [ultimate] sustainability is resolved by recognising the [temporal and spatial] scale-dependent nature of change' (2009:239).

Holmgren (2009:xxi) suggests that providing for people's needs sustainably requires a 'cultural revolution', but that phrasing it thus 'can alienate people and inhibit productive steps toward personal and social change'. According to Leahy (2007), there are two viewpoints as to the degree of change needed for sustainability: 'reformist' and

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'radical'.[78] The reformist approach has it that economic growth can continue simultaneously with environmental damage being minimized (Leahy 2007:437):

> According to the reformist account, all … environmental reforms benefit the economy, first, because energy efficiency is cheaper; you are not wasting money on energy you don't need. Second, environmental reforms create new industries and new jobs— for example new energy infrastructure such as wind energy plants or energy-efficient double-glazed windows.

The radical approach, in contrast, argues that a complete restructuring of the capitalist political and economic structure is necessary as economic growth is inimical to environmental sustainability.

Holmgren (2009:267) contrasts industrial culture's episodic change processes with the rhythmic change that, he says, characterises sustainable culture. "'Permanent' in this context does not mean creating human settlements that are rigidly set in their structures and ways, but rather adaptable human settlements as dynamic and changeable as [is] the world in which they exist" (Hirsch-Tauber 2011:50). Holmgren (2009:268) also argues that small-scale rhythmic changes 'maintain and conserve a larger stability'. This can be seen in the earlier of description of Mooiplaas LCS's aspirations to sustainability being something that helps shape the whole PP's similar aspirations. Sustainable culture, as seen in chapter four's discussion on human settlement patterns and their relation to the sustainable agriculture and the environment to which it intends to contribute and from which it simultaneously draws, is small scale and characterised by the 'home and domestic connection to nature, the cycles of the seasons, and even the mundane, supposedly boring aspects of childcare and education, housework and building maintenance, plant and animal husbandry, [and]community support and maintenance' (Holmgren 2009:268). In Castells' (1997:126-127) terms, permaculture accepts the environmentalist conception of the 'unity of the species' as a new common 'socio-biological identity' that is historically diverse.

According to Mollison (1996:ix), the 'permaculture movement has no central structure, but rather a strong sense of shared work'. In this way, the residents' labour activities on

[78] For more detail on the radical approach and critique of the reformist approach see Leahy (2007), Trainer (1997) (2000), and Pepper (2007) (2010).

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their own sites and toward their levy payments expressed a common intent and a shared aspiration to sustainability.

6.5 Conclusion

This chapter has been concerned to answer *why* residents aspired to be the producers of their own lives. Building on chapters four and five, and the arguments there that the residents took responsibility for their own lives, and sought to minimize their impact on the environment by internalizing building practices and decentralizing their food supply (chapter four); and that this was achieved through demarginalising ethics from their everyday lives and their labour activities (chapter five); this chapter argued that the residents, similar to ecologists, insisted on locality as a positivist response to global climate change and agriculture's complicity therein. Thus displaying a spatial logic of place and a glacial time perspective that Castells (1997) says is characteristic of environmental movements. By reflecting on permaculture as a grassroots environmental movement and its characteristic as a peaceful sedition and a positivistic response to climate change, I have shown *why* residents sought to become the producers of their own lives by integrating human settlement patterns and sustainable agriculture.

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Seven ~ Locating the paths of living, writing and becoming

> Too often our critiques of current approaches to development are unaccompanied by viable solutions… One reason for this is that suggesting such solutions entails a political agenda that clashes with our role as supposedly dispassionate scientific researchers. One way around this conundrum is the strategic choice of research foci. As social scientists we can choose to focus our methods and theoretical frameworks on people who have taken the politically active step of saying ''no'' to current development hegemonies and experimenting with alternative development strategies. (Veteto & Lockyer 2008:53)

Underlying much of this dissertation has been an argument that the perceived epistemological separations between (i) the professional and public self in anthropological fieldwork; (ii) culture and nature; and (iii) a care-ethic located in theories about value-judgments, on one hand, and an ordinary ethic based in action and everyday life on the other, are no longer tenable in the face of the social causes and effects of global ecological climate change. I began section 1.2 with the proposition that to live a sustainable life in the face of socially-driven causes and effects, including ecological, of global climate change one needs an integrated understanding of, and indeed actually to integrate sustainable agriculture and human settlement design. My expressed goal was to establish the implications of this proposition by asking what it means to say that residents of an IC such as Mooiplaas are the producers of their own lives. I have done so by asking three further questions: *What* do the residents produce? *How* does their doing that mean that they produce their own lives? and *Why* do they work towards producing their own lives. Based on the understanding that current conventional agricultural practices is the biggest contributor to climate change (Foley 2010), and an understanding that environmental and social sustainability are interdependent, this dissertation has argued for an approach to address these concerns by integrating human settlement patterns and sustainable agriculture, and that permaculture is such an approach. That said the point of the dissertation has not been to argue for permaculture as the one and only way to achieve sustainability, although it

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does appear that a unique characteristic of permaculture is its incorporation of an ethics of care.

Section A described the theoretical, environmental and social contexts that shaped and were shaped by the PP members' aspirations to live sustainably. It revealed how the residents used their community-based lifestyle, as informed by their legal status as a NPO with an educational mandate and enunciated in their constitution, to demonstrate such a lifestyle to course participants and volunteers. Section A also introduced permaculture ethics as a relational ethic with humans at the centre.

Section B was concerned with answering the question, prompted by Ingold (2011) of, what it means that residents are the producers of their own lives. Chapter four began to answer this question by describing the labour activities that constituted the everyday lives of the residents. I argued that these labour activities integrated their human settlement patterns and their aspiration to internalise their building practices, with their practices of sustainable agriculture and their aspiration to decentralise energetic inputs and outputs from their food production and supply, as a demonstration for others on how to do so.

Chapter five argued that the residents' integrated existence, as described in chapter four, displayed a custodial ethic in which residents took responsibility for their own actions and thus sought to minimize their impact on the environment. I argued that my location of an ethic of care in the labour activities that constituted the everyday lives of residents supplied the answer to *how* residents become the producers of their own lives? By demarginalising ethics and locating it in everyday life and as a property of labour activities I have argued that the integrated existence of everyday life on Mooiplaas displayed an aspiration to sustainability by demonstrating it; and in this way I have sought to unite ecology with ethics.

Chapter six sought to answer *why* residents aspire to become the producers of their own lives? By aspiring to live sustainably through an integrated existence the residents were able to take responsibility for much of their own lives, by building their own homes, living off-grid and growing much of their own food; I argued that residents' use of permaculture zoning principles displayed a spatial logic of place and a glacial time perspective; and that this was in line with Castells' assessment of environmental

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movements' and Mollison's claims that permaculture is a grassroots environmental movement and positivistic response to the global effects of climate change. In other words, the residents aspired to become the producers of their own lives as they understood permaculture to be a viable response to the socially-driven causes and effects of global ecological climate change.

Literature on environmental movements and on communities that aspire to sustainability is often concerned with the longevity of each collective. Change in, or a collective's short lifespan is often considered to indicate lack of success. Yet such assessments fail to recognize the effect on the area occupied by such a collective, on the local fauna, or indeed on those who have participated, however briefly, in such a collective's activities.

Recognising that culture and community are always unbounded and in continuous flux, it seems that a better mode to assess such groups and their endeavours is to consider the effects they have had on the area and the people involved. The same argument can be applied to the environmental movement which, although not a community or group, is a sphere of belonging that is not bounded by either time or space.

Protagonists in the environmental movement regard space as flowing from one meaningful locality or ecosystem to the next. Furthermore, their notion of time is not one that reflects political or policy cycles; rather, it has a different spatial and temporal logic based in the recognition that social and economic sustainability are all dependent upon ecological sustainability; and social sustainability is dependent upon rather than constitutive of ecological sustainability.

By including the glimpses I have into the Mooplaas residents' everyday lives, I hope to have cast light on a unity of ecology and an ordinary environmental ethic. One that displays sustainability as a process; and that is located first, in action – more specifically labour as care activities – then in everyday life; as a viable social response in the face of global climate change. And that this approach to sustainability makes a unity of means and ends, of ecology and ethics explicit in the integrated existence as exemplified by the residents who practised permaculture.

Mass media coverage of environmental disasters has led to popular associations of climate change with extreme weather events. Typically, events covered most

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extensively receive the biggest response in international aid and empathy. Yet, a deep scepticism about what is popularly understood to be sustainability, and about the relationship between global warming and climate change pervades the media. Das (2010:36) writes that 'the mutual shadowing of the ordinary and scepticism' defines everyday life's character.

The ordinary and scepticism has shadowed my own writing processes too. I have come to experience that, to be able to write and to read, the written product itself requires a dislocation of the author and the reader. Dislocation requires that one is seduced by the claims placed on us by books and words (Niffenegger 2010), an unbecoming. But, by finding belonging, i.e. going native and challenging the secularisation of the private and public self of the anthropologist (Green 2005), I have been located and embraced the process of becoming (Ingold 2011). For Ingold (2011:12), 'to be' or being, 'is not to be in place but to be along paths. The path, and not the place, is the primary condition of being, or rather of becoming'. Ingold (2011) finds becoming in tracing phenomenological movement along lines of history and becoming.

Although Ingold (2011) prompted some of the driving questions of this dissertation we have had two different approaches to answering them. Ingold (2011:11) sought to unite the approaches of ecology and phenomenology – whereas this dissertation's primary concern has been with the aspiration to living sustainably and has sought to unite ecology, or what I have come to term an integrated existence, with an ordinary ethic. I have argued that the integrated existence of Mooiplaas' residents revealed an everyday aspiration towards crafting ways of living that sourced its life from its presence; that the presence of sustainable living practices in the present nurtured the emerging potentialities of a sustainable future. In contrast to Ingold then, I have traced the residents' everyday life labour activities along lines of aspirations of an ordinary ethic toward living sustainably.

Yet, it is not merely the aspirations of Mooiplaas' residents that influenced my going native, but their very way of life and living; creating life and sourcing it from living that way. When I started my research, my goal was to write positively and to focus my research on a topic and set of people that might reflect, in what I could describe of their activities and active engagement in a process aimed at creating a positive environmental impact. I hoped that doing that might permit clear understanding of how

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one's actions might relate to aspirations to live a sustainable lifestyle. I have used dancing on a tightrope as an analogy for the ways such aspirations manifest. That permaculture discards linearity through its relational approach has helped me to question the separation of the apparent poles of professional and private, objective and subjective, and nature and culture.

Perhaps a way around such separations can be found by focusing on people's practices when they structure them in terms of aspirations for integrating ethics into sustainable agriculture practice and into human settlement design; and when they recognise the significance of constant readjustment in order to maintain and renew balance. Such balance encompasses the aspiration to an integrated approach to sustainability that I have argued for throughout this dissertation. If sustainability is the ability to source life from its own presence; living sustainably, or, rather, aspiring to live sustainably, requires that one maintain a balance that is never permanently acquired and where constant readjustment renews the balance while giving the impression of 'keeping' it. The art of operating is thus admirably defined, all the more so because in fact that the practitioner himself is part of equilibrium that he modifies without compromising it (De Certeau 1988:73). Or as Ingold (2011:13) writes:

> If there were no more to production than a transitive relation between image and object, then in theory, the time it takes could be compressed into an instant, and history itself would merely be a succession of such instants. But in reality, life goes on, forever overtaking the ends that may be held up within it. One may set out to build a house or to cultivate a field, and eventually lay down one's tools in the satisfaction of a job well done, yet in the doing, life and consciousness have advanced, and other goals already lie on the horizon. For the same reason that horizons cannot be crossed, it is impossible to reach the ends of life ... It would be wrong, then, to compare the living organism to an object, for 'the organism that lives is a thing that endures' (Bergson 1911: 16). Like a growing root or fibre, it creates itself endlessly, trailing its history behind it as the past presses against the present (Bergson 1991: 29).

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Figure two. NBC participants making cob, building a cob wall, making adobe bricks, ramming earth

a. Mixing cob

b. Kneading cob balls into the wall

c. Removing mould to allow adobe bricks to dry

d. Ramming earth

Figure 3: Phillip's house design, showing use of geothermal energy to passively heat and cool the house.

Figure 4: Integrated hot water system: Home-made solar hot water panel on the left, insulated hot water donkey in the centre. The shower on the right could be serviced by either the solar hot-water or the hot-water donkey. The same goes for the bath (reclaimed and originally from 1911) in the background, which also served as a firebath. The acacia wood in the foreground was harvested on the site. In the background is indigenous vegetation forming part of that LDC's zone 5.

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11.1 Appendix 1: Constitution of the Permaculture Project

CONSTITUTION OF THE PERMACULTURE PROJECT

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1. PREAMBLE

This constitution relates to the affairs of the members of the Permaculture Project on the farm Mooiplaas and the management thereof.

This constitution is an internal agreement between members of the project and relates to the use of the farm Mooiplaas and to the social and cultural behavior relating thereto. This constitution is based on the laws that govern the Permaculture Project, which owns the farm and project assets and is headed by 2 directors. The details of the affairs of the company are recorded in the Company Charter.

2. NAME OF THE PROJECT

The name of the project is THE PERMACULTURE PROJECT and shall be referred to as the PP. The name of the farm is Mooiplaas.

3. THE VISION

We are here to create a responsible, supportive, free and harmonious community and training environment. We are committed to investing our community and resources in developing educational models, rooted in Permaculture ethics and principles. Our lifestyles will reflect the dynamic ethics and principles of Permaculture to make conscious our connection to Spirit and Earth and our interdependence with the web of all life.

4. THE MISSION STATEMENT (THE HOLISTIC GOAL)

The PP is a training and education institution that aims to use the farm Mooiplaas to create diverse working examples of community based sustainable dry land Permaculture systems, techniques and management methods that are ecologically sound and economically viable.

The project also aims to encourage diverse creative, cultural and healing pursuits that support a transformative educational environment.

5. LEGAL STATUS

The PP is a Section 21 Company. It is a legal entity, with a legal persona that is separate from those of its members and which is capable of suing and being sued in its own name. The members of PP cannot therefore be held personally responsible for any debts or obligations of the company.

6. ETHICS, GUIDELINES AND RIGHTS

6.1 All individuals present on the farm Mooiplaas are subject to the Constitution and the Farm Rules.

6.2 Each member has the right to freedom of choice, expression and lifestyle providing they adhere to the conditions of the Constitution. No person has the right to dictate to any other how to live their lives on the farm and any conflict between

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members outside the conditions of the Constitution must be taken off the premises or resolved before the Management Committee.

6.3 We come together as a circle of diverse individuals, committed to nourishing ourselves, others and the earth through a simple, sustainable lifestyle which incorporates and respects life, love, work, play, free enquiry, learning, multi-cultural expression, and spiritual practices.

6.4 We honour the inherent dignity and worth of all life and all people regardless of age, gender, race, sexual orientation, financial resources or spiritual and political beliefs. We commit ourselves to supporting each other in living this vision.

6.5 We now face a great challenge: to co-create with spirit a wise, just and sustainable culture in balance with the natural world, to serve as a living example; manifesting a spiritual ecology in our daily lives.

6.6 We see co-operation as the fundamental model for human endeavor. When a proper balance exists between the independence of the individual and the interdependence of the community, each serves to enhance and compliment the other. While we choose to live in a co-operative community, caring for and supporting each others physical, emotional and spiritual well being, we each take primary responsibility for our own actions and needs.

6.7 Conflict solutions generated through co-operation and mutual creativity often transcend solutions generated by any single person, and can transform the very arena of conflict itself. We commit ourselves to transcend mere compromise and to reach for truly transformative solutions.

6.8 We support equally the need for human diversity in the community as we support the natural flux of people in and out of the community, through a fair and honest application process. This would entail allowing people to join only on the basis of merit, competence, and the degree to which their values, ethics, character and behaviour are in line with the PP and its constitution.

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7. MEMBERSHIP

7.1 Membership of the PP is open to any person, provided they support, practice and adhere to the aims, objectives and constitution of the PP.

7.2 Potential members must follow the application process.

7.3 Members must be accepted by a unanimous vote of the Executive Committee.

7.3 Membership shall be on three levels:
Level One: Full Membership
Level Two: Casual Membership
Level Three: Honorary Membership

7.4 A record of members will be held by the directors.

8. FULL MEMBERSHIP

8.1 Full Members are those people who are accepted into the project by the Executive Committee, and are above the age of 18.

8.2 Full Members are entitled to access the resources of the PP and the farm Mooiplaas.

8.3 Children of Full Members remain the responsibility of their parents until the age of 18, after which they may apply for Full Membership.

8.4 Full Members have no claim over the material assets of the project listed in the assets directory, which are property of the Section 21 Company the PP.

8.5 Full Members are entitled to become land custodians, forming Land Custodianship/s (hereafter referred to as L.C.S's) on Land Custodial Site/s, (hereafter referred to as L.C.S's) as set out in the Constitution.

9. LAND CUSTODIANSHIP

9.1 L.C.S's are entities made up of Full Members who have paid a Land Custodianship Fee (L.C.F.).

9.2 There are 21 L.C.S's available and more than one Full Member may make up an L.C.S.

9.3 The number of Full Members making up an L.C.S must be agreed upon at an Executive Committee meeting.

9.4 No extra L.C.S's shall be created. L.C.S's can be reduced by unanimous vote of the Executive Committee.

9.5 The L.C. F. is inflation-related and will be calculated on an annual basis.

9.6 Each L.C.S amounts to one vote in deciding matters at Executive Committee meetings and in the case where more than one Full Member makes up an L.C.S they must function as one entity when it comes to decision making, site allocation, levy payments and work obligations.

9.7 In the event of the transfer of an L.C.S., costs arising out of this transfer are payable by the incoming L.C.S.

9.8 Where development has been undertaken on an L.C.S., the incoming L.C.S must negotiate the value of the development with the L.C.S responsible for said development or outgoing L.C.S (whichever is applicable). The incoming L.C.S must then reimburse the relevant L.C.S to the value of said development. Where no consensus can be reached, an

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appeal may be made to the Executive Committee to decide on a reasonable valuation thereof.

9.9 In the case where more than one Full Member has an L.C.S. of one L.C.S., they must take collective responsibility for the maintenance of the L.C.S. In the case of separation of the entity, a decision must be made by the entity as to who is going to retain the L.C.S and L.C.S. while the other party/ies must renegotiate their relationship with the project.

10. CASUAL MEMBERSHIP

10.1 There are three categories of Casual Membership:
CATEGORY ONE: Volunteer Workers
CATEGORY TWO: Apprentices and Learners
CATEGORY THREE: Affiliated Members

10.2 All Casual Members are regarded as Visitors when present on the farm.

10.3 Casual Members work at their own risk and the PP is not responsible for any accident resulting in injury, sickness, death or theft or damage to private property incurred whilst a Casual Member.

10.5 Casual Members have no claim whatsoever over any of the assets and resources of the farm and have no decision making powers.

10.6 Casual Members may access and use certain clearly defined communal resources as specified by the Management Committee for the duration of their stay on the farm.

10.7 Full Members have the final word in disputes with visitors should they arise and have the right to ask the visitor to leave the farm should they be upsetting any member or to remain confined to a specific L.C.S. This decision must be made at a Management Committee meeting or at an emergency meeting called to deal with the issue.

11. VOLUNTEER WORKERS (W.O.O.F.F.E.R.S.)

11.1 A Volunteer Worker is any person who is willing to contribute towards the sustenance and growth of the project in exchange for lodging.

11.2 Volunteers are accepted for a stipulated trial period as agreed at a Management Committee meeting, thereafter their period of residence is reviewed on a weekly basis.

11.3 Volunteers must be integrated into a work program in consultation with a Full Member upon arrival.

11.4 Volunteer Workers may only access L.C.S.'s if given permission by the relevant L.C.S.

11.5 Volunteer Workers have no decision-making powers.

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11.6 Volunteer Workers may only log work hours on Management Committee specified projects.

12. APPRENTICES AND LEARNERS

12.1 The PP will provide a pre-defined training curriculum relating to any of the projects taking place on the farm and thereby provide a skills sharing platform.

12.2 Paying or funded apprentices or learners must share a common interest in the vision and objectives of the PP and must sign a Memorandum of Understanding (M.O.U.) and/or a contract with the PP, reflecting the terms of their participation in the farm's activities.

13. AFFILIATED MEMBERS

13.1 Affiliated Members are any individual or organization, group, network or community that share the aims and objectives of the PP and wish to enter into a co-operative relationship with the PP.

13.2 Acceptance of Affiliated Members must be made by the Executive Committee.

13.3 Affiliated Members must sign an M.O.U. between themselves and the PP, outlining the nature of their involvement with the PP.

13.4 Affiliated Members may use the resources, facilities and skills sharing opportunities at Mooiplaas for the purposes of any activity that falls under the description of the Mission Statement and M.O.U.

14. HONORARY MEMBERS

Honorary Members and the privileges and rights attached to such membership shall be decided upon at a General Meeting of the Executive Committee.

15. THE EXECUTIVE COMMITTEE

15.1 Only Full Members shall have the right to form the Executive Committee and it is only the Executive Committee which shall have executive decision making powers.

15.2 The powers and duties of the Executive Committee shall be to plan and manage all the activities and affairs of the PP in accordance with the Constitution.

15.3 The Executive Committee reserves the right to make decisions via electronic means if the need arises.

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16. THE MANAGEMENT COMMITTEE

This is constituted by Full Members present on the farm. The Management Committee meets when required, to manage the affairs of the farm.

17. MEETINGS

17.1 A General Meeting (G.M.) of the Executive Committee will be held quarterly.

17.2 An Annual General Meeting (A.G.M.) of the Executive Committee will be held every year after the financial year end.

17.3 Notification of meetings (except Management Committee meetings) and a dated draft agenda, compiled by the Secretary, will be given or sent to members, a reasonable time, before the meeting is held. This is done via the Mailing List, unless other arrangements are made for receiving it.

17.4 Minutes will be kept of all meetings, apologies noted, and written submissions by those unable to attend presented at the meetings that count by a vote as proxy.

17.5 Minutes must be sent out within a reasonable time after a meeting (except for Management Committee meetings).

17.6 Full Members have two weeks to respond, upon receiving the minutes; otherwise their silence shall be taken as consent to the contents therein.

17.7 Corrections to minutes may be tabled via email and must be submitted at the following meeting for ratification.

17.8 Full Members not able to attend a meeting may appoint a proxy.

18. POWERS AND DUTIES OF GENERAL MEETINGS

18.1 To discuss and decide upon how to implement the projects and campaigns of the PP.

18.2 To discuss and approve financial statements.

18.3 To discuss and make decisions on issues raised by members.

18.4 To evaluate and appoint new members.

19. POWERS AND DUTIES OF THE ANNUAL GENERAL MEETING

19.1 To approve the planned projects and campaigns of the PP.

19.2 To develop and approve the budget for the coming year.

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19.3 To change or amend, where necessary, the Constitution of the PP.

19.4 To change or amend, where necessary, the PP's established methods of operation.

20. QUORUM AT GENERAL MEETINGS

The quorum at G.M.'s shall be 50%+1 of the active Full Membership (or L.C.S's where more than one Full Member constitutes an L.C.S) of the PP.

21. DECISION MAKING

21.1 The principle of consensus governs the decision making process at all meetings.

21.2 It is accepted that, if nobody raises a reasoned and paramount objection against such decisions, consensus is reached.

21.3 Whilst the decision making process aims to be one of consensus, the Executive Committee reserves the right to call for a vote if a deadlock is reached.

21.4 Constitutional changes, acceptance of new members and changes to the Rules and Regulations must be made by consensus.

22. FINANCES

22.1 The control of finances shall be the responsibility of the Treasurer.

22.2 The Treasurer shall keep clear records of all funds received, the issuing of invoices and receipts for all transactions made in the name of the PP.

22.3 Financial Records must be submitted annually for audit.

22.4 The Treasurer shall be responsible for issuing quarterly financial statements.

22.5 The PP financial year begins on 1 March and ends on 28/29 February.

22.6 Under extraordinary circumstances, the Management Committee may, in conjunction with the Treasurer, authorise the approval of expenditure of more than R1000 outside the designated A.G.M. budget expenditure.

23. STAFF

23.1 Staff shall be employed according to the labour laws of South Africa.

23.2 Work days are Monday to Friday.

23.3 A working day at Mooiplaas is 7 hours long.

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23.4 Staff duties shall be outlined by the Management Committee.

23.5 All staff will be accountable to, and will report to the Management Committee.

23.6 Wage levels are determined at an A.G.M.

23.7 Staff may be incorporated into Community Projects, receiving a percentage of profits from those projects.

24. PRIVATE VISITORS

24.1 Private Visitors to Mooiplaas fall into two categories:
CATEGORY ONE: Private Visitors staying on L.C.S's
CATEGORY TWO: Private Visitors staying in Community Land

24.2 Private Visitors staying on L.C.S's are the responsibility of the L.C.S concerned and stay free of charge.

24.3 Private Visitors staying in Community Land are subject to an accommodation fee to the PP for each night of their stay or work on designated projects for 7 hours a day for every work day that they are present on the farm.

24.4 Private Visitors enter and work on Mooiplaas at their own risk.

24.5 The PP is not responsible for any theft or damage to private property or any accident resulting in injury, sickness or death suffered by Private Visitors on or around the farm.

25. FEES AND LEVIES

25.1 There are three levies that apply to Full Members and some Casual Members, as stipulated in the categories:
CATEGORY ONE: Normal Levy
CATEGORY TWO: Work Levy
CATEGORY THREE: Resident Levy

25.2 Payment of levies must be made into the PP account. Outstanding levies are subject to 10% interest per annum.

25.3 The cost of the annual levies will be determined at an A.G.M.

25.4 Members who continue to default on annual levies with no mitigating circumstances may have their membership revoked, should this amount reach a minimum of 25% of the current value of the L.C. F. in the case of Full Members and 25% of the affiliation fee in the case of Affiliated Members.

26. NORMAL LEVY

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26.1 Each L.C.S. must pay an annual levy towards the development of the farm by 1st March each year.

26.2 If this levy is paid before 1 March L.C.S.'s receive a predetermined discount.

26.3 When the number of Full Members in an L.C.S. exceeds 5, the Normal Levy will be renegotiated at an Executive Committee meeting.

27. WORK LEVY

27.1 Each L.C.S. must contribute a minimum of 154 hours labour towards farm activities on designated communal projects.

27.2 This labour may be worked off over the current financial year.

27.3 If an L.C.S is unable to do the work, they may elect to pay a Work Levy instead.

27.4 The Work Levy is due by the 1st of March each year.

27.5 The work time L.C.S's put in is deducted off their Work Levy.

27.6 The cost of the Work Levy is determined by the cost of 22 labour days at current wages.

27.7 Credits on the Work Levy roll over to the following financial year.

27.8 Full Members must invoice the company at the end of the financial year for Work Levy hours done.

27.9 If L.C.S's do more than 300 hours of community work, they may share in a form of remuneration from farm produce or economic profits – this is after the 30% which must be paid to the PP for use of communal land.

27.10 All details relating to 27.9 must be worked into a business proposal and passed at a Management Committee meeting before commencement of any project and financial records must be kept.

28. RESIDENT LEVY

28.1 All Full Members are obliged to do one day of work for every 7 working days of their stay on the farm or 1 hour for every working day if they stay for a shorter period.

28.2 Should Full Members be unable to work 1 day in 7, they may opt to pay the farm the financial equivalent of the Resident Levy due.

29. PP LAND AND ASSETS

29.1 All fixed assets are owned by the PP, and L.C.S.'s are caretakers of said assets.

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29.2 All components integral to the design and function of L.C.S.'s are considered fixed assets.

29.3 The property of the Farm Mooiplaas will be separated into two categories:

CATEGORY ONE: Community Land and Assets
CATEGORY TWO: L.C.S.'s and Assets

30. COMMUNITY LAND AND ASSETS

30.1 These are areas and assets of the farm owned by the PP and deemed communal, in the sense that all members have access to them.

30.2 Community Land and Assets will be recorded on a scale topographic map of the farm and the assets directory.

30.3 Community Land and Assets will be collectively managed and maintained.

30.4 Access to these resources and places will not be limited other than by the stipulations of the Constitution and Farm Rules.

31. L.C.S.'s AND ASSETS

31.1 These are areas of the farm designated for L.C.S.

31.2 These areas will be divided up according to member needs based on a L.C.S. proposal presented at a G.M.

31.3 The boundaries of the L.C.S.'s and capacity are recorded on a topographic map.

31.4 Access to these areas is limited to the conditions set up by the relevant L.C.S. and consultation with them is required before any individual may be present on an L.C.S.

31.5 Public access to these sites for training purposes is permitted.

32. CONDITIONS RELATING TO L.C.S.'s

32.1 Each L.C.S. has a right to live on and develop an area of land as an educational model of applied Permaculture as a component of the greater Mooiplaas education model.

32.2 These areas are defined on a topographic design for the farm.

32.3 L.C.S.'s are categorized according to Land-use suitability. The sites fall into 3 categories:
Category one: Agricultural L.C.S.
Category two: Wilderness L.C.S.

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Category three: Co-housing

32.4 All L.C.S.'s are developed by L.C.S's as component modules of the PP training environment.

32.5 Development and maintenance of each L.C.S. is the responsibility of the relevant L.C.S.

33. AGRICULTURAL L.C.S.'s

33.1 Agricultural L.C.S.'s are those sites that have previously been utilized for agricultural purposes and are ideally situated by virtue of their suitability to produce primary resources required to sustain the community and to act as training models for ecological agricultural production.

33.2 Agricultural L.C.S.'s are held in custodianship by the PP and are only handed over to L.C.S.'s once they are resident on the farm.

33.3 Agricultural L.C.S.'s are required to be developed towards ecological agricultural production once the L.C. has taken responsibility for the L.C.S.

33.4 If after 3 years the L.C.S. is not able to develop the L.C.S. and has shown no reasonable inclination to do so, the site may be taken back into custodianship by the PP and becomes available for new custodianship.

33.5 Agriculture may only be practiced on L.C.S.'s by L.C.S.'s resident on the farm.

34. WILDERNESS L.C.S.'s

34.1 Wilderness L.C.S.'s are those sites that are located in the wilderness areas of the farm as noted on the topographic design.

34.2 These L.C.S.'s are located in sensitive natural environments within which rare and endangered plant and animal species may be living.

34.3 Wilderness L.C.S.'s are to be developed with the least possible impact and by virtue of their location and circumstances, are not suited to agricultural production.

34.4 The focus of land-use models for Wilderness L.C.S.'s is indigenous water-wise gardening with small seasonal kitchen gardens.

34.5 Staple food production for these L.C.S.'s occurs within the community production systems.

35. CO-HOUSING

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35.1 Co-housing is defined as a multifunctional model of individual housing units that are clustered around common buildings where residents share cooking and other activities.

35.2 Full Members or L.C.S.'s may be accommodated in Co-housing units.

35.3 Conditions of Co- housing are to be determined by the Executive Committee.

35.4 L.C.S.'s involved in Co-housing combine their resources that would otherwise be focused on individual L.C.S.'s.

36. CONDITIONS RELATED TO THE PP ON MOOIPLAAS

36.1 Building plans must be according to sustainable building principles.

36.2 Outline plans must be submitted to and passed by the Executive Committee.

36.2 Every site must have access to domestic water and this must be prioritized in developments. Water recycling must be in place.

36.3 No structure may be built on a horizon or directly in front of a neighbour's household view, unless it is absolutely unavoidable.

36.4 There will be no building of structures unrelated to agriculture on agriculturally viable land.

36.5 All agriculturally viable land must be used for production of plant or animal based resources.

36.6 All water sources, boreholes and streams on the farm are community property and water will be rationed to L.C.S.'s depending on site function and water availability. In extreme water shortages, all water resources will be focused on communal production until such time that the situation changes.

36.7 The planting of any plant species listed in the National Noxious Weeds species list must be decided on at a Management Committee meeting.

37. CONDITIONS RELATING TO PRIVATE ECONOMIC ACTIVITIES ON THE FARM

37.1 Full Members may run their own private businesses separate from the PP using either their L.C.S. or Community Land as negotiated in a M.O.U. between the Executive Committee and the member.

37.2 Resources of the PP that are used by Full Members for business purposes must be rented from the PP, and/or a percentage of any profits paid to the PP as agreed upon by the Executive Committee.

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37.3 Private business' financial records relating to economic activities on the farm must be open to scrutiny by the Executive Committee.

37.4 No Full Member's private business will be allowed to be run from the premises of the PP if it goes against the aims and objectives and ethics of the PP

38. ORGANISATIONS OR INDIVIDUALS RENTING THE TRAINING FACILITIES AND ACCOMMODATION.

Organisations or individuals renting the resources of the PP must enter into a M.O.U. with the Executive Committee.

39. RULES OF THE FARM

39.1 The Farm Rules are those decided upon at a G.M.

39.3 The Farm Rules are subject to change at any G.M.

39.2 The Farm Rules are subject to the conditions of the Constitution.

39.4 Full Members are responsible for informing their visitors of the Farm Rules prior to their arrival on the farm. The Farm Rules will also be made available to them upon their arrival in pamphlet form as well as being prominently displayed in all community accommodation structures and on the Mooiplaas website.

40. DISCIPLINE

40.1 In the event of an extreme difference in opinion between members, the Executive Committee may be called upon to arrange an emergency meeting to resolve conflict and/or decide on disciplinary action.

40.2 The Executive Committee reserves the right to query the actions and/or attitudes of any member who may have acted against the aims and/or Constitution of the PP and/or Farm Rules and call a disciplinary hearing.

40.3 A member must be given advance notice of a disciplinary hearing.

40.4 The PP may call in outside consultants and/or conflict resolution/group dynamic experts for training and assistance.

40.5 A disciplinary code will be followed in situations which require immediate disciplinary action. The process followed in such instances will be:
One Warning letter
Two Suspension,
Three Expulsion

40.7 Members may have their membership revoked if they are in breach of the Constitution.

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41. DISSOLUTION

41.1 In the event of the dissolution of the PP, consent in favor of dissolution must be reached at an Executive Committee meeting.

41.2 Only the Section 21 Company can be dissolved and its assets disposed in accordance with South African law.

42. ADOPTION OF THE CONSTITUTION

This Constitution was approved and accepted by the members of the PP at an Annual General Meeting held on 9 April 2011.

SIGNED

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Appendix 2: Mieke's weather log

June 2011

Date	Snow	Min. Temp.	Max. Temp.	Clear	Cloudy	Wind	Rain	Frost	Day	Evening
1	*	-1	15		PC late afternoon			L	Icy morning; became beautiful, still and clear day	Clear, still, crisp and cold
2	*	-1	14	Y				L	Icy morning; became beautiful, still and clear day	Clear, still, crisp and cold
3	*	-1	14	Y				M	Icy morning; became beautiful, still and clear day	Clear, still, crisp and cold
4	*	2	14M	Y			L_2mm		Not too cold morning; nice afternoon	Moderate, not too cold. Light rain at 11pm
5	*	7	14		Y	L_SW_ Cold	M_10mm		Cool, rain and dark clouds at mountain	Cold
6		-1	11		PC	L_NE		L	Freezing morning, cool day	Still cold
7		0	10		Y	L_SE			Cold and cloudy. Light afternoon drizzle	Still cold, cloudy
8		8	11		Y		M_74mm (until 5pm) 24mm (during night)		Solid rain all day until 5pm reducing to light drizzle. Rivers roaring! Floods!	Rain from 6pm again. ♥ SO BEAUTIFUL!
9		11	15		Y	L_NW_ Afternoon	L_1.5mm (morning)		Little rain, not too cold	Light NW. Cool breezes.
10		6	15	Y		L_SW_ Afternoon			Cloudy becoming clear and nicely warm	Clear, cold, crisp
11		5	16		PC				Fixing road at bottom. Cool	Cold, crisp
12		5	14	Y					Cool	Cold, crisp
13		3	16	Y					Beautiful, still and clear	Cold, crisp

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									winter's day	
14 ○		3	21	Y		M-S_SW_Evening			Beautiful, warm, still and clear winter's day	Warm!! (19'C) Warm air with gusty winds
15		10	19		PC	S_NW_Gusty	L_3mm		Strong cold NW with light rain	Freezing cold, gusty winds!
16		9	15		PC	M-S_NW			Cool day, light drizzle in afternoon	Partly cloudy, windy, not too cold
17		7	14	Y		L_NW_Cool			Nice sunshine, cool breezes however	Clear, crisp, fresh
18		2	15	Y		L_SW			Beautiful clear	Clear, crisp, still
19		2	16		PC	M_NW			Cool with cold NW	Light cold wind
20		0	13	Y				L	Beautiful clear, still day	Clear, crisp, cold and still
21 Solstice		-1	15	Y				M	Beautiful clear, still day	Clear, crisp, freezing cold and still
22		6	22	Y		M_NE_Warm			Hot, dry wind. Warm day	Windy, cool
23		6	16		PC	M-S_SW	L_1mm		Cold wind, cool day	Cold, occasional gust of wind
24	*	6	11		Y	M-S_SW			Cold with snow through day. Cold wind!	Freezing cold!
25	*	7	12		Y	M_SW	L_5mm		Cold, drizzly day	Still, cloudy, cold
26	*	8					L_2mm			
27	Cape Town									
28	*	-2	13	Y				M		Clear, still, cold, crisp!
29	*	-1	14		PC	L_SW		M	Ice cold morning, cool drizzle	PC, not so extremely cold
30		2	11		Y	L_NW	L_1mm		Cool with light rain	Overcast, cold, light drizzle

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July 2011

Date	Snow	Min. Temp.	Max. Temp.	Clear	Cloudy	Wind	Rain	Frost	Day	Evening
1	*	1	11	Y					Still, clear, cold	Still, cold, crispy icy cold
2	*	-2	11				L_1.5mm	M_Frozen pipes	Freezing cold, short burst of afternoon sunshine	Cloudy, cold!!
3	*	1	10		Y		L_1mm		Freezing cold, big cloud over mountain	Clear, crisp, cold and icy
4	*	1	12		PC		L_12mm		Cold with light hael! in town	Long stretches of constant rain. Cold
5	*	5	12		Y		L		Cold with light morning drizzle	
6	*	4	12		Y				Clear, cool, still	Crispy cold
7	*	-1	14	Y				M	Cool, still	Still, cold
8	*	-1	13	Y				M	Dry, cold morning. Beautiful still day	Still, crisp and cold. Clear
9	*	1	14	Y					Beautiful clear, sunny and still	Lovely, moderate, beautiful, still
10	*	2	17	Y					Beautiful clear, sunny and still. Warm	Still, not too cold. Warm gusty winds at night
11	*	5	19	Y		L_NW			Beautiful clear, sunny and still	Moderate, clear and still
12	*	3	18	Y		L_SW			Beautiful clear, sunny and still	Wonderful, clear, still, moderate
13	*	1	17	Y		L_SW			Beautiful clear, sunny and still	Clear, still, cool, moderate
14	*	2	17	Y		L_SW			Beautiful clear, sunny and still	Clear, still, cool, moderate
15 ○	*	2	19	Y					Beautiful clear, sunny and still	Clear, still, cool, moderate
16	*	Garden Route							Warm'ish. Still, beautiful	
17	*	Garden Route							Moderate. Cool in shade. Still	
18	*	1	20	Y					Beautiful. Warm in sun	Moderate, still , starry
19	*	0	14	Y				L	Beautiful. Warm in sun	Moderate, still, quiet
20	*	-1	14	Y				M	Cloudy with cool SE breezes	Cold, crisp, still quiet
21	*	-1	14	Y		L_SE		M	Constant light rain. Cold	Moderate, still, quiet
22	*	-1	14	Y		L_SE		M	Freezing cold day! Icy!	Moderate, still, quiet
23	*	6	15	Y		L_SE				Moderate, few spits and spatters at night

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24	*	6	11			L	L_9mm			Loads more rain at night!
25	*	4	10			L_SE	L_3mm			
26										
27										
28										
29										
30										
31										

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Appendix 3: Membership diagram

Permaculture Project (PP), Section 21 NPO	
Residents	**Non-residents**
Anna and Nathan **	Joan (1)
Michael (Ina became a joint member with Michael after my field research period)	Harold (became a member during my field research period) (2)
Johan	Gustav ***
Mieke	Nina ***
Leonie *** (Alicia, parents Leonie and Christopher)	Allan (2)
Christopher* **	Jonathan (and his wife, not a member, became parents in 2012)
Phillip (1)	Juliet (1)
Roy	Stuart
	Donna
	Ralph and Sonya (3) **
	Theo

** indicates joint members

*** indicates full members that are a couple

(_) indicate those members that have children

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Appendix 4: Map