



The Choices of the Stranded
Conservation Farming and Biochar
in Zambia

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June 2012

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Acknowledgements

I could not have carried out the research on which this thesis is based without the hospitality and the support of the people whose stories and opinions form its subject matter. My debt to them is enormous, and I thank them. Needless to say, I am grateful to the numerous people, living in Mongu, Mkushi and Kaoma, who were willing to sit down with me and shared their ideas and experiences with me during the field days, individual interviews or at other moments during my stay in Zambia. I am also grateful for the guidance and mentoring Hans de Kruijf provided me with all throughout my journey, before, during and after my stay in Zambia. With his comments he was able to motivate me when needed and they have given me new insights into anthropology in general and this thesis in particular. I would also like to thank the staff of the NGI, most notably Gerard Cornelissen, Vegard Martinsen and Magnus Sparrevik, for providing me with the opportunity to do my first anthropological research in Zambia. Further, I would like to express my gratitude to the CFU for allowing me to make use of their facilities and infrastructure without which my research would have been far more difficult, not to say next to impossible. The two field officers, Cacious Mubita in Mkushi and Kelvas Wilima in Kaoma, have shown incredible patience in showing me around and granting me access to the farmers. The same goes for Sinabu Mwuiya who I could always count on to mirror some of my findings with and who even welcomed me into his home during my stay in Mongu. Oliver Bulaya, the professor of laughter of joviality and CFU officer in Kaoma, also opened up his home for me and never ceased to help me out with my research. And I am especially thankful to Frederik Moneku and his family. His spirit and his strength amazed me time and again and much of this thesis is possible because of him. I'm highly indebted and thankful for it.

Introduction

Conservation farming is currently being implemented in Zambia. This process however, is not clear-cut and cannot be assessed by a simple cost-benefit analysis. Ultimately, the individual farmers make or break the programme as they decide whether or not to adopt conservation methods. They make these choices out of their own understanding of their lives and the conservation programme that is offered to them. In many ways, as I will show in this thesis, the farmers perceive of themselves as stranded, limited in their possibilities to sustain a livelihood for themselves and their families. In this, they often rely on their own strength and the crops they grow themselves. It is within this context that they choose what path best to follow and whether or not they are capable of going down that path. And this is also the viewpoint from which they interpret new agricultural policies and opportunities, like conservation farming, as beneficial or not and as attainable or not. Therefore, the implementation of conservation farming is murkier than an cost-benefit analysis would have it and its success largely relies on the choices of the stranded.

It follows that change is not easily engineered and neither is the implementation of agricultural innovations. It is a logical prerequisite that they are indeed improvements but even this is no guarantee for a successful implementation. Such a success largely relies on the farmers' decision to adopt. And even though farming is seen as a business, this decision is not solely based on a purely rational cost-benefit analysis. Of course, labour, time and cost are all important but it eventually boils down to how these practical and economic aspects are interpreted, if the proposed benefits of conservation farming are viewed as such and how these relate to the way people are farming nowadays. Of equal importance is how these conventional or traditional methods are valued and what farmers think of change in general and, more specifically, in agriculture. All of this influences the decisions farmers make within the context of living in the rural areas of Zambia. A life that is hardened by economic poverty. One that offers but a few opportunities and appears to be largely dislocated from global events and state affairs. The farmers are primarily the object of such processes, that remain vague and distant, and only seldom are they participants. Worldwide processes like the Green Revolution echo through conservationist policies that aim to change the lives of the farmers but do not become real or take on meaning until they arrive at their doorstep. However, this does not mean that farmers are merely the puppets of these larger processes. Although limited as such, their actions, their motives and their intentions are not fully determined by it. Conservation policies can try to instigate change but they cannot direct or engineer it.

What does, however, hold true for contemporary conservationism is builds on the conviction that human beings can control their environment. Moreover, the constant confrontation with our

current predicaments, ranging from unbridled growth in human population and the televised impact of natural disasters to the manifold signs of environmental degradation have convinced many of the necessity of such a control over the environment. This conviction did not prompt into existence but was shaped on the premises of a historical perception and cross-cultural study of how human beings relate to their environment that has ancient antecedents and can be traced back to Hippocrates and Aristotle. For them, change was non-evolutionary because diversity unfolds over space and society was determined by physiological differences (Dove & Carpenter 2008:18). But as diversity began to be studied over time, a conceptualization of culture as determined by nature could no longer be deduced from the complexities of historical record. Or, in the words of Hegel: “where the Greeks once lived, the Turks live now, and there’s an end to it” (cited in Geertz 1963:6). Thus, if two very different societies can sequentially prosper in one and the same environment then culture cannot be determined by nature.

As a result, man now was the subject of the world, preordained to live up to his potential and master nature by the means of technology (Argyrou 2005:ix). The more complex technology became the more civilized a society was perceived to be and, by the same token, those who understood nature in a different way were perceived to be ‘primitive’ or ‘underdeveloped’. Entitled by its superiority, ‘the West’ burdened itself with the task to humanise Africa and lead the continent in its development, with the modern and civilized West as its object of aspiration (Greig, Hulme & Turner 2007:54). But before long this paradigm too was criticized. The post-war development thought was an inadequate and immoral political activity that justified and asserted the power of ‘the West’ by misrepresenting, dehumanizing and objectifying ‘Africa’ (Barrett 1996:151). Those who were once savages now became victims of misunderstandings and owners of indigenous knowledge that ‘the West’ had lost in its march for progress. Man was no longer the subject of the world but dependent on nature for his very survival. Technological advancements are not unequivocally positive. It is neither impossible for innovations to have far-reaching, negative effects nor is development itself a straightforward concept to be unravelled along a linear ladder with at its pinnacle the civilized West (Njoh 2006:3). An awareness grew of the fact that as we expanded our industries and exploited the planet’s resources, we left behind a trail of pollution. The narrative that emerged conceived of humans as degrading actors of which nature had to be saved (West 2006:215). Nature itself was immensely complex and hinged on a precarious balance and securing a viable future would depend on human activity being controlled (Milton 1993:2). Anthropologist became attentive to the skewed relations between ‘the West’ and ‘Africa’ and brought attention to the fact that environmentalist management, mainly instigated by Europeans, was based on the same premises as the post-war developmental plans and would yet again result in uneven distributions of power and wealth. The growing concern about environmental degradation led to a renewal of interventionist practices,

financed and directed by agencies external to Africa (Anderson & Grove 1987:15). It has been argued over and over again that conservation practices cannot be divorced from politics and that when they are insensitive to the interests of local people the likelihood of failure is high (Anderson & Berglund 2003:9). Many have proven to be economically unsuccessful, harmful to the environment and policies often lack crucial socio-historical insights in the lives of the people they affect.

The pressing matters of late, however, still beget drastic attitudinal changes on a global scale and corresponding agricultural innovations because our contemporary mode of engagement with the environment is simply not sustainable. New policies are being designed and novel practices are being instigated, some more promising than others. The mistakes made in the past should not be an incentive to abandon conservationism all together but an education in attention to the historic pitfalls of such initiatives. It is of crucial importance to be sensitive to the manifold social factors that motivate the adaptation of novel ecological solutions to our current problems. If we fail to do this, the endeavours to meet our current predicaments head-on will be futile and it can have devastating consequences for the rural households that the policies affect.

The current programmes and policies, dealing with conservation farming in Zambia, are examples, not only of conservationism in general, but also of ways to coop with environmental degradation and the problems this results in for rural households. From 1996 onwards, an expanding combination of stakeholders, ranging from donors to governmental organisations and private companies, has encouraged the use of a particular set of agricultural practices in Zambia. The type of agriculture they advocate involves early land preparation during the dry season, while making use of minimum tillage methods in order to reduce soil disturbance and erosion. The crop residue from the previous harvest is no longer burned but retained. The inputs, such as seeds and fertiliser, are applied in fixed planting stations. The precise layout of grids and planting lines enables farmers to locate fertiliser and organic material in close proximity to the plants, where they will provide the greatest benefits. Also, by breaking pre-existing plough-pan barriers, these basins and rip lines improve water infiltration, water retention and plant root development. The crops are rotated and, typically, in the parts of the fields where maize and cash crops are being grown now, legumes will be grown next. Finally, the seeds themselves are planted with the onset of the first rains, usually in November, allowing the seeds to benefit from the initial nitrogen flush in the soil.

Another method that is currently being incorporated into the practice of conservation farming, is biochar. This is a new soil treatment that has continuously proven to be successful at increasing crop-yields and sequestering CO₂ (Haefele 2011; Lehmann & Joseph 2009; Woolf 2010). Biochar can be produced out of organic waste by heating the plant biomass without oxygen, a process formally known as low-temperature pyrolysis (Lehmann 2007). During this process, CO₂ is actively withdrawn from the atmosphere and from the cycle of photosynthesis and decomposition.

When combined with bio-energy production, biochar is a clean energy technology that reduces emissions as well. Once biochar is incorporated into the soil, it improves the structure and fertility thereof. It enhances the retention of fertilisers, decreases its run-off and can thus increase crop yields. Tentatively, it can be said that biochar's effectiveness in improving soils is due to an increase in water holding capacity upon amendment. For these latter purposes, biochar is most effective in sandy, weathered, low-CEC and/or acidic soils (NGI Report, 15 October 2011). As of now, several small-scale farmers in Zambia have done a pilot with biochar and the possibilities for implementation on a larger scale are being evaluated.

These are the scholarly and scientific facts on conservation farming and biochar that seem to prove that, at least in theory, the programmes work. However, knowledge about the methods gets distorted as it makes its way from drawing board to the rural farmers. The workings of the conservation farming methods themselves can be misunderstood by the farmers and the adoption thereof does not have to be consciously considered and can even be actively resisted. Moreover, the road to implementation is not devoid of practical obstacles and potholes, nor can it be traversed overnight or at once. This is partially because the farmers are, eventually, the ones who can put the initial ideas into practice but they are not necessarily obliged to do so, for a wide array of reasons. Hence, my main research question is the following: why or why not do farmers in Zambia adopt conservation farming methods?

This question is relevant for two reasons. First, it results in necessary understanding of social dynamics. As I stated before, conservation programmes are likely to fail when they are insensitive to the interests of the farmers, their lives and the various factors that influence their decisions. And a straightforward cost-benefit analysis is simply not enough. Second, the question is also of scientific interest for it offers insight into human reasoning, one of the fundamental subjects of the social sciences. By unravelling the chain of interaction that connects the drawing board to the farmers' fields, one gains a better insight of the process of adaptation to recent agricultural innovations and the factors that influence the farmer's decision on whether or not to adopt these new methods. Moreover, human reasoning as part and parcel of such a process has not received the scientific attention it deserves and begets. Lehmann and Joseph (2009:359) also emphasize the importance of people-centred research on implementation because "at present there are few such analysis". There have been studies on agrarian change that take into account the dynamics of production, power relations and ownership (Bernstein & Byres 2001; Blaikie 1985), but even these studies fail to incorporate the one aspect that is so crucial to the implementation of agrarian innovations. Namely, an understanding of the motivations of the adopters, the farmers. That is exactly what this thesis will provide. It is an anthropological perspective that goes beyond the factual possibilities of conservation

farming and incorporates the social dynamics and particularities of the farmers' lives into an approach to the adoption of conservation methods.

Over the course of three months, from January 2012 until April of that same year, I did anthropological research on conservation farming methods in rural Zambia in order to fill the abovementioned gaps and gather data that is of scientific and social value for those reasons. My research mainly took place in Kaoma, although I also took the time to visit two other villages that house vest farmers that have been found willing to make the shift to conservation farming or even opted to produce biochar. Namely, Mongo and Mkushi. Participant observation, in combination with different forms of interviewing, was the most important research method during my stay in Kaoma because this method is especially suitable for gathering qualitative data that resulted in insight into the perceptions farmers have on conservation farming, the way they subjectively value it, what the motives are that drive their decisions on whether or not to adopt it and what role norms and conventions play in all this. Moreover, the method of participant observation fit particularly well with my long-term stay in Zambia and Kaoma in particular. However, no method should be taken to be salient or suitable for any research question, without a close examination of its merits and flaws.

Cultural anthropology has many faces and has come to mean many a thing, but one aspect of the discipline that has remained both persistent and defining is the preferred method of gathering data. Namely, fieldwork based on participant observation. The method's persistence has been contested during the postmodernist turn. Critiques claimed that it objectified and misrepresented people's lives in a search for a neutral Truth that social sciences cannot obtain. Instead, all the method did was convey and reassert skewed power relations by freezing the "dominated bodies of the colonized" (Berger 1993:176). However, anthropological research is unique in the sense that it gives a voice to those that are usually merely the object of larger processes, like conservationism and the Green Revolution. And these voices are crucial to the successful implementation of such ideas. The postmodernist critique should not come to mean that fieldwork is to be abandoned altogether. The results of anthropological research are far too important and long-term fieldwork lies at the heart of this. Postmodernism is not a cry for abandonment but for improvement and emphasizes the importance of acknowledging and explicating of and reflecting on the influence the anthropologist has on the data. The voices of the people should be incorporated as much as possible and anthropologists should be aware that overtly abstract conceptualizations can become pitfalls for the particularities of the lives as lived (Sluka & Robben 2007:23). And in order to do this, anthropologists still deliberately put themselves in situations in which they try to become a subjective insider. Thinking, feeling, sensing and acting as the people they study in order to understand their ways, while simultaneously trying to maintain their identity as an outsider, in search for scientific data and ways to construct just abstract realities. It is this dynamic and contradictory position, which every

anthropologist will be confronted with at some time. As such, fieldwork is still both the *sine qua non* of modern anthropology as well as the rite of passage for aspiring anthropologists (Berger 1993:174).¹

Besides using the method of participant observation I also utilized more quantitative research methods. This was useful because my research is both qualitative and exploratory in nature and although the semi-structured interviews I did with the farmers did not necessarily result in new or surprising information, it did allow me to look for broader similarities in their experiences and tentative generalizations in my data. I carefully designed the topic list based on and compared with the qualitative information I had already gathered during my stay in Kaoma and the short interviews were particularly focused on the practical constraints and quantifiable or easily identifiable matters, such as the level of mechanization in production. Using these types of interviews raises all sorts of questions regarding validity and reliability in a way most anthropologists don't come across. Granted, some of anthropology's strength, i.e. gathering rich data, might even get lost. However, this thesis will be mainly based on my stay in Kaoma and the quantitative data will mostly linger in the background as a tool to strengthen the conclusions I draw and support the arguments I make. Hence, my research is still greatly anthropological in character and the defining methods of the discipline remain the fundamental aspect of my research and this thesis.

Conservationism aims to re-invent and change agriculture and stems from the idea that humanity can and should control the environment. I will argue that, although change is instigated, it is not easily engineered. Implementation is not a straightforward process nor solely based on a cost-benefit analysis. In the theoretical framework that follows this introduction, I will provide a theory that is better suited to untangle the various aspects that are of influence in the complex process of implementation, perceived of from a person-centred, anthropological, view. I will argue that the farmers are eventually the ones that decide whether or not implementation is successful. And they do so within the context of their lives and their own understanding of their position in the world. This general context will be the topic of the part that follows the theoretical framework. The chapter thereafter will specifically deal with farming, its inherent possibilities and limitations, and how it relates to the living standards of the farmers, hardened by impoverishment. These possibilities and limitations closely relate to the knowledge and opinions farmers have on conservation farming, its benefits and its merits, how information about the methods finds its way into their lives and whether

¹ Participant observation is a contested research method that also raises questions with regard to both the nature of anthropology and the nature of the researcher as a tool. The latter aspect also means that my own subjective experiences, selfhood and identity markers have been of influence on my data. Further on in this thesis, I will deal with these problems more thoroughly in the section called 'reflection'. There, I will also take time to deal with ethical issues that are an inherent part of anthropological research.

or not they think changing involves a risk. This will be the subject of the second chapter. Afterwards I will take a closer look at the actual decisions that farmers make and at their motives, intentions and reasons. All these aspects will be tied together in the conclusion when I answer the main research question: why or why not do farmers in Zambia adopt conservation farming methods?

Theoretical Framework

Adaptation: Elements of Motivation and the Duality of Structure

During the 19th century, change was idealized and thought of as unequivocally good. Change was synonymous with progress (Sztompka 2000:449). With the defeat of Nazism, a movement perceived of as Evil with no disguise, modernity triumphed and in the aftermath of the second world war people became convinced of the fact that they had attained a modern, civil society at long last. But before long, they became confronted with the fact that they too could still act in ways that cannot be reconciled with the idea of a modern, civilized, human being. America, victorious over Nazi-Germany and the pinnacle of progress, proved this as they shocked modern society with atrocities during the Vietnam War. Moreover, the 1961 trial of Adolf Eichmann in Jerusalem showed that even Nazi's were more human than demon (Alexander 2002:15). Overall, the idea of inevitable progress decayed as the modern turned out not to be so civilized at all and were confronted with the negative effects of change in bold relief. At the same time, the experience of the twentieth century, a time of previously unimagined technological advancements, globalization and change on an incomparable scale, underlined the belief that "change alone is eternal, perpetual [and] immortal" (Schopenhauer). Change now became accelerated and always occurring but neither positive nor negative. Within the discourse of conservationism, the inescapability of negative change – i.e. environmental degradation that threatens the very existence of its primary cause, humanity – has to be met head-on by changes in the way we go about our lives and make use of the planet's resources because the perseverance of humanity itself is in danger. In order to avoid disasters, something has got to give, something has got to change. It is obvious that change is the object of conservationism. The same goes for agricultural innovations and conservation farming in Zambia.

Of course, the transformations in ideas about change have also left their mark on contemporary social theories on change. Post-progressivism perceives of social transformations as "continuous, contingent, partly undetermined and open-ended processes, driven by collective agency and occurring within the field of structured options (limited opportunities for action) inherited as the accumulated outcome of earlier phases of the same process" (Sztompka 2000:450). In short, these theories focus on collective agency as the driving force behind change. They are sensitive to the constraints on the collective, caused by limited access to resources as well as to the effects earlier changes have on the current capacity to instigate change. They take non-progressive change into consideration and emphasize the fact that change affects various segments of society unequivocally, that it runs at various paces rhythms and tempos and that these aspects of change

can vary in different domains of life. But exactly how and when do these transformations come about?

For Giddens (1979:20), society is (re)produced *ex nihilo* in every social encounter while people draw on their experiences of previous encounters. And every reproduction is receptive to change. He sought for a way to go beyond the persistent structure-agency debate inherited from functionalism, which conceived of the social structure as a stable and essentially benign whole, self-generative and determining of individual consciousness (Bilge 2010:12). In the arguments that followed this viewpoint, advocates of individual intentionality “correctly insisted on the importance of agency and structuralism correctly insisted on the importance of the ways society shapes human activity” (Fay 1996:70). Eventually Giddens (1979), together with Bourdieu (1990) and Ortner (2006), moved social theory towards a dialectical approach to structure and agency. They argue for a duality of structure and see structure as both constraining and enabling the intentions of people and as constituted through action while action is constituted structurally (Archer 2010:226).

It thus follows that agricultural innovations and new farming methods aim to change the ways of the farmers. It is up to the farmers themselves to adapt to this development and decide whether or not to adopt conservation farming methods. Notwithstanding the fact that they can choose to use certain conservation methods but not all or that they can be wrongly adopted, misunderstood or actively resisted, the options that the farmers have are not limitless. However, whatever decision they make, for whatever reason, does have an impact on the options that they have. In fact, the choice that they make can turn the agricultural innovations into a success or into a failure. For they are the ones that are faced with a question in threefold. Do I change? How or to what extent? And why would I change at all? And whatever the outcome may be, agriculture in Zambia is reproduced – either with or without conservation farming methods – with every time that a small-scale farmer makes such a decision. Giddens (1979:20) refers to this process of (re)production as *structuration*. A process which he defines as meaningful; as a moral order; and as the operation of relations of power. Before I deal with all three aspects of this definition consequently, I will first take a closer look at the underlining forces that motivate the farmers’ answers on the threefold question above. A decision, an action, that is instigated by the possibility of using conservation farming methods but can also make or break the success of these new methods.

The Underlining Forces Driving Adoption: Three Interwoven Elements of Motivation

In this section I will seek to untangle the complexity of human activity and reasoning in relation to the ways in which farmers adapt to agricultural innovations. Firstly, I deem it important to state that whatever their decision may be, it is not the sole outcome of the free will of the farmers, completely capable of doing as they please, nor is it merely a mechanical reaction to factors external to the

farmers. In other words, adaptation and adoption are not, in the tradition of Wittgenstein (1972), solely voluntary nor are they, following Durkheim (1982), fully determined by the system in which the farmers happen to live (Fay 1996:51). There is much more to it and in this section I will its complexity by tracing the footsteps of Giddens (1979) as he defines motivation in three steps.

The first element he purposes being motives, which can be defined as “the wants that prompt action” (Giddens 1976:92). Motives are closely connected to the affective elements of personality. A connection that is exemplified by the way motives are referred to in ordinary language as emotions such as fear, vanity and jealousy. Emotions that derive their meaning and persistence from an ongoing politics of emotion that comes about not so much in one’s individual psyche but in interaction with others (Lutz & Abu-Lughod 1990:15). What is important to stress is the fact that people are not necessarily aware of their motives or they may only become aware of them after the act. Moreover, since Freud (1960), it is assumed to be likely that behaviour can be influenced by motives not accessible to people’s consciousness. In fact, the revealing of these motives might be actively resisted by the person. This is important because farmers do not always make a conscious decision when offered the opportunity to work with CFU and to use conservation farming methods. It is often stated that people are creatures of habit and that when faced with the possibility of change they’d rather stick to what they know without really even consciously considering a new course of action.

The second element of motivation is purpose. Purpose should not be seen as identical to intentions for the latter do not always coincide with wants. One may want something without intending to act accordingly (Giddens 1976:92) just like a person can “do something because he intends to do it, without following that he wants to” (Danto 1973:186). Moreover, I choose not to use the term intention because of its connotations with the distinction between action and movement. It is claimed that action is an intentional movement and that there is a crucial difference between a wink and a twitch, or the contraction of an eyelid (Geertz 1973:5). That is, movements can be directly observed whereas actions beget interpretation. But we observe actions just as immediately and movements involve interpretation as well (Giddens 1976:80).² Further, an actor cannot intend as such for intention is implied in the act in and of itself for “intentions do not refer to causal forces because their relation to any action is internal (...) they are part of the action” (Crick 1976:283). Hence, even mundane conduct is intentional, albeit pre-reflexive. Instead, I shall perceive of any act as purposive in the sense that the agent knows his actions can be expected to realize particular wants and interests and applies this knowledge to secure an anticipated outcome (Giddens 1976:83). Purpose thus entails knowledge. But this does not presuppose a consciously-held-in-mind

² In this, I take interpretation to be that any description of what is observed has to be couched in expressions which presuppose theoretical terms.

orientation toward a goal. One does not have to be able to formulate one's knowledge in an abstract way. In fact, one does not even have to be aware of it nor does the knowledge itself have to be valid.

As for the implementation of conservation farming, knowledge also plays a crucial role. Knight (2003:5) argues that education can reduce uncertainties and diminish risk-aversion. People are less likely to adopt anything new if this means that they'll have to negotiate complex or unclear options. Complexity is a turn-off and garners disengagement from the issue at hand. Knowledge of something can affect subjective attitudes towards risk. Moreover, knowledge is often disseminated in unforeseen ways through social networks (Gordoy 1998). Educated farmers are likely to share their knowledge, causing it to spread and to be applied in unforeseen ways as others subjectively attend to the newly gained information (Kiptot 2006:172). A purposive adoption of conservation farming also implies applying this new knowledge to secure anticipated outcomes in accordance with particular interests. The value of conservation farming from the perspective of the CFU as beneficial for crop-yields and global warming, does not have to coincide with the farmers' perception on the value of conservation farming. For the latter, these outcomes can also mean extra labour, moving away from the methods their parents and grandparents successfully used and positioning oneself as poor. Worldwide environmental degradation is as pressing an issue for the farmers as for the CFU and the increase of production does not have to be seen as a way to cope with growing populations. Purposive adoption entails knowledge to be applied to secure an anticipated outcome. But these outcomes can be perceived of and valued in a wide array of ways and the knowledge itself is not always clear-cut nor objective.

Knowledge, moreover, is a crucial aspect of reasons, the third element of motivation, which can be defined as the "grounded principles of action which agents keep in touch with as a routine element of their reflexive monitoring of their behaviour" (Giddens 1976:90). The reasons one gives for one's actions, are judged through personal reflection and by others in the light of perceptions of what is adequate, common sense, or in accordance with mutual knowledge. Reasons are thus valid if they correspond, factually, with what an actor did and when they confirm mutual knowledge which is drawn upon in interaction, taken-for-granted, constantly actualized and partially derived from authentication by experts, such as educated farmers, esteemed people or policymakers (Keesing 1987:163). Thus, even when a farmer is driven by motives opaque to himself or acts to realize interests of which he is unaware of, he is still able to offer a justified explanation for his actions and decision. These explanations can be framed in or justified by varying bodies of knowledge. This rationalization ties purpose to the conditions of its practical realization and expresses the farmer's knowledge of himself and the world in which he lives. Reasons, however always communicative and social in essence, are not merely given to understand one's own course of action or to be understood by others but can also be given to manipulate or deceive. Moreover, rationalization does not have to

explain and describe motives and intentions (often obscure), for the answer 'I do not know why I just did that' can be valid if it is perceived of as such by the farmer himself and others in the light of their mutual knowledge. And, by the same token, 'I did not mean to do that' can be a justified reason as well, because actions, however intentional, can have unforeseen and unintended consequences.

The Duality of Structure: Adaptation to Agricultural Changes

Let us recall the point I made earlier on, that the way farmers rationalize their decisions is both permitted and promoted by mutual knowledge and the three elements of motivation. The latter aspect I have already dealt with. I shall now combine this with the Giddens's (1979) previously mentioned theory of structuration, or the process of social (re)production. The three elements of motivation form the aspect that is commonly known as 'agency' and mutual knowledge is part and parcel of systems of generative rules, i.e. 'structure'. I will now break down what exactly is meant by structuration and I will do so in three steps.

First, *structuration* is meaningful. Human beings are social beings, first and foremost, and in every interaction there is a constant urge to understand and to be understood. But this is always communicative and the uptake of this is that it has to have meaning. This does not mean that interaction is programmed to communicate already established meanings (Asad 1979:617). It is not hard to observe regularities in the behaviour of some farmers in Zambia in relation to practices they consider traditional, such as the use of the plough. But this perception of what the plough stands for does not cause the pattern of behaviour, i.e. choosing not to use conservation farming methods for they are different from the methods farmers traditionally use. It is true, the plough means or symbolizes something for these farmers but this is part of a convention and does not have to be obeyed as such (Crick 1976:283). Refraining from digging basins, for instance, is not caused by the already established meaning of the plough. The farmers follow the rule by accepting and reifying the convention but its meaningfulness is actively and continually negotiated as another farmer is confronted with the possibility to start to put new agricultural methods into practice. The convention is meaningful for the actor and both permits and promotes his or her actions (Shore 1996:105). Moreover, these generative conventions can partially be seen as bodies of knowledge (Keesing 1987:165), like the ones used in rationalization as stated before.

But, as illustrated above, what a convention or a norm means is constantly negotiated in the ongoing (re)production of the norm. Thus, every interaction is partially constituted as a moral order, played out in the symmetry between rights and obligations (Giddens 1976:114). In every interaction, the rights of one person appear as the obligations of another person to respond in a way that is in accordance with the norm, or it identifies what is good and what is bad and allocates rewards and punishments (D'Andrade 1995:400). But this does not mean that when one is obliged to act in one

way or another that one actually has to. Hence, every norm is in a sense nothing more than a claim whose realization depends on others to respond as they are obliged to by the norm. Moreover, one can oblige the normative claim without accepting it as a moral commitment but by anticipating and avoiding the sanctions that will be applied when one does not comply. Claims are reified in every interaction in much the same way as the meaning of the rights, obligations and sanctions.

It follows that every interaction involves asymmetries in power as clashes between divergent norms or between differing understandings of the same norm are always apparent. I do not mean to refer to power in the Marxist sense, as the exploitative aspect of every relationship to be veiled by ideologies that masks the suffering this results in (Nigam 1996; Donham 1999). Nor do I wish to perceive of power in a Weberian way, as the capacity of a person to realize his or her will against the opposition of others. This definition of power does come close to one that I will opt to choose but it begets some readjustment. This is why I turn to Foucault (1975) and his idea that power is never absolute, does not have to entail violence or oppression and ultimately resides in the *interaction* between individuals. In this sense, power is the pursuance of interests or, in a rendition of the Weberian notion thereof, the capacity of a person to realize ones will *even* against the opposition of others. Conflict only comes about when people act in the pursuance of interests that do not coincide. As such, power is nothing more than the person's capacity to mobilize resources to constitute his or her interests (Giddens 1976:118). Power is a feature of every human interaction but a conflict or division of interest is not. It is, moreover, different from agency because the latter does not have to be intentional. The capacities and resources, two aspects of power to be mobilized in the pursuance of interest, can come to mean many a thing. As for agricultural production and the implementation of biochar, these possible resources and capacities are knowledge (Kiptot 2006), *skills* (Ingold 2000), social capital and financial means (Cramb 2004; Isham 2002); authority or prestige (Kiptot 2006); infrastructure and technology (Barlett 1980); access to global market and (inter)national agencies (Goldman 1995); and geological or ecological conditions crucial to agricultural potentials and suitable crops (Adejuwon 1962), such as location (Porter 1965), weather (Ortiz 1973) and the presence of pests, diseases and other organisms (Goldman 1995; Messenger 1969). Moreover, the a lack of these resources or a hampered capacity to act in the pursuance of interests can both stem from these same aspects. Interests, furthermore, that do not have to coincide, as Clayton (1968) shows in his study on how Malayan farmers continued to produce rubber and buy rice from their profits in spite of government programs that encouraged them to increase rice production. These physical or pragmatic constraints and possibilities, in the form of resources and capacities or the lack thereof, constitute the final aspect of my approach to adaptation. It is a process of innovation, incorporation and social change to be played out by farmers, engaging with other actors including the CFU and the broader world in which they experience and exist, as they choose whether or not to adopt new

farming methods, including biochar. And adoption is essentially an act in and of itself instigated by three interwoven elements of motivation, enabled by and constituting of their generative rules, norms and conventions in the process of *structuration*.

And, to return to the beginning of this theoretical framework, ideas and conceptions about agriculture are not only the object of change or the product thereof, as I have argued earlier on, instigated by new conservationist policies and programmes that are convinced of the necessity of such a change in the face of environmental degradation and unrestrained growth in human population. These same ideas and conceptions are also the means or the context of these hoped for changes (Sztompka 2000:450). It is the mutual knowledge, the generative rules, that farmers use to label, interpret and define their farming methods and the new conservation methods they are suddenly able to put into practice instead. And it is also the shared knowledge they can refer to and make use of in rationalizing and explaining the ways in which they decide to deal with the possibilities offered by these agricultural innovations. And their decision, in turn, influences how and to what extent these innovations will bring about the change they aim to instigate. Change alone is eternal, perpetual and immortal but, notwithstanding its inevitability, directing it is easier said than done.

Context

Footing in Zambia

He kneels down and with one firm pull he uproots the witchweed, lifts it up out of the sandy soil. He holds it up to me so I can see the little red flower it has harvested. The sand falls down from the dangling roots that were stealing the nutrition from the maize crops that so desperately need it in order to germinate and grow.

‘This is a big problem’ Muneku says as he throws the weed into the bush behind us. He pushes one of the maize stems aside, to make way, and takes a few steps further into the field to uproot some more witchweed. ‘This is a very big problem’ he adds ‘especially this year. Last year and last of last year we didn’t have this kind of weed, but this year? There is too much of it. And none of the herbicides work. We have to pull them out by hand or with the hoe’. He walks back towards me and leads the way out of the field, carefully shoving aside the stems. ‘And our soil’, he continues while we enter the path alongside the field that leads from his house to the motorway, ‘our soil is very sandy’. He turns around to look at me and smiles. ‘It is too poor, just like we are’.³

Flanked on both sides by the thick bush, lushing green from the recent rains, we continue our way over the white sand that forms a winding path down to the roadside. We pass by on a twisting trail, made by a rattlesnake that passed this way not long before us, bending of toward the small trees, some of which hang low over the path. The wind is picking up and rustles through the tall grass, still glistening from the thin layer of morning dew. Frederik says it is chilly, even for the time of the day, but it did not rain last night and the sand is dry, fine, and reminds me of that in an hourglass. Neither I nor Frederik have anything to keep the time with but the dawn didn’t brake too long ago. The path broadens a bit and we can now see a thin line of grey asphalt spread out in front of us. Where the two meet, there is a rusty, white bumper, lodged in the ground that serves as a signpost. We turn right, towards the East, on the Mongu-Lusaka road.

Frederik apologizes for the fact that I have to walk. ‘Normally I would have taken you with the bicycle but it broke down the other day when one of my chaps came back with it from school and hit a bump in the road, causing some of the spikes to break. We’re still waiting for the money we were promised by the CFU for maintenance. They are the ones who gave us the bicycle. It is the only

³ The poverty level in Zambia and specifical in the Western Province remains incredibly high. The results of the Multidimensional Poverty Index (MPI), calculated by the UNDP (2011), suggest that 58.3 percent of the national population lived in poor households in 2006. As for the Western Province, this percentage is 68.7. The indicators and calculations can be viewed in the appendixes. Zambia now finds itself among the bottom 20 countries in its HDI ranking, with an extremely low life expectancy, insufficient improvements in education and health indices, and a per capita income below the Sub-Saharan average.

one we own. We still didn't receive the money yet, so we will go footing instead.' I assure him that I don't mind to walk. In fact, I find it a welcome change after hours of being forced to sit while travelling by plane and by bus. Frederik does not seem too convinced but lets it rest and lifts up his green cap that reads *conservation farming unit* in embroiled, yellow lettering, the uniform of a CFU coordinator, and taps his chest twice to greet the man that is approaching us on his bicycle.

'Mwauka Bwanji?'

'Bwino. Mwauka Bwanji?'

*'Bwino'*⁴

I just nod my head and smile and when the other man goes on his way, I ask Frederik about how they greeted each other, what it had meant.

'Was that in Lozi as well? It sounded different from the way I heard you greet your brother-in-law earlier this morning.'

'No. That was in Nyanja. It is a very common language in Zambia, but particularly in the Eastern Province. That is where the Nyanja's originally come from. Here, in the West, we speak Lozi. There are seventy-two tribes in Zambia and they all have their own language but in Lusaka the tribes and their languages are putted together into seven groups. There is Lozi and Nyanja. Then you have Kaonde in North-western and Tonga in the South.' Frederik pauses for a second, trying to remember the remaining three as he keeps count with his fingers. 'And then there are the Bemba, Lunda and Luvali'. He looks at his hands and the number of fingers he flipped to make sure he mentioned all seven. 'But of course, English is our official language'.

English was a crucial aspect of the language politics in the early stages of Zambia as an independent Republic. It was a, relatively, objective language that belonged to the former coloniser, Britain, and would not implicitly prefer any one tribe over the others (Kashoki 1990). Like in many African countries, Kenneth Kaunda, the man that rose to power after Independence in 1964, sought for ways to create some form of national unity out of the vast and greatly diverse country of Zambia. This in contrast to the British, who colonised Zambia in 1924, back then still known as Northern Rhodesia, and introduced the system of indirect rule (Tordoff 1974). Which meant that they exercised their power through the chieftainships.

'So here, in Kaoma, you mainly find Lozi's?', I ask.

'Yes. But this is actually a Mankoya area, one of the tribes that are grouped together as Lozi. In fact, this area itself was called Mankoya. After Independence, KK⁵ renamed several areas. Now it is called Kaoma, named after the stream that lies beyond that hill'. Frederik stops and stretches out his

⁴ This is one of the ways in which one can greet each other in Nyanja, somewhat of lingua franca. *Mwauka Bwanji?* means as much as 'how is your morning?' and *bwino* stands for 'good'.

⁵ A nickname often used for Kenneth Kaunda.

arm in the direction of where the stream must run, beyond our sight. 'It is called Kaoma *ndonga* and *ndonga* means river in Luvali.'

We both remain silent for a while and talk to our hearts, as Frederik tends to say. I take in the surroundings. The wooden poles on our right-hand side will one day extend the electricity line from Kaoma to TBZ. As for now, they are unconnected, the cables still not attached. Dotted in the green, I can see the brownish grass roofs of houses akin to the one Frederik lives in. I look over to him and see how he is using some reed to beat off the flies, unconsciously, that buzz and hum, circling around our heads. Every now and then there is some cattle locked away behind fences made out of wood. The fences, and thus the cattle, are moved around the field from time to time to spread the manure. Occasionally we pass by on road signs that advertise for the various brands of seeds. There is also a big yellow board from the CFU that says: 'Conservation Farming. Look! It Pays!'

Behind the board someone planted an acre of maize, in straight, even lines. The field is most likely prepared with a ripper. The tall plants are green and most stems bare at least two cobs. In the next field a man, shirtless, is weeding with a hoe, which is often done during this time of the year. His maize is scattered unevenly around in his field and most cobs barely reach his middle. By the looks of it, he used the plough to prepare his land, the conventional way of farming. The plough was introduced by the colonial government in the early 1940's, but its use didn't really catch on until the 1960's (Long 1968:247). Before, most farmers operated a type of axe agriculture in combination with slash-and-burn techniques, known as *citeme* (Peters 1950:13). The government was concerned with the devastating effects this system had on the environment, for it led to mass deforestation, and advocated the use of the plough to increase production and cope with food shortages in urban areas (Seur 1992:52). Nowadays, the plough is labelled as destructive and unfeasible by some and as the traditional and therefore just way to farm by others. The man who I see weeding seems to belong to the latter group. He rises and looks up to watch us pass, a welcome break in his working rhythm.

Sporadically, there are bags of charcoal stalled out next to the road, leaning against a wooden frame. They are for sale, just like the tomatoes, sweet potatoes and bananas, piled together in plastic bowls, placed upon old, cut-off tree trunks. A woman crosses the road. She is balancing a bundle of firewood on her head and has a small child tied to her back with a colourful cloth, called a *chitenje*. She heads over to a little booth, made from iron sheets painted in red, that has Airtel written on both sides. She collects her phone that, I think, has just been charged at the shop and buys some airtime. These little shops are signs of self-employment⁶ and they remind me of when Kelvas, one of the CFU officers, told me that these people are not farmers. They are villagers that

⁶ The UNDP report on Zambia (2011), suggests that 16 percent of the labour force is currently unemployed. However, most of the people I interviewed for my research, in the rural areas of Kaoma, Mongu and Mkushi, did not have a formal job. Moreover, most of them are too old to be categorized as part of the labour force.

happen to have a farm. They don't grow crops to make money, they do so in order to feed themselves and their family.

Besides the small-scale businesses, some farmers grow tobacco for money. Others rent out their oxen for ploughing and ripping the fields or keep gardens and catch fish. Other than that, they mostly rely on their farming. They can buy seeds and herbicides from private companies. The government runs a programme, FSP⁷, and buys fertiliser in large quantities⁸. In order for the farmers to buy it against the subsidized price, they have to form cooperatives. In December, the farmers sign up, pay for their membership and get a certificate that says they are part of the cooperative. Farmers who need more than the 4 bags they can get through the FSP, have to buy against the normal price. However, even when subsidized, fertiliser remains too expensive for most. This is partially due to the workings of the FSP. Farmers only sign up for the cooperatives when they have enough money for the membership and the fertiliser. They usually finish selling their harvest in late November but already need the money in December to sign up for cooperatives. Before, KK would offer 16 bags of fertiliser on a loan and there are still NGO's around that handout bags.⁹ Fertiliser is an essential part of conservation farming and crucial to a good yield because the soils are simply too sandy. Without fertiliser, attaining at least a little bit of surplus for sale becomes next to impossible.

As for the selling of the maize, there are three markets. First, there are the local markets that buy against a relatively low price. They also buy rotten or bad maize that they use to brew beer. Second, there is the governmental programme FRA¹⁰. They buy at the highest price but most farmers have already sold their goods long before this price has been set. Ironically, the government also runs the FSP which leads farmers to try to raise money as fast as possible so they can buy subsidized fertilizer. Also, the payment of FRA is not made straight away but can sometimes take up to months. That's why several farmers sell their goods, albeit against a lower price, to "briefcase buyers". These are employees of private companies, showing up with a bundle of cash ready to be obtained. It is a tempting deal when everyday life is, as Frederick say, a struggle against hunger and a fight for food. After the harvest, farmers join forces to arrange a booking and transport their goods to the sheds for

⁷ Fertilizer Support Programme

⁸ 80.000 tonnes. *Zambian Farmers Magazine*, July 2008

⁹ Sata says he wants to double it and make it 8. He's also mentioning a new payment system to deal with the corruption. A voucher system, similar to what CFU has been using with the coordinators who get paid in inputs for the job they do as encouragers, teachers, hosts of field days, meetings and trainings, or "preachers of conservation". They're given vouchers with their names on it, that they can exchange for inputs at the agro shop if they identify themselves with their National Registry Card. They're not given cash because they can buy booze from it and they are registered by name so no one but them can buy the goods. Of course, this won't be waterproof. People can just exchange, go around the corner, and sell. The difference is that with the government, you'll have to pay for the vouchers, in much the same way as the farmers have to pay for the fertilizer they get through the cooperatives.

¹⁰ Food Reserve Agency

selling. Of course, these trade mechanisms rely on a surplus and a lot of the farmers barely make enough to feed themselves and their family. They simply do not harvest enough to sell anything.

Suddenly Frederik pulls me away, into the verge, as he sees a truck approaching and brings my train of thought to a standstill. The truck belongs to one of the Chinese logging companies. While repeatedly honking the horn, the driver slows down to avoid the potholes, filled with brown, muddy water from the recent rains.

‘Ah, the Chinese’, Frederik says and starts to laugh. ‘Did you know that they were the ones who made this road? I think it was in 1971’. The truck rushes by and Frederik holds still for a moment, unable to speak loud enough for me to hear him over the truck’s racket and continues as the noise dies out. ‘Yes, it was in 1971. I remember because the year thereafter, in 1972, the road was finished and I travelled it on my way to the Tanzanian border, where I worked on the railway with the National Service. I took the bus to get there. Not the busses you see now, like *Shalom*. That is a private company. Back then, the government still owned a lot of companies and industries, like public transport, but now everything is privatised. Some of the managers working on the railway, were Chinese as well. They all just came to mine the copper and they needed good roads, railways, what and what, for transportation.’ We step aside to give way to two women. Both of them are carrying big buckets on their heads. They are filled with water from the well, installed and paid for by an NGO a few years back.

Frederik looks down the road towards Kaoma in the West. He is amazed by its appearance. ‘It is so very straight’, he exclaims. I follow his stretched-out arm with my eyes to where he is pointing and gaze into the distance. Somewhere over yonder lies the border between Zambia and Angola, drawn up at the Berlin Conference in 1884-85 where the scramble for Africa was formalized (Förster et. al. 1989). The border is as straight as an arrow, much like the road Frederik and I are walking on. The grey clouds finally start to scatter. I can see the shade on the asphalt, rolling down the hill towards us, being pushed along by the sunshine. The rainy season is coming to an end and soon the crops will be dry and mature enough to harvest.

Frederik explains to me how important changes are. ‘We need change. Everything changes. We Zambians are not the same as before the British and the Chinese came and we are different from the way we were before Independence. Now we have phones, cars, what and what, all kinds of things. And farming changes too. People have to try. They can’t just sit like this’, Frederik crosses his arms and bows his head. ‘You can’t just wait. You have to try. If you don’t, things will remain the same. You will continue to suffer and the hunger won’t go away. I mean, even God changed things. He gave us light. He was the creator. Others disagree and say that they know how to farm because they have been doing it for many years and will continue to do it in the same way. I want to change them, encourage and teach them.’ He grabs me by my shoulder. ‘I am a preacher of conservation!’

Practicalities and Power Strength, My Friend!

The walk along the motorway from Kaoma to Lusaka and the conversations Frederik and I had during our journey are illustrative for the ways in which Frederik, and most of the people I interviewed, perceive of and relate to the world as rural farmers in Zambia and demonstrate much of their living standards. While walking down this road, accompanied by someone who lives there, one gets to see this in bold relief. The little shops and stalls next to the road illustrate the lack of economic possibilities, also constituted by and reflected in the lack in means of transportation and availability of water and electricity. Also of importance in this are the political changes. However, the politics of language, the privatization and the presence of the Chinese, the proliferation of NGO's and the changing policies on agriculture all influence the lives of people like Frederik, but they never do so fully, as is the case with language for instance. Furthermore, these developments appear to be vague and distant. When walking down the motorway one is only momentarily reminded of their existence, signified by the privatized bussed and trucks rushing by. It is within this context that farmers make and rationalize their decisions.

This chapter will specifically deal with farming, its inherent possibilities and limitations, how this relates to the living standards of the farmers, hardened by impoverishment, and how these in turn underline their decision on conservation farming. Much of this is played within a rural context, as described in the previous chapter. The large, global events, such as the scramble for Africa, colonization, independence, the privatisation and the response of the Chinese, have all staged political, economical and agricultural changes that have left their marks on the lives of the small-scale farmers like Frederik. However, those that live in the rural areas have mainly been able to witness these developments being played out on stage, not as full participants but as interpreters and as the objects of these changes. Every succession of the political protagonist remained vague and distant until its effects rippled through in the lives of the farmers. The Colonial Government advocated the use of the plough for agricultural and economical reasons. Kenneth Kaunda was aware of the importance of maize as the staple crop and turned fertiliser into a political instrument. This is also apparent in the current government programmes like the FRA and FSP. Frederick Chiluba, KK's successor, decentralized the government and opened up the country for foreign investments and companies. This did result in socio-economic growth for some but this did not really occur in the rural areas. There is still little to no monetary income, information mostly travels word to mouth and other than the bicycles there is no means of transportation. As of yet, there is no readily available electricity, except for the occasional solar panel attached to the thatched roofs, and water is collect at the nearest pump. Most people in the rural areas rely on self-employment and their options in

subsistence are in many ways limited to farming. And with farming they are limited by the weeds and insects, poor soils and whimsical rainfall and the occasional droughts and the fact that they do not have the funds to invest and create or make us of the possibilities that agriculture has to offer. And, as Frederik explained to me, one who doesn't have capital has to rely on his own strength and that of his relatives:

'Last year I hired people to help me with the tobacco', Frederik says. 'I got the seeds, the ovens and some chemicals on a loan from a tobacco company. Every little money that was left after paying back the loan, was for me, for my pocket'. The dog, God Knows, walks over and sits next to Frederik, eagerly looking at the cob of cooked maize he is eating. Frederik hits him on the head and shoos him away. With a low, woeful, moan the dog steps aside and curls up next to the bonfire, almost touching the smouldering coals. It rained all through the night and yet the grey clouds still linger low above us. The cold forced us to leave our beds and seek the warmth of the bonfire earlier than usual. Frederik and I are sitting in the heart of the village, a round and open pergola covered with dried grass.

'I tried to grow tobacco to get some money so that I could buy herbicides. But there was no money left after I paid for the people I hired. Now I just do the job with these young chaps, my sons and that other one from further down the road. Him, I do pay. Now we do it together. I am not the boss'. Frederik throws the maize husk into the bush and the chicken fight over the leftovers, picking away at each other. He picks up an old, battered lid and blows the fire back to life. The wet logs sizzle and Frederik pulls away from the smoke that is blowing in his face. Timothy, one of his sons, is continuously counting to ten, writing the numbers in the muddy sand with a tiny twig and muttering them underneath his breath in English. Every now and then he looks up to me or Frederik to assure that we are paying attention.

'Growing tobacco is hard work', Frederik continues. 'It involves a lot of jobs. Like today, we dry the leaves with the ovens but if the leaves burn too long or too fast, they become brown and burned. That's what the people from the tobacco company call scrap. You don't get a lot of money for those leaves. Yellow ones are the best. But it is a hard job to get them. You have to keep a small fire going all throughout the day and the night. I tell these chaps to watch the oven at night but as soon as they stop chatting and lie down, they fall asleep. Sometimes I wake them up and tell them it is their turn but usually I am on duty at night. Then I just sit there, dozing, and every now and then I go over to the barn to make sure the fire is not too big and not too small. As soon as the

leaves turn yellow you put on a big fire to fix the colour. It is a hard job but I try'. Jacob, the oldest son and one of the chaps helping out with the drying of the tobacco, joins us in the heart of the village. He goes through the items that are held up by a net, hanging from the roof of the pergola. He ignores the axe and the machete and shoves a few hessian bags aside. Finally he finds the needle and thread he was looking for and starts to repair his flip-flop.

'Ah, but some of these people, my friend. Some just walk by and tell me that I'll never be able to do the job on my own. But I don't need pieceworkers. I can do it by myself. *Bomeka*, is what I tell them. It is just like that song, *Capital Yamacushi, Bomeka*. Who is the artist again?'

'Afunika', Jacob shyly replies.

'Ah, yeah, Afunika. *Capital Yamacushi, Bomeka!* That is what I tell those people who think I can't grow tobacco without their help.

'What does it mean?'

'It means the capital of the... Ah, what is the word in English?', Frederik bows his head as he tries to remember what it was. 'It is a man with no house, no family, no food, no money, no nothing. It is a stranded man, that's it. So, the capital of a stranded man is strength, my friend! That is what it means and that is what I tell those people. They say that I'm going to fail but I tell them that I can do it, that I'll try. I don't know how God made these people but they have their brains and I have mine. It is like it says in the Bible. How are you going to help your brother with a speck in his eye when you still have a plank in your own eye? *Bomeka!* Strength, my friend!' Frederik raises his arm and laughs as he leans back into one of the wooden poles, upholding the roof. 'And God gives me strength'.

Frederik is a stranded man who has no other option but to farm in order to sustain a living for himself and his family. Within farming in general and between conservation methods and conventional methods, there are differences in land preparation, weeding and mechanization that are either possibilities or constraints for one who has no capital but strength. This mainly boils down to differences in labour, time and costs. In order to further unravel these, it is a prudent first step to make a distinction between the phases of production.

The first phase is preparing the land. With conservation farming this is done during the dry season, either by hand or with the ripper, pulled by oxen. These are minimum tillage methods and reduce soil erosion and disturbance and the break pre-existing plough-pan barriers that improve water infiltration, water retention and plant root development which is a big advantage over other

methods during times of little rainfall or even droughts. It also means that fertiliser can be applied in fixed planting stations, in close proximity to the plants where it will provide the greatest benefits. All of this can increase the production yield. When using basins, land preparation can take up to a few months. Farmers say that digging is an easy job, but time-consuming. Also, because digging should be done during the dry months, in order for the land to be ready for planting with the first rains, the work itself is a little more intensive because the soil is harder. It is also possible to wait for the rains and then start digging, but this will also mean less yield and therefore, implicitly, less profit and thus more expenses. Moreover, with conservation farming you only have to clear the parts of the field that you'd want to cultivate.

In contrast, with conventional farming, preparing the land is done with the plough and the whole land is tilled. This means that fertiliser is to be applied across the whole plot and therefore more fertiliser is needed. It also means that farmers have to clear a new part of land every two years and that ploughing takes more time than ripping because with ripping you only till the areas you want to cultivate. Therefore, ripping one hectare of land can take two to four hours while ploughing that same plot can sometimes take up to three days. This is also why hiring an oxen to rip is cheaper than hiring one for ploughing. But because you use animals with ploughing, it is less labour expensive than digging and it is a one-time job that is done as soon as the soil is softened by the first big rains in early November, which makes the tilling of the land easier.

The second phase in land preparation is weeding. With conservation farming this is, ideally, done with herbicides for they make weeding into a one-time and easy job and it is very effective against the weeds that are competing with the crops for nutrition and water and the insects that feed on the growing crops. When the chemicals cannot be acquired, farmers do the weeding by hand or with hoe which also means that it has to be done up to three times per harvest. Additionally, farmers can also weed by using their oxen in combination with cultivators. The use of herbicides is not restricted to conservation farmers but it is an integral part of the programme and I never came across a conventional farmer that applied chemicals after preparing his land with the plough. Thus, the small-scale farmers that cannot afford herbicides or don't do conservation farming all weed their fields by the same methods. Namely, using their hands and the hoe.

It follows that differences in production yield stem from which farming methods are used and differences in labour, time and costs stem from differing means of production. Conservation farmers can use herbicides which makes the weeding costly but also less labour expensive. Also, it is usually very effective which means that there are no weeds eating away at the crops, the food supply or the surplus for selling. Conservation farming also means a reduction in fertiliser without decreasing the harvest. A conservation farmer that uses a ripper saves time and money and will have more harvest, compared to someone who ploughs. If you have to do everything by hand, you save

money on herbicides, the ripper and on oxen but you'll have to do more work that is not as effective for less yield. And, of course, the time you spend on digging and weeding by hand implicitly means an increase in costs because time is money.

The CFU opens up new possibilities with which the farmers can increase their production and better their livelihoods. Conservation methods can make farming easier, faster, more effective and more productive. However, they involve investments and they are only a possibility if one has the sufficient funds and does not solely depend of one's own strength and that of one's relatives. In other words, farmers lack the power or the capacity to mobilize resources to constitute and pursue their interests (Giddens 1976:118). These capacities and resources can come to mean many a thing. Besides monetary funds, it also includes technology – electricity, transport, domesticated animals, agricultural machines – as well as the capacity to access and influence the market and (inter)national agencies (Goldman 1995).

Frederik is limited to being a farmer and depends on himself and the possibilities offered to him by other companies, like the tobacco company that gave him inputs on a loan and the CFU that offers to train him in conservation methods. He is in many ways confined to those actors and does not have the capacity nor the resources to do otherwise. The way he defines '*capital yamacushi, bomeka!*' is also illustrative. For him it means that strength is the capital of a stranded man, with which he identifies himself for he does not have the power to pursue his interest with anything but his own two hands. When I asked Sinabu, the CFU officer in the Mongu-district, what he thought the song was about, he told me that it meant that you have to be strong in order to survive in the capitol, in a big city. But Frederik does not live in a big city, nor would he be able to do so. He is marginalised in the sense that he is a limited to being a rural farmer with little influence on the larger processes that affect his life.

I do not, however, mean to argue for a reinvention of the 'culture of poverty' (Lewis 1959; 1998)¹¹. Poverty is not a culture that determines a uniform set of values and interests to be found in anyone that happens to be poor. There is as much deviation in values and interests within Frederik's community as there are commonalities with the values and interests of those that are neither poor nor marginalised to the extent that Frederik is. He wants to provide for his family, values education and tries to get his kids through school. He just has limited resources and capacities to pursue these

¹¹ Much more has been written about the culture of poverty but I do not deem it necessary nor possible to delve deeper into the debate. Critique on his work was, amongst others, given by Valentine (1968) and Leacock (1971) for Lewis misused the concept of culture and did not pay attention to structural causes, blaming the poor for being poor. Harvey & Reed (1996) deconstruct the context of the debate and argue that his work was erroneously criticized and that it remains a celebration of the resilience and resourcefulness of the poor.

interests. But “[he] tries” by working hard and making use of the possibilities in the form of programmes offered by agencies like the CFU. He perceives of conservation farming as beneficial to his life, even if this means that he has to do everything by hand.

But the decision is not solely based on a cost-benefit analysis. If this would be the case, every farmer that has the power to invest and purchase change would do so because, factually, conservation farming can increase production and it makes farming easier, faster, more effective and more productive. Especially if one can afford to use a ripper. And of course, labour, time and cost are all important but it eventually boils down to how these practical and economic aspects are interpreted, how these relate to the way people are farming otherwise and if the proposed benefits of conservation farming are viewed as such. Thus it is of crucial importance what knowledge farmers have about conservation farming, how it relates to their lives and how they gain it. This will determine if conservation farming becomes an interest they want to pursue, irrespective of whether or not the farmers have the capacity and resources to pursue a change in farming methods.

Risk and Knowledge

The Branch of the Tree

In this chapter I will look at risk and knowledge. Or, more precisely, I will look at how knowledge about conservation farming finds its way into the lives of the farmers and how it can reduce the amount of risk they think is involved with changing. Like any other change, a switch in farming methods implies a certain amount of risk that has to be taken. And with farming this risks becomes even greater because a lot of people rely on the food they grow to feed themselves and their family. They cannot afford to miss the little harvest they can get, something a change in farming practices could very well come to mean. However, neither the perceived risks nor the knowledge about conservation farming have to be factually true. As I will show, knowledge about conservation methods, its benefits and its merits, is negotiated and interpreted and thus leaves room for deviation. Moreover, risk is in a sense a form of scepticism about the benefits of conservation farming. Can the farmers be sure that an increase in labour involved in switching from ploughing to digging is going to pay off? Does conservation farming work? Will early land preparation result in more weeds? Are the herbicides effective or do they damage the soil?

Questions like these are common and they all have a straightforward answer. However, when one does not know the answers, one might perceive of changing to conservation farming as risky. As I argued in the theoretical framework, knowledge can reduce uncertainties and diminish risk-aversion. Farmers are less likely to adopt any new method of farming if this means that they'll have to negotiate complex or unclear options. Complexity is a turn-off and garners disengagement from the issue at hand (Knight 2003:5). And a better understanding often affects someone's attitude towards the new methods as well as someone's perception on the amount of risk that there is involved with changing. Hence, this decision is not only influenced by practical constraints and possibilities, as described before. It is also based on what farmers know about the methods and on what they think the change at hand will imply and what the risks are they'll come to face when they choose to adopt. But it is not just about being taught, as Frederik said during our walk on the motorway, it is also about being encouraged by those who pave the way.

I left Frederik and his family the day before yesterday and I'm now staying with Oliver Bulaya, the CFU district officer. He resides in one of the compounds in the *boma*, the township or centre of Kaoma. The Maseka bar is one of the many small, concrete buildings lined up next to the main road in Kaoma. The open door allows me to look out into the street. There are people swarming around a van, unloading the bags of grinded maize used to make the main dish, *nishima*. The bartender is dozing while he rests his

weary head on his crossed arms, leaning on the counter. It takes some effort to draw his attention but he finally opens his eyes and walks over to me with a Coke and a bottle opener, made out of a piece of wood pierced with a rusty nail. He uncaps the bottle and drags himself back to the counter. I am the only customer, seated in the corner on a comfortable sofa in front of a wooden table that barely reaches the height of my knee. My research notes are spread out in front of me and I'm trying to make sense of it all.

'What are you working on?' A man asks as he enters through the back door. He is handed a *Mosi* by the bartender and takes a seat at my table. I explain to him that I'm doing research on conservation farming and he immediately starts talking about the land he inherited from his father.

'I farm as well but I don't do conservation farming. I haven't had the time to look into that. I have a family to look after and I'm also the owner of this bar, you see? I have seen the advertisements next to the road to TBZ. The fields look good but I never stopped to think or ask what conservation farming actually is. Most people in Zambia don't like changes. Even if they do see, like I do, that conservation farming can work. Change doesn't come about in one day, you know.' He takes a sip from his drink and so do I. The Coke is very sweet, flat, but cooled.

'A man once told me', he continues, 'that a visitor is an angel. Maybe he brings good news and maybe it is bad. But whatever you do, listen to what he has to say. Those who don't will stay the same. But after a while, they notice that the ones who did listen got something out of it at the end of the day. Then they can no longer say: "Ah that is just a waste of my time and energy". First you listen, then you decide.' He leans over the table and takes one of my notepads.

'Do you have a pen?' he asks. I feel my chest pocket and hand him one.

'I have to go but I'll write down a proverb for you first. It's in Lozi. It means "don't jump for the branch of a tree". You shouldn't just jump because you don't know what the branch is like, whether or not it is going to hold once you jump.' He finishes scribbling, stands up and hands me back the notepad and pen.

'Good luck with your research', he adds as he turns around to walk away. The bartender drowsily greets him and I flip the pages of the notepad to look for the proverb. I finally find it, at the top of an empty page. It says: *Usika wa tulela kota kwamu tai wa yoma.*

Later that month I show the proverb to Sinabu, the district officer in Mongu. He explains to me that the branch is, of course, just a metaphor. It actually means that you should not get involved unless

you know what is going on, unless you are familiar with the problem or the subject at hand. And this is also the case with conservation farming. Once you learn more and more about the methods, about the branch, it becomes less of a risk to jump for it and to try conservation farming. You know that it will hold, that I will not ruin your harvest.

But knowledge about these methods does not emanate from within the community of the farmers. It is handed down to them by organisations like the CFU and the government. As it disseminates, it largely follows the structure of these organisations. Most notably, that of the CFU. The people at the headquarters test new methods and ideas at the fields near Lusaka, sometimes in cooperation with UNZA¹². After that, several farmers in other areas and regions are selected to do a pilot, or a demonstration, on their fields using the new method. The workings of the method are closely observed and the results find their way back to the headquarters in Lusaka. If it is proven to be successful or at least useful, the method is incorporated into the broader scheme of conservation farming and therefore into the programme. The knowledge is then injected into the rural communities, aimed at changing agriculture, and the farmers are primarily the marginalised object of it. They interpret it from within the context of their lives on the sideline. And with every interpretation, the knowledge about the new method is negotiated, sometimes causing misconceptions (as far as the CFU/NGI are concerned). New methods are first introduced to the coordinators and lead farmers by the officers and later dealt with at the trainings. The other farmers first come to know about the new methods during one of the many field days.

“The Conservation Farming Unit (CFU) will from mid February to end of March, 2012, hold about 9,000 field days (...) Don’t be told. Come and see all for yourself”.¹³ The advertisement appeared in the Zambian newspaper, *The Post*, over two weeks ago. It advertises for the field days by stating that this is the best chance for people to see if conservation farming really works. I had cut it out of the paper when I first saw it and have had it in my notepad ever since. It fell out a few seconds ago as I was leafing through my pad, looking for the next empty page. I write down the date, February 24th, in the top right corner and give it the title: “Field day at Moluwela”.

‘Now this is what we call an African promise, Mr. Kros’, says Paddon, a conservation farmer and close friend of Moluwela, one of the coordinators in Kaoma and today’s host. ‘You tell people to come at 10 hours. They promise they’ll be here in time and then they show up around 12 hours.’

¹² University of Zambia

¹³ See the appendixes for the advertisement.

‘Maybe they are still weeding’, Moluwela adds, ‘or maybe it’s because of this morning’s rain.’ The three of us are seated on a log, in the shade of a big mango tree that no longer bears fruits. We are waiting for the other farmers to arrive, none of them have shown up yet. Moluwela’s wife is heating up the water that she’ll later on use to cook the rice for the attendees. To kill the time, Paddon tells me a story about the first time he ate with cutlery. It was back when he was still working as a miner in the Copperbelt, before he moved to Kaoma and became a farmer. One by one, people start to arrive. Finally, an older man, wearing gumboots and a blue jumpsuit, arrives and greets us by going down on one knee and clapping his hands a few times.

With this man’s arrival, Moluwela decides that the wait is over and signals that he wants to start with the tour around his field. We follow him to the plot with maize and gather around him, forming a semicircle. There are fourteen attendees. Five men and nine women, Paddon, Moluwela and myself not included. The field is well managed. The maize is planted in straight, even lines and grows out above Moluwela’s head. Each plant bears at least two big cobs. Moluwela tells us that he applied fertiliser and used herbicides for weeding, explains when, how and in what amount he applied the chemicals, and that he started digging the basins right after the harvest, long before the onset of the rains in November.

‘That way the maize will grow bigger because the seeds are already planted before the rains come’, he says.

‘But doesn’t that also mean that there will be more weeds as well?’, one woman asks.

‘No, it doesn’t. Do you see a lot of weed in my field?’

‘But you used herbicides!’, the woman exclaims, still not convinced that early land preparation will not increase the amount of weeding she has to do, on top of the extra investment in labour that is involved with the digging in the first place. Time and energy that could have been used elsewhere. She looks passed Moluwela, down the lines in his field.

‘So the herbicides kill everything?’, she asks.

‘I used two kinds of herbicides’, Moluwela replies. ‘The one I used before I planted the seeds is non-selective and kills everything that is green. The other one, maize weed killer, only kills the weed and should be applied about two or three weeks after planting, when the stems are about to reach knee-height.’

‘First, you apply the non-selective, then you apply the maize weed killer’, the woman summarizes. ‘And what about the costs? What do you pay for herbicides?’

‘55.000 Kwacha for one litre’. Moluwela’s reply causes the woman to laugh.

'55 *pin?*', she asks amazed. 'That is more than the school fee. I am a widow. Where do I get that kind of money?'. Paddon joins the discussion and tries to explain to her that even when she starts to dig the basins early on in the year, she'll have more harvest at the end of the season. And then maybe next year or the year thereafter, she'll be able to afford the herbicides as well. The woman just smiles and shakes her head, not too convinced. She won't be able to purchase the herbicides and still doesn't seem persuaded to think that early land preparation will not cause more weeds to germinate. There are but a few weeds in Moluwela's field and yes his cobs look big but she'll have to do it without the chemicals and is unsure if it will have the same effect without. Why would she do all the work herself when she is not convinced it'll pay off, knowing that she can have an oxen do the work instead?

The older man in gumboots and a jumpsuit does not seem as discomforted by the prospect of having to dig basins and asks Moluwela how exactly they are supposed to be dug. Moluwela tells him to come to the training on land preparation in June. There he'll be able to learn everything about digging basins. We pass by on the patches of land with rice and groundnuts before we arrive at the demo plot where Moluwela is growing maize using biochar in combination with different amounts of fertiliser. No one seems tempted to ask anything about it and Moluwela sees the time fit to head back to the cool shade of the mango tree. The women take place on the thatched mats and the men pick one of the small, wooden stools or find an empty spot on the big log to sit themselves down. I put my hands together and close my eyes as the older man says a prayer in Lozi and only join in when the attendees exclaim as one: 'Amen!'.

Moluwela opens up the discussion by asking to crowd what they thought of the plot where he applied biochar, or *malacha* as he calls it.¹⁴

'What tree can we use to make it?', the widow asks. Moluwela explains that biochar is different from normal charcoal.

'It is not made from trees. You use the husks of the maize, the leftovers after harvest, to make biochar. You burn them slowly, hammer the coals and apply them in the basins like you would do with fertiliser'. Moluwela looks over to me to assure that he did not say anything wrong. 'I used a stove to make biochar out of the husks'.

'I would be willing to try it', the older man says. 'Especially if I get one of those stoves as well. Do you think that is possible?', he asks me. 'Could we get one of those stoves on a loan?'. Moluwela answers for me and explains to him that the stoves are simply too

¹⁴ Charcoal.

expensive for everyone to receive one. Instead, he will teach them how to make biochar out of the husks by using the same type of kilns they use to make charcoal out of wood.

Indeed, it is safe to say that not all the farmers are going to get a stove, if anyone besides the six selected farmers in Kaoma is going to get one at all. It remains to be seen if and how biochar is going to be produced. The traditional kiln was initially seen as a good alternative to the stove but later turned out to emit so many greenhouse gasses that it would annihilate the function of biochar as a way to sequester CO₂. Moreover, when I spoke to Frederik about how he thought others were going to produce biochar, he mentioned that they could dig holes in the ground and burn the husks inside. Besides, it is not all that clear to everyone, including the widow at Moluwela's field day, that biochar is not to be made out of wood. The CFU did look into the use of charcoal dust as an alternative to actual biochar but this method will no longer be encouraged because they consider biochar to be the best suitable option, both in terms of logging and in terms of the quality of the coals compared. However, not everyone is aware of the difference between the two. In fact, for Frederick anything that looks like charcoal is now biochar, including the coals he gets from burning the wood in the ovens he uses to dry the tobacco with.

Besides these problems that arise with the production of biochar, there are also some differences in how biochar is defined by the NGI and the CFU and the way in which the farmers interpret it. When I mentioned biochar to Zakaria, Frederik's brother-in-law, he turned to Frederik and asked what it was. Frederik explained to him that it is a cheap fertiliser. This definition of biochar is the one I have been hearing most of the time and it goes to show that the knowledge Frederik and others have of biochar differs from the view NGI and the CFU have of it. The latter do not see it as an alternative fertiliser but as an addition with different benefits all together. Indeed it can increase the quality of the soil and it is inserted into the basins but it is not an alternative fertiliser.

Biochar as a method and the knowledge thereof is injected into the rural communities and handed down from the CFU, via the coordinators, to the individual farmers. With every interaction, conversation or explanation concerning biochar, its meaning is (re)produced anew. The fact that farmers interpret it as a cheap alternative to fertiliser is illustrative for the problem many of them have with acquiring fertiliser as well as for the fact that the mitigation of greenhouse gasses and reduction in logging is of no importance to the farmers. The idea that biochar can sequester CO₂ is lost somewhere down the line, there are large asymmetries between the several ideas on how to produce it and it quickly goes from an additional method to an alternative to fertiliser. The biggest reason for people to try biochar is that it would reduce the amount of fertiliser they need, since the acquisition of fertiliser is problematic for everyone. When it would be introduced and perceived of as a cheap alternative to fertiliser, it could be a reason for conventional farmers to change farming

methods and a big incentive for other conservation farmers to use it. However, such a view of biochar would be factually incorrect and thus this motive would drop away. More importantly, if this misconception of biochar proves to be persistent, it bears a risk to the livelihood of the farmers. If it is seen as an alternative fertiliser and it is used as such, thus reducing the amount of fertiliser farmers would normally use, then it would imply a decrease in their yield and therefore in their food supply. In this case, knowledge that is factually wrong results in a genuine risk that the farmers do not foresee while the widow saw an unjust risk in doing early land preparation and digging basins because she was not convinced by the 'correct' knowledge that Moluwela gave her and still believed that conservation farming would cause more weeds to germinate and could not be done without herbicides.

Many conservation farmers express a certain amount of scepticism in the reasons they give for trying conservation farming methods in the first place. Many changed after they had seen that conservation farming worked for others, that the branch might be strong enough to hold them as well. And, in this, saying and seeing that conservation farming works means that it can increase production yield. Most of them start off in the first year of conservation farming by ripping or digging one line and still plough the rest of their field because they are not sure whether or not it is going to work. During the time of harvest, they compare the two parts of the field and are either convinced of the benefits of conservation farming or abandon the method altogether. Once they see for themselves that conservation farming works and once they know what it entails, it becomes less of a leap of faith or a jump and more of a slow but steady climb that starts at the tree trunk and eventually leads up to the branch they now know is safe. Some, like the widow at Moluwela's field day, never become convinced that the branch is beneficial or attainable, due to misinterpretations about conservation farming or because they know exactly what the methods entail and what is needed to change but do not feel as though they could jump for the branch. Usually this is because they do not have the means to do so.

Motives and Reasons

Suffering is our Knowledge

The options the farmers have are limited by practical issues and the decision they make are partially influenced by these. And as they come to know the branch and gain knowledge on the issue at hand, factually correct or not, they decide whether or not to take the risk, jump for the branch and adopt conservation farming methods. The different motivations for doing so, or refraining from doing so, are underlined, as argued before, by three interwoven elements. Namely, motives, purposes and reasons. These are in turn constituting of and constituted by the meaning certain methods take on, in relation to certain norms with regard to agriculture and life in general, such as change and tradition. These meanings are, as I will show in this chapter, in many ways informed by their own understanding of their lives on the sideline. In other words, suffering is their knowledge.

Oliver plunges into the scruffy sofa I'm seated on, visibly delighted that the discussion is over, and taps me on my knee.

'I'm hungry my friend, very hungry. My girls made beans this morning and you know how much I dislike Bean Laden', he says joyfully. Kelvas pulls up a chair to the right of us and continues to text with his phone. The field day just ended and we are about to have lunch. The ceramic plates are already stalled out on the fluffy carpet at our feet, as are the spoons, the carafes of water and the glasses, turned upside down on a dinner tray. Oliver pours himself a glass, downs the water and pours himself another one before sitting down again.

'You did well, *bwana*¹⁵', he tells Ntumwa, who walks in through the open door, quickly followed by Sinafu. Both of them are coordinators and Ntumwa is the one who hosted today's field day.

'Thank you, Oliver, but not enough people showed up'. Ntumwa, a retired school teacher, closes the door while Sinafu makes himself comfortable on the carpet and leans into the concrete wall. Ntumwa walks over to a wooden cabinet in the far end of the room where he checks his phone, an old Chinese model, for missed messages before sitting down in the brown, downy, armchair opposite to me.

'Don't worry about it. It is just their mentality', Oliver assures him. 'They show up too late or not at all, unless they know they'll get food or fertiliser'. The wall behind Oliver and me is torn down, except for a few remaining concrete blocks in the corners that

¹⁵ Boss

testify to its earlier existence. The hushed voices that belong to the other attendees, seven in total, that are sitting outside are still audible though incomprehensible.

‘Their mindset is very hard to change, they just don’t listen’, says Ntumwa disappointed. ‘Not even when they do come to the field days. They’d rather stick to ploughing anyway’. The others remain silent and seem to agree with him.

‘Why do you think that is?’, I ask.

‘Some people just don’t want development, Mr. Kros. They say that they’d rather use the plough because that is their tradition’.

‘And some of them are simply too poor to afford fertiliser’, Sinafu adds. ‘And there is no farming in Kaoma without fertiliser. The soils are simply too poor.’

‘But conventional farmers need fertiliser as well’.

‘Yes, even more so’. Sinafu uses his finger to draw out an imaginary field on the concrete floor. ‘With ploughing you need eight bags of fertiliser for one hectare and with conservation farming you only need four bags’. He drags his finger down the middle, cutting the imaginary field in half, to illustrate that a conservation farmer can cultivate twice as much with the same amount of fertiliser.

‘Then why don’t they change?’

‘I don’t know’, he replies, shaking his head. Oliver leans over to put down his empty glass and turns towards me.

‘You have to understand one thing very well, my friend. Most of these farmers are really very poor.’ Kelvas looks up from his phone and nods in agreement. Even though Sinafu has just explained that conservation farming implies a reduction in the amount of fertiliser that is needed per hectare, conventional farmers refer to their inability to purchase fertiliser to justify their decision not to do conservation farming. The fact that conventional farmers need fertiliser as well, even more so, is not a reason for them to think of this justification as strange. Living in poverty is something that is understood by all, and referring to that aspect of their lives is a justified reason not to do something. Even if it does not hold true, factually. It still does not explain why they don’t change, as Sinafu just expressed, but it does make it understandable.

‘Ah, you’re just in time mama!’, Oliver exclaims. ‘I am starving!’. Getrude, Ntumwa’s wife, uses her elbows to push aside the curtain that serves as a door to the backroom while holding a tray with several plates of chicken, pumpkin leaves and *nshima*. She rearranges the glasses to make room for the tray. Ntumwa thanks her and ushers us to start eating.

'Please, share yourselves'. Kelvas kneels down next to a silver bowl filled with water to wash his hands and passes the bowl on to Oliver. Getrude recognizes me from earlier this month when I interviewed her and smiles. As Oliver impatiently slides the bowl towards me, I am reminded of what Getrude told me during that interview. Other villagers in the area had argued with her, telling her that she should not use herbicides because it would destroy the land. They had denounced her for continuing to do so.

I can hear the muffled sounds of scraping plates coming from outside. Getrude excuses herself and leaves to check on the other attendees. I shake the water off from my hands, grab a plate, and return to the sofa. Now everyone is eating there is nothing left to say. I look over to Ntumwa and notice a poster of Jesus Christ hanging on the wall behind him. At the bottom of the picture, a saying is written: "suffering is our knowledge".

The suffering and the understanding farmers have of their lives as stranded or marginalised people with limited options and resources forms a specific body of knowledge that informs the meaning certain farming methods take on and stipulates certain norms. In fact, within the hierarchy of reasons, motives and intentions, this knowledge seems to be the most immediately pressing and therefore the most important issue that also ripples through in other motives, interests and rationalizations. Several of them can be distilled from the conversation that took place after the field day at Moluwela.

What are the motives or, in other words, what are the wants that prompt the farmers' actions, their decisions? First, there are the ones that are primarily pragmatic in nature. In a sense, you can speak of a twofold purchase of change. Some are under the impression that they need inputs, fertiliser and herbicides, in order to do conservation farming. Even those who are convinced of the benefits and want to change, do not do so because they cannot afford the inputs they think are necessary to do conservation farming. This has a lot to do with similarity and being able to identify with the situations others find themselves in. During Ntumwa's field day there was a man who was amazed by the fields but knew that Ntumwa, being a landlord and a retired teacher, has a lot more income and is therefore able to buy the necessary inputs. It was hard for him to imagine how he was going to follow Ntumwa's lead because he did not have any income whatsoever. The same goes for the coordinators who receive their inputs in return for the work they do for the CFU. They can do conservation farming because they have the inputs. If you are not as lucky, you might come to think that therefore you cannot use the same methods.

Change is also seen as something that has to be purchased in another way. As Ntumwa and Oliver agreed upon, the biggest challenge in trying to convince people of the benefits of conservation farming is the mindset or the mentality of the people. Often they come across people that resist

change unless they receive inputs in return. It is change on the condition of being given something tangible, not just the training CFU provides. In a largely similar way, the older man in gumboots and a jumpsuit was very willing to give biochar a try, especially if he would be given a stove as well. Hence, changing itself is not really considered. The possibility of receiving inputs is the primary motivation and change is just the by-product or the cost for it. This is an attitude that the officers and coordinators often referred to as the so-called dependency syndrome. The main problem with farming in general is the acquisition of inputs, such as seeds, fertiliser and herbicides. Kenneth Kaunda, the first president after Independence, was handing out sixteen bags of fertiliser on loans. Every farmer in the country would receive these bags year after year. This period was quickly followed by a proliferation of NGO's that started handing out inputs as well. Some of them are still around. Consequentially, an often heard complaint is that some have made being lazy into a habit. They just lie around underneath their mango trees, waiting for someone to come and help them out, instead of doing the work themselves. Inputs and not conservation farming is seen as the way to lessen their suffering.

Moreover, for some using conservation methods is even equated with poverty. Only those that cannot afford to use animals turn to hard labour and digging basins. Therefore, a change in farming methods is not desirable for they do not want to be poor nor do they want to do a lot of extra work. Others are convinced by the fields and of the fact that conservation farming does result in an increase in production but they are not impressed by what this results in outside of farming. There are not a lot of differences in living standards between those who do conventional and those who do conservation farming. So conservation farming could very well be good for your crops, but it remains unclear whether or not it is really going to change anything in your life besides just that. They want their living standards to change but are not convinced that conservation farming is going to be of any help. Besides the meaning these aspects take on that are intrinsic to conservation farming methods and/or the farmers who use them, change in and of itself carries a certain value for people. Some even condemn change. Getrude's use of herbicides was denounced because the chemicals are arguably destroying the land and, by the same token, several of the farmers were laughed at when they decided to dig basins according to the principals of conservation farming. They were told that digging basins is only for the really poor people. And, following the argument about the purchase of change, for others the possibility of receiving inputs is the primary motivation and change is just the by-product. In contrast, to others, like Frederik, change is a necessity. He was unsatisfied with his living standards and saw that conservation farming works. He became convinced that change would increase his production.

Change is often valued by referring to tradition, or the use of the plough, like Ntumwa explained. Tradition is either seen as backwards, or in Ntumwa's words, an obstacle to development

or it is thought of as something good and important. To many farmers, the plough is still the traditional way of farming and therefore the correct way. It is how they have been doing it for many and many years and there simply is no reason to change. Tradition is an example of a convention or a norm and one should feel obliged to act in accordance with it. But what a norm comes to mean is constantly negotiated in the ongoing (re)production of the norm. During the introduction of the plough by the Colonial Government, *citeme* was seen as the correct way to go about agriculture. Now, with the up march of conservation farming, the plough is suddenly seen as the traditional and therefore the right way to farm. The norm of tradition has taken on a new meaning but some still feel the moral obligation to act in accordance with it and follow in the footsteps of their fathers. Moreover, they sometimes sanction those who do not live up to this norm in the form of laughter and condemnation. The norm identifies what is good and what is bad (D'Andrade 1995:400). However, this does not mean that when one is obliged to act in one way or another that one actually has to. Hence, every norm is in a sense nothing more than a claim whose realization depends on others to respond as they are obliged to by the norm. Moreover, one can oblige the normative claim without accepting it as a moral commitment but by anticipating and avoiding the sanctions that will be applied when one does not comply. This is apparent in the decision some farmers make, solely based on the fact that they'll be laughed at by others if they dig basins. But because norms are subjective to change and negotiation, differing understandings of the same norm are likely to occur. Whereas some uphold the value of tradition, others denounce the use of the plough for the very same reason. They think of those that still use the plough as backwards and ignorant.

As such, referring to norms such as tradition is one of the ways in which farmers justify the decision they make. The reasons they give are judged through personal reflection and by others in the light of their perceptions of what is adequate, common sense or in accordance with the norm. Reasons are thus valid if they correspond, factually, with what an actor did and when they confirm mutual knowledge which is drawn upon in interaction. Because the norm of tradition can be interpreted in more than one way, both the decision to make the switch to conservation methods and the decision to stick to ploughing are justified and rationalized by the way in which change and tradition are framed.

However, reasons are not just given in the form of justifications. They are also used in the form of examples, in order to rationalize certain decisions. Christianity is often referred to in this manner. It is an important part of most villagers' lives. All meetings, trainings and field days start with prayer and even the Jehovah's Witnesses, who say they do not pray, join in. Many of the roadside shops are named in ways that reflect the importance of Christianity and the first question people usually asked me was what church I go to. Farmers usually do not justify their decisions on farming by referring to Biblical texts in the sense of: I am a Christian and therefore I do conservation farming.

But many of them eagerly use examples from religious doctrine to elaborate on their fields, their crops and the problems they are facing and the examples are understood by all. As Oliver was training coordinators in how to go about the field days, he told them to invite conventional farmers as well by saying that “they [conventional farmers] are the enemy but visit them as well, encourage them too and tell them, show them, the benefits of conservation farming. How are you going to evangelize someone if you keep them out of your church? Do not avoid them, convert them, so that they end up in the Kingdom of God as well. Also, Frederik exemplified the importance of change by stating that even God, the creator, changed things and referred to the Biblical text about a speck in your brother’s eye and a plank in your own eye when he spoke to me about the reactions of others when they found out he was trying to grow and harvest the tobacco all by himself this year. And God gives him the strength to do so. In much the same way, others have explained why conservation farming works or why other methods might work. Namely, it is a blessing from God in order to end the suffering and create paradise on earth.

But, as the depiction of Jesus Christ in Ntumwa’s home illustrates, suffering is their knowledge. And a lot of the decisions on conservation farming are justified by referring to a life lived in poverty. The conservation farmers refer to their struggles to make ends meet when they justify their decision to change but the conventional farmers use the same kind of justification to stick to conventional farming. Usually this is done with reference to the costs of fertiliser and herbicides, in combination with the differing ideas about what conservation farming entails mentioned before. Moreover, the fact that conservation farming methods reduce the amount of fertiliser that is needed per hectare is not important in this. Also, the fact that conventional farmers need fertiliser as well, even more so, is not a reason to think of conventional farmers that justify their decision not use conservation methods as strange. Living in poverty is something that is understood by all villagers. Referring to that aspect of their lives is a justified reason not to do something, even if it is factually false. Being poor is the cause of a lot their suffering, their knowledge.

Conclusion

The farmers are in many ways limited in possibilities. They are stranded as such. It is within this context that they decide whether or not they adopt conservation farming methods. These decisions are, moreover, influenced and rationalized by a specific body of knowledge that is illustrative of the stranded who often have to rely on their own strength as their capital. Namely, suffering is their knowledge. And this is also the viewpoint from which they interpret new agricultural policies and opportunities, like conservation farming, as beneficial or not and as attainable or not.

Therefore, a successful implementation of conservation farming methods largely relies on the farmers' decisions to adopt them. These initiatives aim to instigate change out of the belief that humanity can and should control its influence on the environment but this change, however, is not easily engineered. And even though farming is seen as a business, these decisions are not solely based on a purely rational cost-benefit analysis. Indeed it is important that the innovation is in fact an improvement and, of course, differences in labour, time and costs with other methods are key. But that is not all there is to it. Conservation programmes are likely to fail when they are insensitive to the interests of the farmers, their lives and the various factors that influence their decisions. A critical understanding of these factors is of utmost importance for they reflect and compose the context in which the farmers make their decision. Their paths of life are confined to the rural areas of Zambia, where life is in many ways hardened by poverty and offers but a few opportunities to change or to affect the global events and state affairs of which the farmers are more object than participant. The farmers are limited in power, both capacity and resources, and often rely on their strength as capital. However, the farmers are not the puppets of these processes but make their own decisions. The choices of the stranded.

Conservation farming offers a programme with which the farmers can increase their production and better their livelihoods. The methods can make farming more productive and more effective but it eventually comes down to how the practical and economic aspects are interpreted and if the proposed benefits of conservation farming are viewed as such. This will determine whether or not conservation farming becomes a purpose, an interest they want to pursue. This is not to say that a lot of farmers would not want to increase their production. But, following Giddens (1976:92), one may want something without intending to act accordingly. This act can imply something some farmers do not agree with, they might not know how what it is they can do or they do not think the suggested act actually results in what they want. Hence, even if you do want to increase your production yield, you do not have to intend to do the things, such as conservation farming, that might be necessary to attain such an increase. This is, of course, closely related to the view farmers hold of conservation farming and how this relates to their own understanding of their lives.

Information about conservation farming is handed down to them and only reaches them during the field days. It is then that they come to know the branch and decide whether or not they should jump for it., whether or not it can help them realize their wants.

There are several combinations of motives, meanings and norms that can be distilled. For one, not all farmers consciously consider farming methods as an alternative. When offered the opportunity to work with the CFU, some do not consider it as a real possibility. For instance, Mukumbuta, the owner of the Maseka bar in Kaoma, said he knows conservation farming exists, he saw the signs along the roads and was impressed with the fields, but he never really thought of trying it himself. Second, there are the pragmatic aspects. Some farmers value inputs over conservation farming and only join forces with the CFU if this implies that they will also receive tangible inputs, not just training and encouragement. This is the attitude, or mentality, Oliver referred to as the dependency syndrome. For them change has to be purchased. This is also apparent in the fact that some think that conservation farming implies an investment, an acquisition of inputs, and therefore they feel incapable of changing. For them, conservation farming is for the haves whereas for others it is for the have-nots, the people who cannot afford animals, and don't want to do conservation farming because they do not want to remain poor or be equated with the poorest of poor. Yet others do not want more labour and therefore decide not to do conservation farming if it implies that they'll have to dig basins. And, of course, there are those, like Frederik, who want to increase their production and are convinced that the CFU will help them to do so.

Third, there is the aspect of tradition and change in general. The use of the plough is either seen as an obstacle to development or adhered to as the traditional and therefore the correct way to farm. Some denounce those who plough for being backwards whereas some of the conventional farmers condemn conservation methods, like digging basins and the Getrude's use of herbicides, and laugh at those who put them into practice. Consequentially, others do not start to dig basins because they do not want to be laughed at. In contrast, to Frederik change is a necessity. He was unsatisfied with his living standards and saw that everything, including his suffering, would stay the same if he would not change and stick to ploughing and conventional farming instead.

Change in general and the switch to conservation farming in particular, are framed in accordance with suffering as knowledge. Conservation farming is either for those who suffer the most, the have-nots, or those who suffer less, the ones that can at least afford fertiliser and herbicides. And a lot of the decisions on conservation farming are justified by referring to a life lived in poverty. The conservation farmers refer to their struggles to make ends meet when they justify their decision to change but the conventional farmers use the same kind of justification to stick to conventional farming. Moreover, farmers disagree about whether or not the conservation methods will help them alleviate their suffering as stranded or marginalised people with limited options and

resources. But the experience of living such a life is shared and understood by all villagers. In fact, within the hierarchy of reasons, motives and intentions, this knowledge seems to be the most immediately pressing and therefore the most important issue that also ripples through in other motives, interests and rationalizations. Referring to that aspect of their lives is a justified reason not to do something, even if it is factually false.

Whatever the decision may be, the choice of the stranded is ultimately what makes or breaks the implementation of new conservation methods and agricultural innovations such as biochar. These new ideas aim to instigate change and transform the way farmers go about agriculture. The knowledge the farmers have about farming and the differences between conventional and conservation methods are the object of change or the product thereof. However, this same body of knowledge, formed by being stranded people with little power, is also the context of these hoped for changes. It is the mutual knowledge that farmers use to label, interpret and define what happens in their lives, including farming. It is what they refer to and make use of in rationalizing and explain their choices and the ways in which to deal with possibilities or the lack thereof. The choices of the stranded, diverse and seldom purely rational or informed, influence how and to what extent the agricultural innovations will bring about the change they aim to instigate. Change alone is eternal, perpetual and immortal but, notwithstanding its inevitability, directing it is easier said than done.

Reflection

Fieldwork has been the *sine qua non* of anthropology ever since Malinowski (1922:4) found himself “set down surrounded by all [his] gear, alone on a tropical beach close to a native village”. Participant observation, over a long time, results in rich, qualitative data, of crucial importance to gain understanding about the lives Others live, that cannot be gathered in any other way. It is therefore that it is still the defining research method of anthropology. Nonetheless, it raises questions with regard to both the nature of anthropology and the nature of the anthropologists as a research tool. With the postmodernist turn, the idea that the anthropologist could unravel an objective and neutral Truth quickly decayed. This is in part due to the fact that the data anthropologists gather is already interpreted and mediated by the informants. Anthropological data cannot be collected as if they were soil samples, scooped up into a glass tube and shipped to a laboratory for analyses (Rabinow 1977:150). Moreover, the anthropologist has no other research tool to rely on but himself and his data emanates from his relationships with the informants (Rabinow 1997:154). It is an intersubjective endeavour and my own subjective experiences, selfhood and identity markers have influenced my data. Therefore, acknowledging and explicating the influence my own subjectivity has had on this thesis is important.

It has been argued that gender and ethnicity can both hamper and facilitate the process of participant observation (Johnson 1984:110). I am, unquestionably, a white male in his early twenties. Being a male was an advantage because it made it easier for me to build relationships with the farmers since most of them are men as well. This should not come to mean that the influence of women in agricultural decision-making is marginal (Seur 1992), but the data I, as a man, collected is coloured as such. Moreover, being white in the rural areas of Zambia is an anomaly to say the least and it often came to signify me as merely a visitor. This was especially the case during my stay in Mongu and Mkushi, where I did short, semi-structured interviews, because I did not stay for very long and I rarely met my informants more than once. Besides being a white male, I was often introduced to the farmers by the CFU. This yielded respect, especially since I’m relatively young to be a researcher, but it also made it clear that I was indeed a visitor, for that is what all the white men were that the CFU introduced before I came around.

Because I was introduced by the CFU or by the farmers themselves as a representative of the CFU, it was not always easy to get information about topics other than directly related to farming, especially in Mongu and Mkushi. It also took a moment before the farmers realized that I was not there to hand them over anything or to teach how to farm nor to judge but that I had come to understand, out of genuine interest, why it is that the farmers do or do not want to do conservation farming for the reasons they themselves deem important. It also became time and again that I was a

visitor due to the fact that I only speak a little bit of Nyanja and Lozi. Many of the farmers I spoke with only know a little bit of English, so quite a few of the interviews were done with the help of Frederick, Kelvas and Oliver, who took up the role of translators. Undoubtedly, this implies a loss of information but there was simply no other way to go about it. And it has to be taken into account that farmers have answered some of my questions in ways they think I, a big man from the CFU, was expecting. Mirroring the questions I had and the data I found with Oliver and Frederik was very helpful in this.

In fact, not only did my stay with Frederik help me with revising and designing the topic list and questions I was going to use in Mongu and Mkushi, it also made me more confident that the answers I got from the semi-structured interviews really did hold true because I could cross-check the quantitative data with what I had learned during my stay in Kaoma. By *being there* for a longer period and by partaking in daily activities not necessarily related to farming, I was able to gather the rich data so pivotal in anthropological research. This daily participation implies some form of involvement and the level thereof largely relies on a certain level of trust (Robertson 1996). In fact, Sluka (2007:121) argues that “when fieldwork fails, it is generally due to a failure to either establish rapport and good relations or maintain them over time”. In essence, trust underlies rapport, or a relationship between informant and researcher in which both share the same goals and are committed to help one another in achieving the goals by providing useful informant and approaching each other in a respectful and thoughtful way (De Walt & De Walt 2011:47).

At first, because my pending arrival was mentioned to Frederik by Gerard (NGI) and I was introduced to him by Kelvas (CFU), I was immediately seen as a visitor. But by being there for a longer period of time I gained his trust. Usually, Frederik, Zakaria and I, often accompanied by other people as well, would sit around the *mulilo* (fire) at the heart of the village and we would mainly just talk and laugh. After a while, I became the visitor that “that just likes to chat with people and share knowledge and experiences. We teach him and he teaches us”. And before long I made a shift from *muzungu* (white man) to *munzanga* (friend), or from Mr. Kros to “our friend that [Oliver] Bulaya has come to steal away again”. And especially during the times I visited Frederik, I was able to gather the rich data that I needed to write this anthropological thesis while pushing the information I gathered with the short, semi-structured interviews in Mongu and Mkushi to the background, mainly lingering there as support for the arguments made and the generalizations therein.

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Appendixes

Table 1.1 – Multidimensional Poverty Index, Zambia.

Indicators and the calculation of the MPI, 2004 and 2006								
	2004				2006			
	Head count	Intensity of poverty	MPI	Ranking	Head count	Intensity of poverty	MPI	Ranking
Zambia	0.563	0.428	0.241		0.583	0.440	0.257	
Central	0.618	0.424	0.262	3	0.634	0.436	0.276	4
Copperbelt	0.351	0.406	0.142	2	0.393	0.413	0.162	2
Eastern	0.652	0.449	0.293	7	0.690	0.450	0.311	6
Luapula	0.720	0.440	0.317	9	0.771	0.471	0.363	9
Lusaka	0.309	0.390	0.121	1	0.298	0.396	0.118	1
Northern	0.651	0.425	0.277	6	0.702	0.452	0.318	8
North Western	0.643	0.423	0.272	5	0.717	0.442	0.317	7
Southern	0.610	0.431	0.263	4	0.600	0.431	0.259	3
Western	0.698	0.439	0.306	8	0.687	0.446	0.307	5

Source: Central Statistical Office 2010.

The MPI identifies multiple deprivations at the individual level in health, education and standard of living. It uses microdata from household surveys. Each person in a given household is classified as poor or non-poor, depending on the number of deprivations his or her household experiences. These data are then aggregated into the national measure of poverty. The health thresholds are: having at least one household member who is malnourished, and having had one or more children die. The education thresholds are: having no household member who has completed five years of schooling; and having at least one school-age child, up to grade eight, who is not attending school. The standard of living thresholds relate to: not having electricity; not having access to clean drinking water; not having access to adequate sanitation; using “dirty” cooking fuel (dung, wood or charcoal); having a home with a dirt floor; owning no car, truck or similar motorized vehicle; and owning at most one of these assets: bicycle, motorcycle, radio, refrigerator, telephone or television.

Fig. 1.1 – Advertisement in *The Post*, 06-02-2012

LOOK
Conservation Farming Pays

DOES CONSERVATION FARMING WORK?

- ➔ **THE CONSERVATION FARMING UNIT (CFU) WILL FROM MID FEBRUARY TO END OF MARCH, 2012 HOLD ABOUT 9,000 FIELD DAYS**
- ➔ **THE EXACT DATES AND LOCATIONS FOR FIELD DAYS CAN BE OBTAINED FROM THE FARMER CO-ORDINATORS, CFU OR MACO STAFF IN YOUR AREA**
- ➔ **THIS IS YOUR BEST CHANCE TO COME AND SEE IF CONSERVATION FARMING REALLY WORKS.**
- ➔ **DON'T BE TOLD. COME AND SEE ALL FOR YOURSELF**
- ➔ **CONSERVATION FARMING, INCREASING PRODUCTIVITY AND FOOD SECURITY IN A CHANGING CLIMATE**

THE CFU IS FINANCED BY THE ROYAL NORWEGIAN EMBASSY

E166285