

THE RURAL HOUSING STUDIO:
SUPPORT TOOL

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notes:

This work is part of the PhD research of Michiel Smits:

A new approach for PDIs on Mount Elgon: Inhabitant inclusive, self-reliant & capacity based development

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I. PREFACE

The rural housing studio support tool is a manual written for the students and architects participating in the rural housing studio 2017 (<https://www.theruralhousingstudio.com>). The manual aims to help local operating architects and engineers to develop in a context sensitive matter. Hopefully leading to self-reliant and resilient housing to the families supported. It presents the major findings and developed methods within the PhD research of Michiel Smits. The rural housing studio is the semi-experimental setting in which the developed manual will be tested and evaluated on Mt. Elgon Kenya. This means that the manual is still in concept and the consequences of using the manual and its local effects cannot be predicted yet. Therefore, the manual should not be shared or used by anyone outside the participants. Copying or sharing this manual and its results poses a threat to the results of both the experiments as the general outcomes of the research.

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III. INTRODUCTION

1. THE ASSIGNMENT

By signing the contract you have agreed to participate in the design and construction of a family house on Mt. Elgon in Kenya. During the period 08-2017/01-2018, you will be partnered with a rural family, which you will help to realise a new family house. By applying to this assignment you have agreed to follow this support into detail and help to improve it by giving feedback on the whole document.

2. THE SUPPORT

This booklet is intended to help you prepare, analyse and understand the context in which your family lives. Moreover, will the support help you to make design decisions on materialization, building methodology, tools and skills. We believe that when you base design decisions on the capacities of the family and their community, you guarantee their involvement, enable to transfer your knowledge to them and ultimately create a self-reliant solution. As each team has an architect we believe that there is sufficient design and engineering knowledge for each team to build a family house in Chepchoina, Kenya. The support will start to give you some general background information on important topics (self-reliance, development, etc.). In this way you better understand why self-reliance in relation to family house is important and how various factors (material choice, construction method, etc.) influence the inhabitants' self-reliance. After the general background the pilot projects are explained, followed by the preparations before departure. The central working methodology is the daily division of the team into an actor and an observer. We believe that by having one observer enable the team to quickly locate mistakes, problems or any other unwanted activities. The actor section of the support will give the actor step by step guidance what to do upon arrival on Mt Elgon. The observer section explains how to observe, give feedback and register the daily process. Below we will elaborate more extensively on this methodology.

3. METHODOLOGY

One of the most essential elements of this project is the methodology you will be using in the field. Normally you would be working as a team, covering the steps in the guide together and give each other ad-hoc feedback and support in the field. This project however is completely different from the normal project methodology in practise. In this project every day one member of the team will be

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actor¹ and one will be **observer**². During lunchbreaks and in the evening the observer evaluates the day and discusses what could be done differently. Together you decide the steps of the next day and switch roles. Now the observer will become actor and the actor becomes the observer till the end of the day.

The **actor** is able to rely on: this guide (ACTOR SECTION), their education, experience and intuition. Allowing him/her to focus on the task ahead and try to book progress in terms of results for the project. These are the primary project processes.

The actor should always seek the help (participation) of the family members. There will be tasks for which two people are necessary. However, the observer should interfere as little as possible.

The **observer** is able to rely also on: this guide (OBSERVER SECTION), their education, experience and intuition. However, they have to remain impartial and analyse behaviour, posture, gestures, emotions and degree of following the support instruction by the actor. He has the time and peace of mind to contemplate processes besides progress of the project, which enables him to consider alternative directions and solutions. These are the secondary project processes.

4. TRACKING YOUR PROGRESS

During the upcoming year (pilots and house project in Kenya), there will be many occasions where you participate or organize an activity. Most of them will have a clear description how to plan, structure, record and analyse them. However, there are also many things you observe yourself, important things you want to write down for a later moment and also just general contemplations during/after an activity. For this purpose we suggest to use a notebook or often also called dummy (buy at least size A5 and not bigger then 300x300mm, clear pages; no lines). Below you will find a few examples how you can record activities.

¹ Actor: is the person who speaks, makes decisions and does physical labour

² Observer: is the person who does not get involved in any physical or verbal activity.

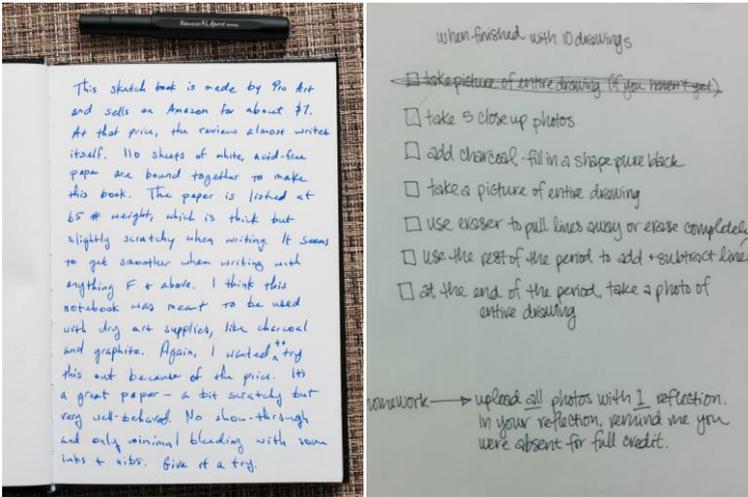


Figure 1: Left, example of an introduction; Right: example of a checklist

5. INTRODUCTION PAGES

An important part of your dummy is the starting point. Always use the first pages to write a little about where you are in life, the purpose of the dummy and what you hope to register.

Many people use the dummy as a sort of diary to write down and illustrate activities but more important to contemplate what happened that day. When you look back at your year involved in this project it will give you great insights how you developed (comparing your attitude before and after). We advise you to make a form of a daily checklist (based on the points mentioned below).

6. WRITING/SKETCHING



Figure 2 Left, an image a very tidy way of writing and sketching, Right, advised (faster)

Primarily you will use the dummy booklet for writing and sketching.

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Try to work tidy (legibility for later retrieval) but don't overdo it. In the end its is meant to register your observations best and fast as possible, you are not intending to make a piece of art.

7. COPY/PASTE

Sometimes you might forget your dummy and you will be forced to write and draw on a loose sheet of paper. Sometimes you might wake up in the middle of the night with a great idea with no dummy close to you. Please don't worry and trim the page to the information written/sketched down and paste it to your dummy. Also take the liberty to sometimes fold, cut or remove a page when needed.

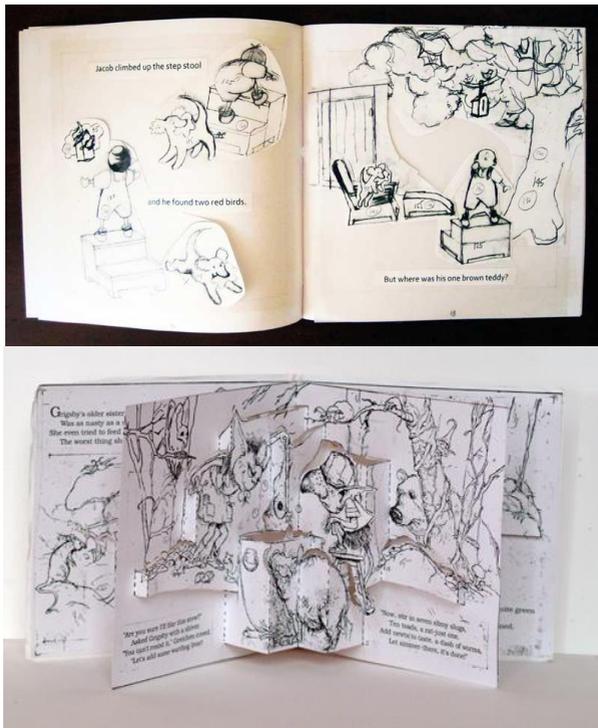


Figure 3 Above examples of copying and pasting and folding and cutting.

8. FEEDBACK SUPPORT TOOL

As you might be aware this support is tested for the first time. That is why your experience is of the highest value. **Your feedback will be used to improve this support tool and will be tested in the field in the following experiments.**

We ask you for your constructive feedback:

1. At the end of every chapter (of this book)
2. After performing steps described in the tool (in the field)

The feedback on the book itself (1) will be collected at the end of the experiment. In the book please use the margin space for comments and space at the end of each chapter (*Feedback to the support*). We will ask you to digitalise them upon finishing a chapter into the digital text document, which you can find on your usb-stick.

Please give us feedback on the contents of the tool – the theory, instructions, etc., but also their form (the way it is written, presented , etc.)

Feedback on performing the steps (2) – will be collected every Sunday. We ask you to note the following while in the field: the important issues that have arisen, ideas on improvement to the method, suggestions for the development of the method, etc. At the end of each week please have a conversation and go through both actor and observer results. Then digitalize the findings of your team into the digital text document , which can be found on your usb-stick. Remember that these activities are vital for us to track the progress of your team and help when necessary. For this purpose we added a weekly support review document. Here you can state the success and failures of the support, if there is an emergency you can request for a meeting in this document.

9. WEEKLY COLLECTION OF THE OUTCOMES

Every week on Sunday (afternoon), together with feedback, we will collect the digitalized outcomes of your work. At the end of every chapter you will find the list of expected outcomes.

The system of coding the files is given below:

Team number /phase/ actor or observer/ kind of recording or file/ initials of the author/ date/ media number.

notes:

Team number: T (number)

T1: Pelle Rademakers, Argjire Krasniqi

T2: Ayoub Salah, Jackson Kariuki

T3: Damian van der Velden, Corne Nuijten

T4: Atdhe Lila, Despoina Kouinoglou

Phase: P (chapter number)

Phase 1: First introduction family

Phase 2: Interview daily routine

Phase 3: Hopes and Dreams

Phase 4: Mapping

Phase 5:

Actor or Observer file:

A- actor

O- observer

Kind of recording/file:

Time-lapse: TL

Video: VI

Photo: PH

Audio: AU

Text: TX

Drawing: DR

Scan: SC

Initials of the author: first letter of first name and surname

Date: European calendar system

Media number: This will be given automatically when renaming a bash of media

An example of the video code: T1.P1.O.VI.PR.10.10.2017.1

An example of the photo code: T1.P1.A.PH.PR.10.10.2017.1

An example of the audio code: T1.P1.A.AU.PR.10.10.2017.1

An example of the text file code: T1.P1.A.TX.PR.10.10.2017.1

An example of the drawing code: T1.P1.A.DR.PR.10.10.2017.1

An example of the scanned file code: T1.P1.A.SC.PR.10.10.2017.1

After having finished all the steps described in this support tool, the files will continue to be collected every Sunday.

Those files should be coded with the following phase numbers

Final Design: (FD)

General drawings and documents: 1

notes:

site preparation: 2

foundations: 3

floor: 4

walls: 5

roof: 6

finishes: 7

e.g.

An example of the video code: T1.FD1.A.VI.PR.08.11.2017.1

IV. EXPLANATION KEY TOPICS

1. PREFACE

With a global population reaching 9.6 billion by 2050 (UNHCR, 2016), there is a rising demand for affordable housing. No government or corporation will be able to build the housing required (Cromley, 2008). It will be up to local communities and inhabitants to build their own houses. Existing informal rural (vernacular³) architecture offer a flexible model based on locally available (renewable) materials and building methods. The available global vernacular models often evolved over centuries, passed down to every new generation. Due to the nature and character of the vernacular archetype⁴, extensive maintenance is often essential. Even though the maintenance is considered inconvenient, the continuity of it allows the community to constantly practice their knowledge and skills, Smits (2014). This makes them highly resilient⁵ towards change, Nel and Binns (2000). Moreover, due to the choice of materials and construction properties the vernacular archetype has the ability to completely dissolve back into nature when its lifespan ceases. The circular sustainable model is still widely used among many rural African communities, which is simply striving to survive (Nel & Binns, 2000). The left image of Figure 1 shows the current rural traditional way of building houses. The right image shows an example where the thatched roof is changed for metal roofing sheets. Over last decades rural communities have been trying to improve the living quality of the vernacular model, but the change often introduced industrialized materials and 'foreign' construction methodologies. In practice, this means, despite that durability and maintenance have improved, it created significant external dependency (material, construction and labour). The modernization is unsustainable, non-circular and affecting both identity and culture, Rapoport (2008). What is equally important, it diminishes the community's self-reliance⁶ towards their built environment. Meaning that the inhabitants are increasingly unable to build and maintain the dwelling themselves and depends heavily on hiring labour. This in its turn demands funds to buy the materials needed and pay for labour. Most of the inhabitants already struggle to find the financial

³ Vernacular: A local style in which ordinary houses are built ("Vernacular Meaning in the Cambridge English Dictionary," n.d.)

⁴ Archetype: A typical example of something, or the original of something from which others are copied ("Meaning in the Cambridge English Dictionary," n.d.)

⁵ Resilience: The quality of being able to return quickly to a previous good condition after problems ("Resilience Meaning in the Cambridge English Dictionary," n.d.)

⁶ Self-reliance: The ability to depend on yourself or your own abilities (Idoma & Muhammad, 2013)

notes:

resources to meet basic requirements. Therefore, making improvements to the house often takes many years and still does not meet the basic family requirements.



Figure 4 Rural vernacular, Mt. Elgon, Kenya, 2015 (made by author).

The reasons are manifold, however it is a fact that rural inhabitants struggle to improve the quality of the existing vernacular housing. In most cases restricted using only local, non-industrialised materials and familiar construction methods. In an effort to change the existing housing model, they now often use materials and techniques that lay outside the inhabitants' knowledge sphere. If these communities are to continue to self-build self-reliantly, they need a way to improve the housing model (extend durability, lower maintenance) without damaging its qualities (social and cultural). This manual does not elaborate on the various development models: sustainable, top-down or bottom-up. Development is perceived as a general societal aim on the realization of what Robert Chambers (1995) calls 'good change'.

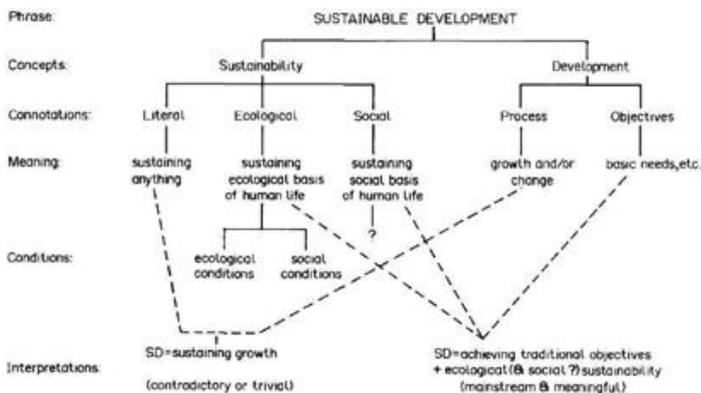


Figure 5 :The semantics of sustainable development, Lélé (1991).

Sustainable development is chosen as a general model for a balanced growth. Lélé (1991) proposes a model with a strong emphasis on the ecological conditions necessary to support human well-being now and in the future. This model will help the 'expert' to grasp what the

inhabitant's capacities (chapter 26) in relation to their self-reliant built environment are; hopefully, sustaining the inhabitant's self-reliance towards their built environment. Figure 5 shows how we can disseminate sustainable development into the basic elements.

Although total rural independence is an admirable goal, there will always be a relation to a form or degree of external support (material, construction method, labour, etc.). However, it is of vital importance to improve the current (vernacular) housing model with as many local materials, craft and knowledge. With their expert knowledge on construction, materials and their ability to develop new ways, they could come up with techniques and methods, which are within the abilities and capacities of inhabitants, without reaching for easy unsustainable solutions (e.g. iron sheet roofs). Sustaining or improving housing self-reliance would enhance the socio-economical situation of the inhabitants. It would also lessen the dependency from western aid, making this effort a worthy goal. How the expert intervenes in this process is crucial to the self-reliance of the inhabitants, Prinnet (Lee, 2008). According to Oliver (2007), helping inhabitants to make the appropriate choices should be the task for architects and engineers. In order to properly improve the inhabitants built environment, the external support should evaluate current inhabitant's capacities towards their built environment. The rural housing studio is an example of how this external support could be organized. The manual will help you to offer this support (to make an improvement in the family housing situation) based on the capacities.

In this chapter, some of the key topics mentioned above to the formulated support are briefly introduced. Hopefully enabling you to better understand what is meant with certain topics (development, capacities, etc.) and why they are import to sustain inhabitants' self-reliance towards their housing. Every subchapter will have an advised literature section (as shown below), this literature is not mandatory, and however, it will improve your understanding of the various topics. In the case something is not clear please use the feedback section of the Google drive to comment.

Advised literature (see appendix):

(Lélé, 1991)

(M. Smits, 2014)

(Nel & Binns, 2000)

2. DEVELOPMENT AID FRAMEWORKS

Although a starting point for development aid is difficult to identify,

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the categorization of development started from the Second World War. Here the level of development was divided in three major groups of countries. Western countries were coined as “First World” countries due to their financial, political and technological development. The eastern bloc of communist-socialist countries was coined as “Second World” countries. The remaining world population as “Third World” countries (Nationsonline, 1998). Resulting from the United Nations Stockholm Environmental Conference (1972), Fourth World theory was coined by indigenous delegates who felt they did not belong to the Third World countries (Hipwell, 1997). The ranking of the countries clearly suggests that the countries identified as “First World” are first, suggesting that this example is to be followed. Since the 1970s much has changed in development theory and below some of the different theories, indexes and frameworks, are explained to better understand the importance of capacity based development.

Development is for the largest part based on development theory that finds its roots in the sociological, economical and political science. In the 20th century the “industrial system became consolidated and therefore evolutionary thinking took over from functionalism and equilibrium theories” (Hettne, 1983). With the backlash of the Second World War a new interest in developing backward (underdeveloped) areas found its way to the international debate. Essentially development should create an environment in which people can develop and lead productive, creative lives, fulfilling their needs and interests (UNDP, 1990). Peet and Hartwick (1994) explain what development is by looking at what constitutes to development how this potentially creates inequality and more importantly look at the possible undesirable outcomes. If growth effects the environment negatively, it is not development. This for Peet and Hartwick (1994) comes down to the following

- Development should not produce excess of waste
- Development should not concentrate the cumulative wealth into the hands of few
- Development should not be controlled by the minority of powerful people
- Development should not be based on consumerism

Although we can argue if these points really constitute to an undesired development approach they do emphasise to whom the development should be beneficial. Thus emphasizing who organises and finances the development, whom actually benefits from this development and how it influences social, economical and political agendas.

Development as a concept can be broken down into various sub-categories. Community development is an alternative to top-down development proposed by the UN and USAID in the 1950s and 1960s. The concept is inspired by the humanistic concepts of the village self-rule movement in India in 1962, and the Liberation Theology in South America. Community development as an ideal was abandoned in the late 1960s in lieu of the large modernist blocks. In the late 1990s community development was revitalized through the idea of development as the tool for transformation and freedom within society. Ewing and colleagues call for the need of “constructing new development pathways that place much less strain on the global environment” (Ewing et al., 2009).

The resultant concept is *sustainable development*. Sustainable development is not equal to the idea of sustainability. The Brundtland Commission describes sustainable development as “development that meets the needs of the present without compromising the ability of the future generations to meet their own needs.” (United Nations Commission on Sustainable Development, 2007). By definition, sustainable development projects are anthropocentric. The ASCE defines sustainable development as “the challenge of meeting human needs for natural resources, industrial products, food, transportation, shelter and waste management whilst conserving and protecting environmental quality and the natural resource base essential for future development” (ASCE, 2013). Frameworks for sustainable development have progressed rapidly over the last 20 years. The UNDP development framework evolved in four stages largely echoing the worldly practice of development.

First development aid was the major practice- the assumption was that “developing countries need money”. The focus was on investment, and as a result developing countries became dependent on the first world. The practice then evolved to include technical assistance. Foreign experts operate and deliver their own projects, expecting similar results as in their own countries. The assumption at this point was that “developing countries should just model themselves after the developed ones”. The resulting projects are disconnected from local goals, ignoring local realities and therefore inevitably fail or do not deliver the anticipated outcomes.

The premise of development projects then matured to technical cooperation. A greater emphasis was placed on training and transforming knowledge based on national policies and priorities.

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The assumption being that “developing countries should partner with developed ones”. Local expertise is enhanced in line with local priorities and goals but the process is overly expensive. The contemporary development practice centres around empowerment and strengthening of indigenous capabilities. The assumption is that “developing countries should own, design, direct, implement and sustain the process themselves”.

This approach makes the most of local resources emphasizing lasting transformation through policy & institutional reforms. It values *best fit* over *best practice*, understanding that one size does not fit all (United Nations Human Settlements Programme, 2003). Capacity development is defined by the UNDP as “a process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time.” The Canada International Development Agency defines it as “the approaches, strategies and methodologies used by developing countries, and/or external stakeholders, to improve performance at the individual, organisational, network/sector or broader system level.” (Walters, 2008).

The GTZ (2007) explains capacity development as a process, which leads to sustainable development. Capacity development is “ a holistic process through which people organizations, and societies mobilize, maintain, adapt and expand their ability to manage their own sustainable development” Acquiring capacity in small scale developments, requires participatory locally generated processes, at the end of which, communities which are acted upon should possess the necessary resources and knowledge to address their own problems, be self-sustaining, cope with various stressors and satisfy their own basic needs whilst demonstrating livelihood security.

Advised literature (see appendix):

(James, Nadarajah, Haive, & Stead, 2012; Willer, 2002)

3. SELF-RELIANCE & RESILIENCE AS OVERALL AIM

The rural vernacular tradition shows us great sustainable and circular examples. They shed a completely different light on how contemporary environmental problems could be dealt with. Rural communities are able to construct and maintain their built environment with local renewable materials, circular processes and local knowledge (Idoma and Muhammad, 2013). The community is almost fully able to provide necessary materials, technique and labour without external⁷ capital, materials or help. For this reason self-reliance in this manual is described as: the ability to independently provide a qualitative built environment on one's own power, knowledge, materials and construction methodologies, (UNHCR, 2016). Nonetheless, this self-reliant model is based on local, renewable but not durable materials, which decrease housing quality and increase the measure of maintenance (Ashby, 2013). The change in lifestyle and general development demands alterations of the existing model. Without the evaluation of the communities' capabilities, the chosen solutions might weaken the communities' self-reliance (Li and Ng, 2014). Li and Ng propose a Rural Built Environment Sustainability Assessment System (RBESAS) to indicate the sustainability (balance) of the development, which is evaluated along two axes: Self-reliance Capability and Development Capability (Figure 6). This model provides the an aim for sustainability that applies to both developing and developed world.



Figure 6: Built environment sustainability of poor rural areas, Li and NG (Li & NG, 2014).

However, it proves troublesome to advance the existing informal

⁷ External: outside one's community

notes:

sustainable model by inhabitants themselves. They often use materials and techniques (bricks, cement, steel, etc.) that are outside the community's knowledge sphere (capabilities). As a result, dependency on non-local materials, labour and knowledge often occurs. A tendency that can be traced back to the development strategies which often deliberately used dependency for external partners to benefit (Grudens-Schuck et al., 2003). If the communities are to remain self-reliant, a balance between their own and external capabilities ought to be found (Idoma and Muhammad, 2013). Contemporary examples reveal that the 'expert' intervention by the professional is often problematic due to its technological character. Moreover to improve (enhance the quality of building within the inhabitant's reach of material, tools and methods) inhabitants' built environment, their self-reliance should be evaluated. The community's construction knowledge plays the most vital role for sustaining self-reliance towards their built environment. The importance of the local self-reliance (community-based, local resources, etc.) has been recently described in a new development theory called: African renaissance (Matunhu, 2011). Independence is important, (Fonchingong and Fonjong, 2003). However, there will be a necessity for external technical and financial support, as inhabitants themselves proved not to be able to formulate a sufficient way of improving their built environment, therefore concluding there is a role for the external support and knowledge.

Advised literature (see appendix):

(Idoma & Muhammad, 2013)

(Fonchingong & Fonjong, 2003)

(Li & NG, 2014)

4. QUALITY OF LIFE (QOL)

In order to understand what constitutes to improvement of rural inhabitants built environment one has to position himself in a wider spectrum. This paragraph focuses on how essential self-building/self-reliant building practise is to overall quality of life of the inhabitants. Quality of life (QoL) is a framework used by various disciplines to understand the living quality experienced by an individual or group. Understanding individual qualities is a complex phenomenon due to social, environmental and psychological factors. However, it is important to understand which factors constitute to an “acceptable” level of any given living environment. Or as Cobb and Clifford (2000) state:

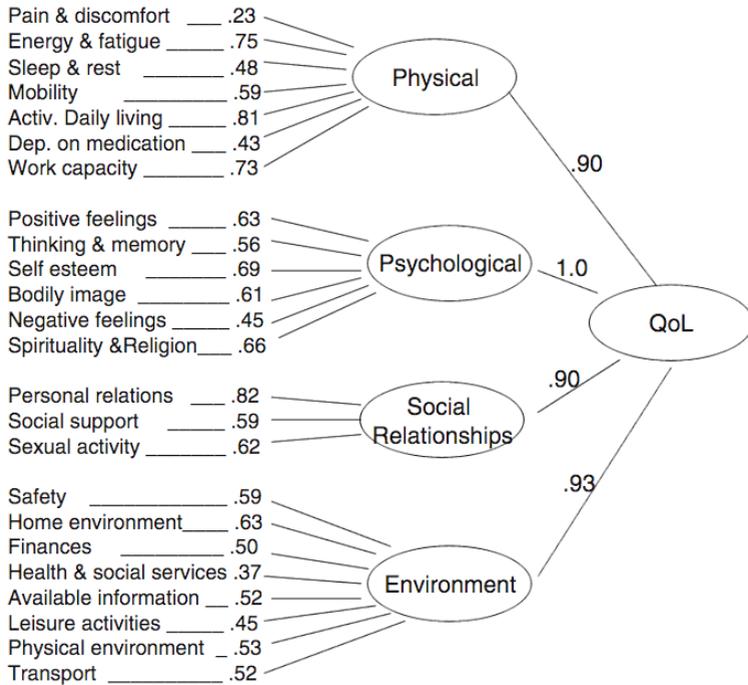
‘In order to measure quality of life, one must have a theory of what makes up a good life’

Health is an example of an important indicator of the overall QoL, The brief version of World Health Organization Quality of Life (WHOQOL) is a generic quality (World Health Organization, 1997) of life (QOL) inventory of 26 items, including four main domains (Simonelli et al., 2013, 1671). Whereas Lucas-Carrasco (2012) uses 24 indicators of WHOQOL, Skevington (Skevington, S, Lotfy, & O’connell, K, 2004) uses 28 indicators. Demonstrating that between disciplines and researches different indicators are selected and sometimes even altered.

A Dutch example of using the QoL indicators projected on a residential environment was made by the ‘Sociaal en Cultureel Planbureau’ (SCP). Knol (2005), was searching for the criteria that can evaluate the quality of the living environment and tried to measure them.

- Housing
- Greenery and playgrounds
- Services
- Social and economic structure
- Ethnical composition
- Neighbourhood nuisance
- Waste management
- Undesirable activities
- Safety (criminality)

notes:



• *Figure 7 -Indicators of WHOQOL (Lucas-Carrasco, 2012)*

Here not only the physical aspects of the living environment (housing, greenery, etc.) but also the social aspects (Social structure, activities and safety) play a significant role. In fact, in the case of Mt. Elgon self-building and community build-housing practice plays an essential role in the quality of life. In case of Mt. Elgon most of the households are self-build with a high involvement of relatives and community members (Michiel Smits, 2017). Building together as a community, helping each other, improving houses, repairing and maintenance, all constitute to the social and economic tissue of the community. Sharing food, labour, songs and many more (social/cultural) dimensions. These as a whole constitute to a safe community, full of vibrant and desired activities. Therefore removing self-building or community-build practice could endanger the communities' QoL. In the next section we will explain how we can better understand the self-building practice.

Advised literature (see appendix):

(Lucas-Carrasco, 2012)

(Skevington, S et al., 2004)

5. COLLECTIVE INTELLIGENCE, EMBEDDED KNOWLEDGE AND SITUATED LEARNING

In the traditional built environment, the community acted as a collective to provide each other with habitation. Inhabitants (on the family scale) individually evaluated their situation within the built environment. The built environment provides with the most long lasting human artefacts as a part of our collective cultural memory (Cole, Leaman, & Seaden, 2000). Families were able to live self-reliantly but interdependent on other families (community). This group of families constructed and developed the house archetype together. The archetype is a shared cultural perception, which is perceived as an articulation of a community's common goal. In other words, it means there is a 'collective intelligence' of the community towards their built environment. Leimeister (2010) defines collective intelligence as a group of individuals who are not required to have the same point of view, but can have different perspectives and approaches. Their shared intelligence refers to their ability to learn, understand, and adapt to an environment. It enables the collective to deal with changing and difficult situations.

The collective intelligence of rural vernacular architecture often is misunderstood due to the lack of formalized knowledge. The absence of this 'explicit' knowledge, Allee (2000) & Frost (Frost, 2013), can be explained to the high level of intuitive and experience based knowledge. This 'tacit' knowledge, Polanyi (2012), is deeply rooted in action, commitment and involvement, Nonaka (1994). Furthermore because of the community involvement, this 'embedded' knowledge, Collins (1993), is articulated in all processes and products, concerning their built environment. It is not a model or a framework but a way of learning that occurs in the every day.



Figure 8 Various Communities of practice (CoP), Mt. Elgon, Kenya, 2011 (made by author).

A form of learning what Cobb and Bowers (1999) call situated learning:

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'The theory of situated learning claims that knowledge is not a thing or set of descriptions or collection of facts and rules. [...] Human knowledge should be viewed as a capacity to coordinate and sequence behaviour, to adapt dynamically to changing circumstances.'

Advised literature (see appendix):

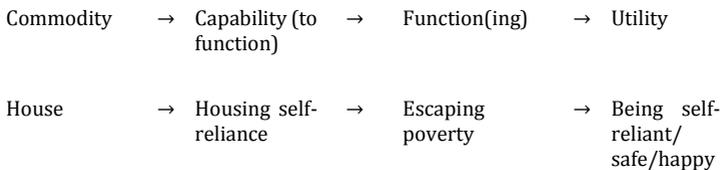
(Cole et al., 2000)

(Collins, 1993)

(Leimeister, 2010)

6. CAPACITY BASED DEVELOPMENT

Capability generally means the quality of being capable; capacity; ability. Within the context of this manual, capability is analysed to what extent one is capable or able to effectively formulate their built environment. Developing on one's own abilities will be essential for the self-reliance of sub-Sahara, Willer (2002). The capability approach (CA) is based on the same definition. Which, for this purpose, forms the departure point to understand what is realized (functionings) and what is actually possible (capabilities) by inhabitants. Capabilities are described as a person's ability to achieve a given functioning: doing or being, Sen (1993) distinguishes basic capabilities. The basic capability is the ability to satisfy certain elementary functionings up to a certain level. For the purpose of this investigation of habitation, it is of vital importance for *survival* or to *escape poverty*, Robeyns (2011). Sen, describes this phenomenon as follows, (qtd. Clark (2005)):



The capability approach is a normative economic framework that provides a theory on how (individual or group) well-being could be assessed. However, there are only few research examples that use the CA for the evaluation of a group's decision-making or evaluation process, Robeyns (2011b). Li's and Ng's, investigation (2014) seems one of the few examples that used the CA in the evaluation of the built environment. They formulated a list of indicators based on a set of capabilities. Here a distinction between self-reliance and

development capabilities is being made:

- Self-reliance capability: To meet basic human needs without over-reliance in outside resources under existing bio-capacity, and at the same time, does not reduce bio-capacity.
- Development capability: To increase the bio-capacity, and to meet human psychological needs for better development.

Li & Ng used the indicators to analyse to what level they could successfully evaluate the sustainability of a rural community towards their built environment. However, uncertainty remains if the indicators cover all aspects of the capabilities. Moreover, it does not explain what the various indicators afford in relation to a self-reliant and sustainable built environment. In an effort to formulate a clear and complete scope of all capabilities relating to self-reliant housing, the following capabilities are proposed:

- Maintainability
- Affordability
- Liveability
- Improvability
- Aesthetics
- Sustainability
- Suitability
- Flexibility
- Usability
- Comfortability

This list of capabilities is merely an attempt to cover the different themes related to self-reliant housing. Any such endeavour without the direct involvement and evaluation of a given situation (inhabitant/community) seems futile. However, it is necessary in order to properly analyse all dimensions of such circumstances.

Advised literature (see appendix):

(Robeyns, 2011b)

(Sen, 1993)

(Willer, 2002)

notes:

7. A BAREFOOT ARCHITECT AS BASIC MANUAL IN THE FIELD

As described in this chapter of the support design and building based on local available capacities is important to the resilience of the formulated solution. Using locally available materials, skills and community, is essential to maintain or change any new project being built. The book: *The barefoot architect: a handbook for green building* (Lengen, 2008), has been used all over the world to formulate design and construction solutions. The book constitutes fundamental support in the field and is there selecting as a key support. It is advised for all participants to have at least one copy to take with them.

Advised literature (see appendix):

(Lengen, 2008)

notes:

V. PILOT PROJECTS & TRAVEL PREPARATIONS

1. PILOT 1 (01-2017): EXPERT INTERVIEW TRANSCRIPTION TOOL

This support is a part of the “Guidelines for Interview support” and it intends to help you with transcribing interviews. In the project on Mt. Elgon you will need to interview all family members of your project. During these interviews you will make either an audio or video recording of each and every interview session. You will collect many opinions, observations and problems while spending time with the family; you need not miss any detail of the problems addressed during interviews. Going through the recordings and writing down in detail what is being said during the interview is what we call transcribing. Transcripts will enable you to generate in-depth results, which will be used as input for: the design brief, design, decision-making and many more.

The outcomes will not only help you to make decisions based on the gathered information, but also make your transcript fully useable for research and future publications (for both yourself as others), in other words the *knowledge valorisation*⁸ of your findings. This information is vital in the long-term effectiveness of your design and project proposal for the local family you will be helping.

In this pilot you received an “expert interview” to practice the transcription of an interview. This is a real-life expert interview, taken by Michiel Smits, and the results of the transcriptions will be used for publication. Next to the audio recording you received the guide: guidelines for transcribing interviews. Over a period of 4-5 weeks you will work on transcribing the interview.

Used literature (see appendix):

Guidelines for Transcribing Interviews_Experts.docx

Interview_Guide_Expert_2016_(name interviewee).docx

⁸ Knowledge valorisation: The process of value-creation out of knowledge, by making this knowledge suitable and available for economic or societal utilisation. (“What is valorisation? | Netherlands Proteomics Centre (NPC),” n.d.)

2. PILOT 2 (02-2017): GoPRO OBSERVATION TOOL

This support tool guide will help you to prepare for your project in Kenya. As you are designing and building a house for a rural family it is of vital importance to capture the progress you make over the months. In the rural housing studio you will use a GoPro Hero 4 to record your project. In the image below a typical rural family compound is shown. A family, which you will help building a new house, currently lives in a comparable house. Before you can start, you will be involved in talking to the family and map their compound out. All of these processes are vital to capture. In this way every single 'action' you take will be registered and can be analysed afterwards.



Figure 9 Observation distances (author)

In your project the GoPro (Hero 4) will act as a static 'macro' (long distance) observation point, which will be permanently positioned throughout the project on one spot, mounted on the large tripod (Hama, star 63). From this position the GoPro will be solely used to create a time-lapse of the building process. This guide will show you in easy steps how to register and use the different recording methods/items to produce a clear recording for the 4-5 months showing that you are designing and constructing the family house.

The specific instruction to operate the GoPro and Lumix cameras are included in the *Observer section* (p.170) of this tool.

Used literature (see appendix):

Observation_Pilot2_ProjectCaptureSupportTool.docx

notes:

ACTOR SECTION

notes:

1. INTRODUCTION TO THE FAMILY

In the following section we will explain the do's and don'ts with introducing yourself to the family. We advise you to read the whole chapter before going to the family. Some important points might be stated in later steps, however, the family might have questions about them. The observer must also read this chapter and the corresponding section in the observer manual (chapter **Error! Reference source not found.**).

1. INTRODUCTION: BE AWARE & BE SENSITIVE

Before leaving to your family it is wise to evaluate what you wear and take to the family. Although the family might not have much money to spare they are proud of what they have and how they dress. Most men dress elegant trousers and shirt. The women long skirts or dresses. Children are often dressed in a similar fashion to their parents (see image below).



Figure 10: Local clothing

As most inhabitants in this area are Christian or Muslim exposing parts of the body is **not** preferred (see image below). Moreover, it can complicate your relationship with the family. Working in tops or shorts is therefore not recommended. Wearing expensive jewellery, showing your (expensive) phone or other exclusive things, might enforce your wealth and disposition to the family. Try to take as little as possible and the cheaper is often the better.

Local inhabitants are very respectful and supportive. They often perceive foreigners as well educated and rich. You will notice as a result that your opinion in most cases is leading. However, as a western educated engineer or architect you have limited knowledge about the background, culture and general understanding of the context. Therefore, always be careful what you say in presence of the family. Try to be patient and let the family, this guide and research

outcomes, lead in identifying answers and solutions.



Figure 11: Dress code working in the field

Although emancipation and women empowerment is growing rapidly, there is still a respected boundary between men and women. Collective activities like: water fetching, firewood collecting or working on the farmland (shamba), are often performed separately by men and women. This does not mean mixed activities (men and women) are not allowed or problematic, but is often preferred by the inhabitants. If you have doubts or fears don't worry, it is always best to be honest to the family. Ask them about their preference in working together or any other matter, as long you make sure they are in a comfortable climate to explain things (private: often inside the family home).



Figure 12: Examples of daily activities: fetching water, cutting grass, etc.

INTRODUCE YOURSELF AND YOUR MOTIVES

In the following part multiple steps to introduce yourself to the family are described. Although you are excited to start the project and you want to know everything, it is important to pace yourself. You have been preparing 6 months for this moment, for the family all of this is completely new. There are no set rules how much you should cover per day. The most important is to follow your feeling and regularly check with the family if everything is okay. They might have other things they need to do and they might be scared to tell you. The steps below can be covered in multiple days, so take your time. After every

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section, things to prepare for the meeting are stated and also possible questions and comments you could make during your meetings.

2. PLANNING

Arriving at the house you might only find no person there. As you will understand the family has their daily routine and might be out. You will receive a phone number of a family member. Try to set a day to meet him or her, when you arrived on Mt. Elgon. Before you can start anything you will need to know a little about the week schedule of the family. Therefore contact the contact person and ask if there is any moment in the week the whole family is at home. Explain that you would like to meet the whole family and like to introduce yourselves.

Things to ask and comment:

- Contact person
 - When could we meet the whole family?
 - What is the most convenient for you?
 - How much time would you have for us?
 - Thank you and looking forward to meet you and the family.

3. FAMILY & COUNTRY

Just after we started the project we asked you to introduce yourself to a wider audience (facebook: <https://www.theruralhousingstudio.com>). Introducing yourself to the family is just as important. Taking a small gift in the form of some candy or cookies (specific to your hometown or culture) is always a good start. It tells a little about you background and is any easy way of opening the conversation. Before you jump into what you are doing there and why, take the time to properly introduce yourself and your background.

Where you come from and whom your family are is a common starting point of any conversation in the world. Don't be shy to show pictures of your grandmother, sister or even a pet. Most people will have difficulty to understand where the Netherlands exactly lies let alone your place of birth. Print a few maps of showing where you live. When you show pictures give the family sufficient time to look at them and ask any questions. Although they might be shy at first, the questions eventually will always come. The result should be that the family becomes comfortable in asking questions or comments on things you show or talk about. This is of vital importance in the steps to come. If you feel you have shared sufficiently, try to start asking

questions to the parents.

Things to Explain and show

- Country & City you live
- Family; grandparents, parents, etc.

Things to ask and comment:

- Parents:
- Where they are from
- Who their parents are
- Where their parents are from
- Children:
- Did you live here your whole life?
- Were you born here?

4. STUDY & INTENTION

Now you know each other a little better you can explain more about the house you live, the schools that you went to and what you are currently studying. You can show some of the things you did you are proud of and how you arrived at this project. In this way the family understand what your motives are why you want to help them. Obviously, explaining that you always wanted to help underprivileged people might upset the family. Make sure you explain by alternative motives for helping the family without embarrassing or judging the family for their condition. In the end they are no different from a normal project only the used materials and methods might be different. Explain that in the end you want to help the family in the best of your abilities to build an improved house for themselves. Most probably the family has questions about what it is you offer. Questions like: what will you pay? Who is in charge? If the family does not start questioning encourage them to ask, if that doesn't help try to help them with some of the vital topics (finance, organization, labour, responsibilities, etc.)

Things to explain and show

- House and your bed/study room
- Schools you studies at
- Avans and projects you have done.
- How you got to this project
- What your intentions are for the family

Things to ask and comment:

- Is everything clear?

notes:

- Do they have questions about what your help entails?
- Any other questions?

5. SELF-RELIANCE AND CAPACITIES

From the previous chapter it is important to explain why you will only offer your knowledge and advice to the family. As explained in chapter IV *Explanation key topics*, self-reliance is a key component for resilient development. It is of vital importance that you explain to the family the need for them to be able to maintain and possibly expand the new house by themselves. Although they might reject their old (vernacular) house they are able to maintain and extend the house by themselves and their community (see picture below). Not only because of the materials (found locally and are often cheap) but more importantly they don't have to hire someone to do the repairs for them. Because of that they need little money to maintain or extend the house. The image below was taken in one of the communities of Mt Elgon and is comparable to the family you will be helping (you can use the pictures to explain your argument).



Figure 13: Roof maintenance

When you compare the above traditional way of building to the below new ways of buildings there are many improvements made. The house lasts longer, it needs less maintenance and more importantly is more hygienic. However, it is very expensive to build, mainly due to the materials and construction methods used. Most of the families that do have such a house rely on external funds, which most people in the area have no access to. If they want to maintain the house or extend the house, they rely heavily on skilled labour, which demands a lot of money.



Figure 14: Examples of local "improved" houses

The families who are unable to invest in the house are confronted with a degrading house within the first 10 years of usage (as seen in the right image above). The aim of this project is to understand the skills of the family and their community (capacities) and review how they can be used in the design and construction of a new house. Moreover, which materials are available and how they can be used in affordable house, which is durable and easy/cheap to be maintained by the family. Below some examples of local (earth), recycled (tires & bottles) or innovative (sandbags) projects are shown. These projects are examples of solutions directions your team will investigate as a possible new house solution for the family.



Figure 15 : Examples of possible solution directions

notes:

Things to explain and show

The disadvantages of vernacular house

The advantages of vernacular house

The advantages of modern house

The disadvantages of modern house

Things to ask and comment:

Do you understand the importance of the goals?

Do you have any questions/comments about self-reliance?

Do you have any questions/comments about capacities?

Could you agree on these goals?

Why?

6. WORK FORM

As explained in chapter 1 (Methodology) you will be working in two different roles (actor and observer) during the mornings and afternoons. It is crucial that the family understands why these roles are important:

The actor is able to rely on this guide (chapters 3 till 14), their education, experience and intuition. Allowing him/her to focus on the task ahead and try to book progress in terms of results for the project. They can always be addressed or asked questions or for help.

The observer is able to rely also on this guide (chapter 15), their education, experience and intuition. However, they have to remain impartial and analyse behaviour, posture, gestures, and emotions. They have the time and peace of mind to contemplate what other processes besides progress of the project is at large. Enabling them to consider alternative directions and solutions. They are not to be addressed or asked questions or for help.

More importantly is to show how the family can recognize which role you are in. We suggest that you chose a specific hat or something else you wear when you are observer and not to be spoken to. This is vital for you to analyse and contemplate the processes at large. Make sure that the object you chose is not to distracting, as it will invite children/people to address to you. Below image shows an example of a suggested type of hat. In Chapter **Error! Reference source not found.** the role of the observer and the methodology will be further explained.



Figure 16 Example of recognisable, non-distracting, observer identification

7. REGISTERING, NOTING: DRAWING AND WRITING

As a new family member the family and the community are very curious who you are and what you came to do there. You have by now properly introduced yourself to the family and they know a little about the work (and methodology) you intend to do. Before you start writing and sketching, you have to inform the family you would like to do make notes. Moreover, what they are used for and to whom you will share these.



Figure 17: Example of sketching in the field

All notes will be made by you to better understand the current situation the family is living in. Later on the building process you will continue to make notes to track your progress and make side notes to help you make decisions. All these notes will be shared with the team (student and architect), the family (every family member that

notes:

asks) and the head researcher (Michiel Smits). Communicating openly with the family about your results will create Trust and honesty. As the notes are a part of the research they might be used in later publications to the research. In that case the family's privacy will always be protected by anonymising the names and any other details referring directly to them. At all times if the family has questions about this issue, please redirect them to the head researcher.

8. REGISTERING, DIGITALLY: PHOTO'S, FILMING AND AUDIO RECORDING

Just like the section above, the need for digital registering has to be properly introduced to the family. Although most families have one or multiple media devices (phones), filming and taking photo's is a lot more intrusive then writing or drawing. Pointing a camera at someone direction can make someone feel threatened and scared. Show the devices you will use (GoPro, Lumix and phones) and explain to them what they do and where you for what purpose you intend to use them. From our experience **letting the family take the first pictures** for example of you or their children, makes a big difference.



Figure 18: Example of an intrusive way of making pictures.

GoPRO

As you have learned during the pilot projects the GoPro is being used for a timelapse macro observation. The essence of this form of registering is that for 4,5 months you use the same spot, height and angle, to make one picture every minute. As the camera will be standing quite far away from the house this recording is perceived as very intrusive. However, it is essential that the family understand that the GoPro is very light and can be easily tipped over. The tripod or GoPro should not be touched at all time and parents should take

care to prevent their children or animals (dogs, chickens, etc.) to access the equipment.



Figure 19: Example of the distance and setting of the GoPro in the field

LUMIX

The Lumix camera will be used for more up close and detailed registering. Below we will show some examples of the things you would like to register. This guide will start with an interview on daily routines. During this interview you will only make few pictures of the interviews you are taking to later show who's routine you have been analysing. Below an example of an interview taken inside the house.



Figure 20: Example of picture taking during an interview

Next step is the registering of the games you intend to play with the family. These games will help to visualize the dreams and demands the family has towards their future house. Close pictures will be taken

notes:

to register the process and outcomes of the played games.



Figure 21: Example of picture taking during game activities

The next step of your project will be about observing the family during their daily activities. These can range between distant pictures in the example below during the preparation of food.



Figure 22: Example of a picture taken during an observation of the compound

Or close up activities like washing utensils or eating lunch.



Figure 23: Example of a picture during an observation of activities

Or making up the inventory of the house like bedroom, kitchen, storage, living room, etc.



Figure 24: Example of picture taking during an observation of the interior of the houses.

9. PREPARATION CHECKLIST INTRODUCTION FAMILY (OVERVIEW OF ALL ABOVE MENTIONED)

- Take photos of your family, friends
- Take photos of your house and room
- Bring pictures of any interesting schoolwork or hobby's.
- Take some printed maps indicating where you live.
- Take a snack or candy (little gift - it's a local custom to bring a gift with you) from your hometown and explain the importance
- Take photos of vernacular Kenyan houses
- Take photos of modern Kenyan houses
- A hat or something else you can wear to distinct the observer from the actor.

10. OUTCOMES

The expected outcomes of this chapter (from the actor)are:

1. Digitalized notes from meetings with the family
2. Recordings of meetings (if applicable)
3. Photos from the meetings

The outcomes will be collected weekly. Please make folder named after the team and phase number and number of the week(week per phase) – e.g.: T1.P2.W1

II. INTERVIEW: DAILY ROUTINE

In this section you will interview the family members individually on their daily activities. In this way you have a first notion what their week looks like, which activities they participate in and where they take place. For example at what times the children get up, when they have breakfast or when they go to school. These interviews will help you to better understand daily life of the family members and how much time use for every task. More importantly how much time they have left. This part of the manual will explain how you should prepare for the interviews, where and how to conduct them and which questions you should ask, to get the best results. As mentioned earlier (1) pay attention to how your dress and act in the field. Make sure you read the whole chapter before starting the interviews.

1. INTERVIEW INTRODUCTION

Interviews are meant to better understand one's personal motives, actions and emotions, within certain actions or behaviour. Be aware you are not related to the individual you are interviewing, therefore, asking questions can be perceived as intrusive. Also your social cultural background is very different from the person you intend to interview. What type of questions you ask, how you ask them (direct/indirect) and where (space) is of vital importance. An interviewee that feels threatened, ashamed or provoked will most likely not give you the truth and appropriate answers. Therefore this first section will help you how to properly prepare for the interview.

2. CULTURAL GUIDELINES AND GENDER

As you will understand the cultural norms and values of the communities living on Mt. Elgon are quite different from your own. Some are obvious but most are not. Gender, age and position within any community for a large part decide what you can and cannot do. In any given circumstance (your place of birth or in any foreign country you visit) you automatically adjust to certain norms and values of the place you visit. However, most norms and values are complex and not easily seen by the naked eye. Adjusting to the contextual norms and values will help you to participate in the everyday activities of both inhabitants and the community. **Opposing them might cause friction and frustration, more importantly it might damage the position of the family within the community.** In most cases trust your gut feeling, if a neighbour or family member is acting strange, there will most likely be something that worries them. Checking regularly if everything is all right in an honest matter will always be rewarding.

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The largest part of the Mt. Elgon inhabitants is Christian who have a rather conservative set of norms and values. Therefore the position of men, women and children, is quite traditional. Your age, gender and status (experience, education, professional and role within the community) are identifiers of your position within the family and community. As a young female asking certain questions to the father of the family, might antagonize him. Similarly, as a young male asking certain questions to the mother might scare her, damage her position in the family or threaten the father. The golden rule is to always try to interview a person with the same gender in a comparable age. If this is not possible make sure you get approval from those involved or ask for a trusted community member to help. With interviewing the family confirm from both parents that interviewing them and their children separately is approved.

Another way to prevent insensitivities during the interview is by a simple exercise. This exercise helps to mentally place yourself in the position of the person you want to interview. Reviewing how you would feel or the questions you might have before or while being interviewed, can really be of importance. Below we explain the exercise.

3. FORMULATE A LIST OF QUESTIONS AND ANSWERS

This mini preparation assignment you should do before going into field (preferably the day before). When you try to place yourself in the position of the interviewee⁹ start by the questions you would have yourself. The questions often relate to motive, what you want to know (topics), what you will do with the results (using them for design brief¹⁰, design, etc.) and to whom you might disclose or share the results with.

Try to consider:

- What type of house you have
- The overall level of development
- Income
- Amount of children

Try to imagine:

- What your average day looks like (sleeping, eating, working, etc.)

⁹ Interviewee: The person being interviewed

¹⁰ Design brief: List of requirements for the design process.

- What would you struggle with

Now what would you think about an interview with a European?

- Why are you here (covered in section 0)?
- Why do you want to know my daily routine?
- With whom will you share/discuss the results of the interview?
- How are you going to use the results of the interview?
- For what purpose will you use the results?

Now try to formulate at least five more questions:

-

Now try to write all the answers you would like to give:

- Why do you want to know my daily routine?
 - Because If I want to understand what the best possible house for you and your family would look like, I need to understand how you live now. As you know I am from a completely different country with a very different way of life. Therefore, its rather difficult to imagine how your everyday life looks like.
- Continue with answering the other questions you have written down

4. INTERVIEW SETTING



Figure 25: Indoor & Outdoor interview settings

When you ask personal or general questions to any individual you should always consider their privacy. General questions such as income, education or diet, may sound general however people can feel a degree of **shame or insecurity** about them. In the images below we show an indoor and outdoor interview setting of a family

notes:

on Mt. Elgon. The indoor setting allows privacy and little distraction, which is always preferred. As you will understand talking about your personal life inside your own home will be much easier.

However, you will notice that the whole family is involved in all kinds of activities during the day. Asking questions while they peel potatoes or wash some cups will be highly appreciated. In all cases make sure that there is privacy while answering your questions. Most of the families have multiple houses standing close together; in the centre they often have a common area (living room). This area is often used for shared activities: preparing food, making homework, etc. This space is partially enclosed and often shielded (by the houses) from public roads or areas. Therefore, this area is suitable to conduct interviews outside. Make sure when you participate in household activities which make writing/sketching difficult, that you record (audio/video) the interview (explained in next section).

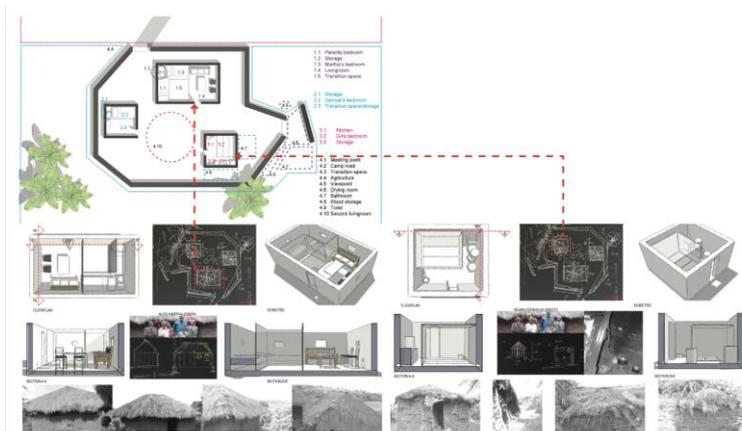


Figure 26: Example of a rural family compound

5. INTERVIEW REWARD

As you will notice the family most probably will serve you tea as it is customary for receiving visitors. Especially in the first visits to the family don't decline as it might be considered rude,

6. INTERVIEWING THE PARENTS & CHILDREN

In the Appendices of this manual you will find a detailed interview instructions (from p.237), guide for interviewing the parents. You will also find the instructions for the children and the guide. How the interviews should be transcribed you can find in *Appendix V- Interview Transcribing*.

7. INTERVIEW INSTRUCTIONS

Before you can start interviewing there are many things you need to organize before, during and after the interview. Although you don't have to mention them in the interview you are required to take them into account or execute during the interview. The instructions will help you not to miss anything being said or expressed. An interview instruction sheet normally consists of:

- Title page
 - Location
 - Date
 - Interviewer
 - Interviewee
 - Responsible parties
 - Supporting parties
 - Institute
- Research information
 - Central research question
 - Objective
 - Aim
 - Questionnaire instructions
- Introduction
 - Composition of the interview
 - Practicalities of the interview
 - Location
 - Recruitment of participants (optional)
 - Picture recording (optional)
 - Video/Audio recording (optional)
 - Venue
 - Duration
 - Breaks
 - Compensation
 - Coding
 - Transcription
 - Ethical issues

8. INTERVIEW GUIDE

In an interview guide you write basically everything you want to explain or ask while conducting the interview. The guide helps you step by step what to say and ask without forgetting anything. You will notice that often while talking to your interviewee you will easily lose track. Not to worry you have the guide to help you and if not you can

notes:

always come back to some of the questions on a later moment. An Interview guide normally consists of the following parts:

- Title page
 - Location
 - Date
 - Interviewer
 - Interviewee
 - Responsible parties
 - Supporting parties
 - Institute

- Research information
 - Central research question
 - Objective
 - Aim

Questionnaire guide

- Introduction
- Questions
 - Introduction questions (make interviewee relax)
 - General information (Ages, profession, etc.)
 - Topical questions (what you came for to ask)
 - Closing questions (slowly moving away from detail)
- Outro, Explain:
 - Where the outcomes will be used for
 - By whom
 - Managing expectations (make sure the interviewee knows what he/she can expect in return)
- Consent
 - Privacy & Quoting

9. REGULAR BREAKS

Some of the family members will require more time to be interviewed than others. As soon as you start to notice that the interviewee lacks energy, enthusiasm or attention, most probably they have other matters to attend to. Ask them if they need to do something and if you could maybe help them a bit with the activity. Below an example of a student fetching water during the break of his interview. Helping the family member is a small reward that can really make the difference in mood and understanding.



Figure 27: Example of a student helping with a daily activity: fetching water (by author)

10. ADVISED LITERATURE

(Hennink, Hutter, & Bailey, 2010)

11. OUTCOMES

The expected outcomes of this chapter (from the actor) are:

1. Digitalized list of questions
2. Recordings of all interviews
3. Transcription of all interviews

The outcomes will be collected weekly. Please make folder named after the team and phase number and number of the week(week per phase) – e.g.: T1.P2.W1

III. FAMILY'S HOPES AND DREAMS FOR THE NEW HOUSE (PLAY SESSION - DRAW/EXPLAIN/SHOW - FAMILY MEMBERS SEPARATELY):

In this section you will organize individual meetings with the family members to help them express their hopes and dreams for the new house. Multiple games, workshops and question rounds will be explained to help you fully understand the wishes and dreams of the family. The physical outcomes of the sessions will help you to locate key physical elements of the design (doors, windows, typology, materials, etc.). Verbally expressed wishes will help to better understand the underlying reasons and considerations

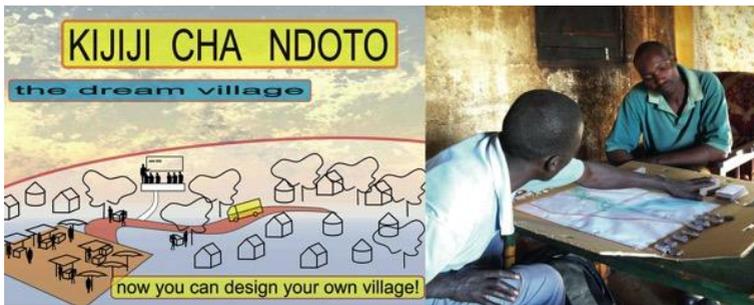


Figure 28: Example of playing and dreaming: dream village (by author)

1. DRAWING WORKSHOPS: HOW SHOULD IT LOOK LIKE (DRAW/EXPLAIN/SHOW EXAMPLES)

Talking with and interviewing family members about their current and future house will only reach to a certain extend. Most family members will stick often to general comments about typology and materials. Drawing is a great way to think about various parts of the house. By asking questions regularly during the sketching the family members will step by step add more details. For this workshop you will need approximately 1 hour per person, please make sure you repeat the workshop with every individual family member. Make sure that there is a safe place where the family member can draw without getting distracted. Especially the parents will be embarrassed by people watching them while drawing. Remember playing is about having fun, any outcome (even folding the paper to a ball) can be of use. It's not about if you can draw or how good you can draw, but what you explain while drawing.

The golden rule: Anyone can draw!

DRAWING WORKSHOPS: MATERIALS LIST

- 4 x A4 blank paper

notes:

- Markers (at least 5 colours)
- Pencils

DRAWING WORKSHOPS: TIMEFRAME (1 HOUR PER FAMILY MEMBER)

- Drawing workshop introduction
- Drawing the existing house without any help: 15 minutes (practice round)
- Drawing dream house with mid feedback (after 7 minutes): 15 minutes
- Drawing dream house together: 20 minutes
- Summing up the dream house together main points: 5 minutes

DRAWING WORKSHOPS: RECORDING

- Video record the whole session with the Lumix
- Use a comparable distance to that of the interview
 - you both need to be on the frame
 - make sure the camera is close enough to properly record the sound
- Make sure that the frame captures what is being drawn

DRAWING WORKSHOP: STEP BY STEP

STEP 1: INTRODUCTION

Good morning, as explained today we are going to dream for the first time about your new house. To get a better understanding we are going to sketch whatever comes into your mind about this new house. Adding text, explaining what you are drawing and why you dream of this is highly important. In this exercise nothing is good or bad, feel free to draw whatever comes into your mind. The exercise will have the following layout:

- Drawing workshop introduction
- Drawing the existing house without any help: 10 minutes (practice round)
- Explain and feedback: 5 minutes
- Drawing dream house with mid feedback (after 7 minutes): 15 minutes
- Explain and feedback: 5 minutes
- Drawing dream house together: 20 minutes
- Summing up the dream house together main points: 5 minutes

Do you have any questions before we begin?



Figure 29: Example of things you might not like (cracked walls) and you might like (cool inside)

STEP 2: DRAWING THE EXISTING HOUSE WITHOUT ANY HELP: 10 MINUTES

[handout one A4 and equipment]

I would like to ask you to draw things about the house you are living in right now. Showing what you like (green) and don't like (red) about the house (red) and what you would like to improve, add or change. You can also draw separate elements of the house to explain.

- Please do something else in order for the family member to work on his/her own

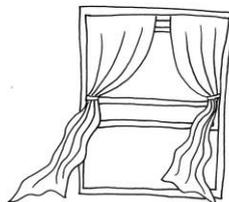


Figure 30: Example of drawing, whole house or separate elements.

notes:

STEP 3: EXPLAIN AND FEEDBACK: 5 MINUTES

Could you explain to me what you have drawn, what you like about the house you live in right now and what you don't like about the house.

- Try to ask as many as possible: why, where and how questions
- Write on the back of the paper the main points mentioned above

STEP 4: DRAWING THE DREAM HOUSE WITH MID FEEDBACK (AFTER 7 MINUTES): 15 MINUTES

(handout one A4 and equipment) I would like to ask you to draw things about your dream house. Showing what you would really like. Again you can also draw separate elements of the house to explain. [please do something else in order for the family member to work on his/her own]



Figure 31: Example of a dream house, or desired elements like solar panel or roofing sheet.

MID FEEDBACK (AFTER 7 MINUTES)

After 7 minutes ask the family member what they are drawing and what you would really like in your dream house.

- Try to ask as many as possible: why, where and how questions).
- Give a brief response to the work and try to give tips for improving or adding (be careful not to be direct or too suggestive),

STEP 5: EXPLAIN AND FEEDBACK: 5 MINUTES

- Could you explain to me what you have drawn, what you like in or on your dream house?
- Try to ask as many as possible: why, where and how questions
- Write on the back of the paper the main points mentioned

STEP 6: DRAWING THE DREAM HOUSE WITH MID FEEDBACK (AFTER 7 MINUTES): 15 MINUTES

(handout one A4 and take one A4 yourself) Based on the past drawings and conversation we are now going to try to make drawings together at the same time. The two A4's from the previous steps have all the things you don't like and do like. Based on those try to draw a possible dream house. Again you can also draw separate elements of the house to explain.

- Try to give tips or feedback while drawing.
- Write on the back of the paper the main points mentioned

STEP 7: SUMMING UP THE DREAM HOUSE TOGETHER MAIN POINTS: 5 MINUTES

(While putting the two drawings next to each other) Lets go through both drawings and talk what you like and find important and I will comment how we could use that for the future house.

- Try to ask as many as possible: why, where and how questions
- Write on the back of the paper the main conclusions mentioned

notes:

2. MODELLING WORKSHOPS: WHAT SHOULD THE HOUSE CONSIST OF (ONE STRUCTURE OR MULTIPLE? SEPARATE ROOMS? WHAT MATERIALS SHOULD IT BE MADE OF?)

Although drawing really helps family members to think about their current and future house, it in its turn also has its limitations. Depending on the creativity, literacy, self-confidence and willingness, the results from the drawing workshop can vary. Moreover, you need quite advanced spatial perception and drawing skills to articulate design. If we want to gain more insight in spatial aspects we will need to use a more three dimensional approach. For this purpose you are going to use the Modelling workshop to approach the dream house as best as possible. In this workshop you are the tool the family member can use to articulate the house. Again please make sure that there is a safe place where the family member can draw without getting distracted. Especially the parents will be vulnerable to people watching them while modelling. Remember playing is about having fun; any outcome (making a box) can be of use. It's not about if or how good you can make models, but what you explain while making them.

The golden rule: Anyone can make a model!



Figure 32: Example of dream house models

MODELLING WORKSHOPS: MATERIALS LIST

- Scavenge the house: any cardboard, paper, etc. will do
- Role of sketch paper
- Glue
- Scissors
- Ruler
- Sticky tape
- Markers (at least 5 colours)
- Pencils
- Model people (scale: 1/10 1/20 1/50)

MODELLING WORKSHOPS: TIMEFRAME (1 HOUR PER FAMILY MEMBER)

- Modelling workshop introduction

- Modelling dream house with mid feedback (15 minutes): 30 minutes
- Feedback: 5 minutes
- Modelling dream house together: 30 minutes
- Summing up the dream house together main points: 5 minutes

MODELLING WORKSHOPS: RECORDING

- Video record the whole session with the Lumix
- Use a comparable distance to that of the interview
- both of you need to be in the frame
- make sure the camera is close enough to properly record the sound
- Make sure that the frame captures what is being drawn

MODELLING WORKSHOP: STEP BY STEP

STEP 1: INTRODUCTION

Good morning, as explained today we are going to dream for the second time about your new house. To get a better understanding we are going to build whatever comes into your mind about this new house. Adding text, explaining what you are making and why you dream of this is highly important. In this exercise nothing is good or bad, feel free to make whatever comes into mind. I will help you wherever you want, I have a little more experience in making models and can explain/help where needed. The exercise will have the following layout:

MODELLING WORKSHOP INTRODUCTION

Modelling dream house with mid feedback (15 minutes): 30 minutes

Feedback: 5 minutes

Modelling dream house together: 30 minutes

Summing up the dream house together main points: 5 minutes

Do you have any questions before we begin?

STEP 2: MODELLING YOUR DREAM HOUSE WITH MID FEEDBACK

(After 15 minutes): 30 minutes

[Hand out materials and equipment]

notes:

I would like to ask you to build your dream house.

If this house consists of multiple houses please try to show the sizes and shapes you would prefer. Then continue to show where you would like doors and window (you can also draw them on the cardboard). Please do something else in order for the family member to work on his/her own

STEP 3: EXPLAIN AND FEEDBACK: 5 MINUTES

Could you explain to me what you have made, what your dreams are and try to give as many details as possible who would live where and why.

Try to ask as many as possible: why, where and how questions

Where are the different family members living?

Which functions and where?

STEP 4: MODELLING DREAM HOUSE TOGETHER (AFTER 15 MINUTES): 30-45 MINUTES

Based on the first exercise we now know how many structures you would like to have, who lives where and which functions there should be. I would like to ask you to pick the most important house (the one that needs to be build first) and start building a model as detailed as possible. Think you could think of: living room, bedroom, roof, windows, doors, walls, furniture, etc. I will help you as much as I can include all the aspects and with making the model.

3. PRESENTING THE PROBLEMS OF THE OLD HOUSE AND THE DREAMS OF THE NEW HOUSE (1 HOUR)

This session is meant to reflect on the session held with the whole family. If the family wants to share their ideas, neighbours and friends are more than welcome to join. In this way the family can reflect on each other's ideas and try to find a common ground of their problems and dreams.

MODELLING WORKSHOPS: RECORDING

- Video record the whole session with the Lumix
 - Most probably will take quite some space: audience and results
 - All objects need to be on the frame
 - Everyone needs to be on the frame
 - Make sure the camera is close enough to properly record the sound

STEP 1: EXPOSITION PREPARATION

Start by finding a good spot somewhere in the shade and protected from the rain and wind. A good spot for instance are the outside walls of the house. Here you can hang drawing and with relatively little ease out the models on the “veranda”. It also allows you to move freely through the expo showing and explaining all the problems and dreams. Please make sure you hang everything according to the author.

STEP 2: INTRODUCTION

Welcome everyone to this marvellous exposition of the problems, dreams and hopes of the family. Give a brief overview of how important the results are and how you are going to use them in the further design process.

STEP 3: FAMILY MEMBERS PRESENT THEIR PERSPECTIVES

Ask the family members one by one to stand up and explain what they have drawn and build with the model. The audience is allowed to ask questions or make comments. In the beginning they might be a bit shy, starting by asking one of the children/parents if they agree or not agree, will give a little push. Applauding after the “presentation” is really nice motivator.

- Make notes during the presentation

STEP 5: SUMMING UP THE DREAM HOUSE

In this session we will go through the main points you mentioned during the exercise to make sure everything is clear. The outcomes will be used in the design of your house.

notes:

IV. MAPPING, MEASURING AND DRAWING (SHOW CASE STUDIES AS EXAMPLES: CATTLE, THRESHOLD IN THE HOUSE, ROUND OR SQUARE BUILDING; RAIN/WIND):

1. INTRODUCTION

To better understand how the family currently live and thus how they use the space, this section will explain how you can map, measure and draw the house, compound and surroundings. Most of the rural families have more than one structure on the compound but still a multitude of functions are taking place outdoors. Some functions can be clearly identified (such as cooking) some are more difficult (studying). Do not worry that you do not yet understand what everything is for. In the next section (Observe: Daily Routine) you will study how the house is used and what for. To be able to mark actions in the field (eating, washing, studying, etc.) you need detailed floor plans, section, façade views, interior (functions and furniture) of all the houses within the family compound and their surroundings. In this way when we observe we have the lines in which the activities take place. Most activities take place in and around the house, however, many of them also in the surroundings. To better understand important places in the surrounding (water points, school, church, etc.) and how they relate in terms of infrastructure, we will need to map the surroundings (max 0,5-1 km radius). Therefore this section explains the various steps you should take and how to properly measure and document the:

- Individual structures & Interior
- Family Compound (outdoor functions)
- Community Area

The outcome of this section will help the design process in offering a departure point for the design. When you know everything there is about the house (this section), you add everything that is perceived as wrong or needs improvement (previous sections) and alter it in the design. Based on the hopes and dreams of the family you will come up with a departure point what the new house could look like.

2. MATERIALS LIST

- Small tape measure: 2-5 meter
- Large tape measure or laser: 50-100 meters (not mandatory)
- Laptop & Mobile phone
- Lumix Camera
- Google Maps/Earth
- Internet Bundle

- Role of sketch paper
- Scotch tape
- A3 clipboard
- Printed A3 maps
- Various markers
 - At least 6 colours
 - At least 2-3 different thicknesses
- Pencil
- Eraser

3. INDIVIDUAL STRUCTURES & INTERIOR

Most of the families have one or more structures to live in. The first step to better understand how they live is to start measuring their whole living environment. The procedure below should be repeated for every individual structure.

STEP 1: PINPOINT LOCATION AND ORIENTATION OF THE DWELLING (SMARTPHONE)

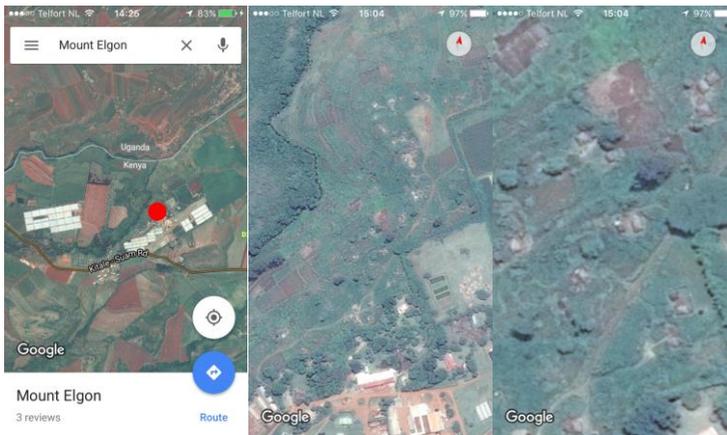


Figure 33: Example Google maps of Mt Elgon area

First you will need to know where you are in the area. Using your smartphone is one of the easiest ways to find out. Make sure you have installed Google maps and you have sufficient internet bundle. Although the quality of the maps on Mt Elgon is insufficient to zoom in on a very high quality, however, in most cases you can still see the contours of the house. Based on the contours and the position of large trees you can specify the location of the house.

!!Use your sketchbook to record the following!!

notes:

STEP 2: DRAW INVENTORY OF THE HOUSE (FLOOR PLAN AND FACADES)

- Start drawing shape (rectangular, circular or square) of the floor plan in the middle of the paper. Make sure you have sufficient space to put facades around the drawing.
- Measure total width and length of the building and put the measurements in the drawing
- Measure all openings and their distances to the corners of the wall and put in all the distances
- Measure the average thickness of the wall and offset the thickness on your drawing.
- Draw in the doors and shutters and give their respective turning direction.
- Go inside and try to measure the height of the tip of the roof
- Measure the height of the walls (up to the roof)

STEP 3: FACADES

Now you know the size, orientation of the plot and structures, make pictures of the four facades and name there respectively to their orientation (South, West, South-West, etc.).

- Based on the floor plan now start drawing all the facades
- Try to put in as much detail as possible (crack, difference in colour, materials, etc.)
- Also include all loose elements on or in front of the façade (it might uncover the usage of this side of the house)



Figure 34: Example of façade pictures on Mt Elgon

STEP 4: INTERIOR (DIVISIONS: FIXED AND TEMPORARY)

Based on the floor plan you made you can now start detailing the interior of the house. It is best to start with a new page to make sure the drawing remains legible.

- Start by putting in all the major furniture (as most houses have no interior walls the furniture will help to define the different functions)
- If there are any clothes hanging to separate spaces or to cover walls draw them
- Now continue putting in very detailed elements, for example; containers, fireplace, storage, boxes, etc. If possible make

side notes of observations or specific elements.

- Note all tools and belongings of the family that can be used during the construction of the house. It will be necessary for preparing the interview about family's capacities (*chapter VII Interview: capacity analysis*).



Figure 35: Example of Mt Elgon dwelling interior

STEP 5: SECTIONS

To comprehend the spatial usage you should draw at least one width section and one over the length of the house. Preferably on the same positions of doors and windows.

- Make sure you draw the right thickness of the walls
- Use the height of the wall and roof top you measured before
- Show furniture, functions and possible separations used in the house.

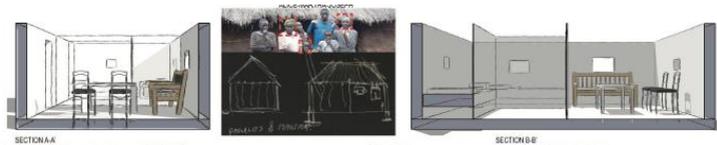


Figure 36: Example of Mt Elgon dwelling section

STEP 6: DIGITALIZING THE HOUSES (SKETCHUP)

Based on all the gathered information of the structure you can now easily make a digital model of the dwelling. You can choose any program you prefer, however, we advise you to use Google Sketchup. The Google Maps extension in Sketchup helps to place the houses on the right location and orientation. We assume that everyone has a sufficient level of Sketchup skills or can self-teach via the following links:

- <https://www.youtube.com/watch?v=YGdLwE4Ue-c>

notes:

- <https://www.youtube.com/watch?v=q8ll0u9fdAM>
- https://www.youtube.com/watch?v=rKhRDvnpn_DU
- <https://www.youtube.com/watch?v=gjDI-J41304>
- <https://www.youtube.com/watch?v=ddxHoBWGE3I>
- <https://www.youtube.com/watch?v=1PD1syrS10Q>
- https://www.youtube.com/watch?v=VL_UvWZtn88

4. FAMILY COMPOUND

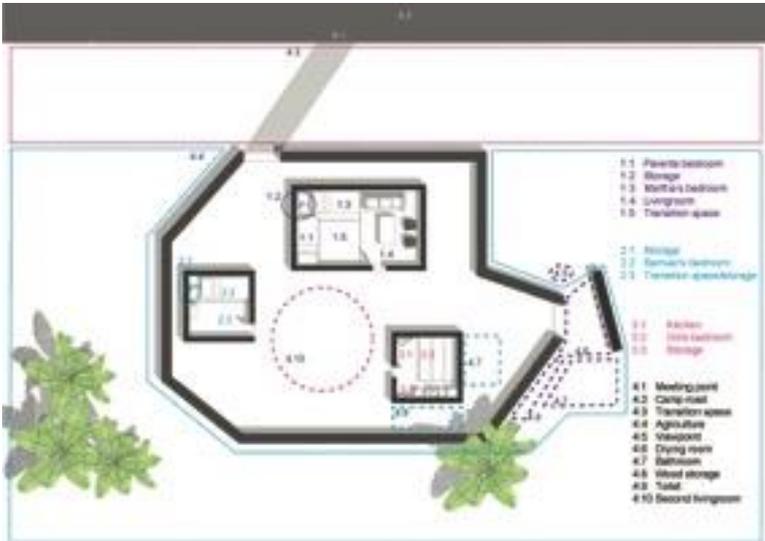


Figure 37: Example of a family compound on Mt Elgon

In the previous section all the individual structures have been measured, drawn and specified. Now you have spend some time at the family compound you might have identified some form of fencing (often green fence: shrubs) and some areas that are often used (cleaning, bathing, farming, etc.). In this section you map out the plot and the family compound (area marked by fence).

- Ask the family to show/explain the border of the plot (this is their full land)
- Measure the area and try to draw the area
- Mark the slope of the terrain and any other distinctive terrain elements (large boulders, etc.)
- Mark/draw any road, farming land, neighbouring structures, light posts or trees, on the plot or on the border of the plot. (exclude the family compound fence; in the image below marked in dark grey)
- Now start measuring the distances between the different

houses with the border of the plot. Continue this process till you have all the structures mapped.

- Now we are left with marking the green fence of the family compound. Often the shape, distance and angle change. Therefore, drawing the fence is an estimation and should be kept as the last element to add to the map.

DIGITALIZING PLOT AND FAMILY COMPOUND (SKETCHUP)

Based on all the gathered information of the plot you can now make a digital model of the plot and compound. Again you can chose any program you prefer, however, we advise you to use Google Sketch up. When you finished the compound you can start by adding the individual houses as components. In the end you should have the entire plot, family compound and all houses on them.

5. COMMUNITY AREA (500-1000 METER DIAMETER)

Mapping the community area is quite comparable to that of mapping the family plot. However, the level of detail can be lower. Here you are focussing on main infrastructure, surrounding houses/compounds, places of importance (fetching water, collecting firewood, etc.). Don't worry you might not know them all now, in the next section (observation) you will be able to map them all. This section is to give you the basic map on which you can work out your inventory

STEP 1: RETRIEVING SCOPE



Figure 38: Example of Mt Elgon dwelling section

Before starting to collect you information in the field it can be really helpful to take a printed map of the area you need to look at. When you go back to the Google map you made before. You can see a scale index in the bottom right corner. Basically this means that the radius should be 2,5 times the indicated 200 meters on the scale.

notes:

STEP 2: POSITION THE PLOT, COMPOUND AND BUILDINGS ON THE MAP

Now you know the target area it's time to retrieve the surrounding from Google maps into Sketch up.

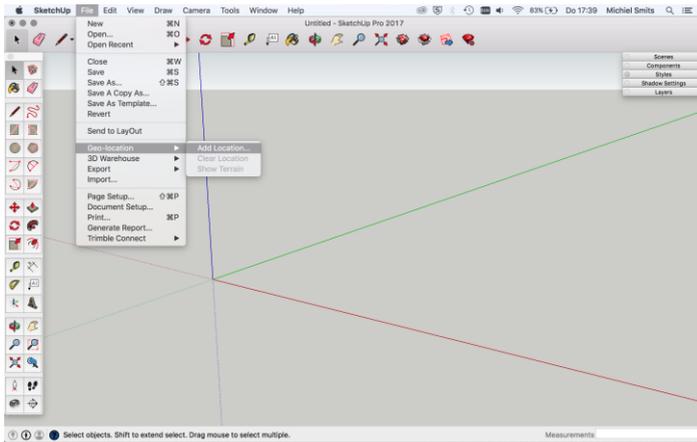


Figure 39: How to add Geo location to Sketch up

- Go to file
- Click Add location

In the menu bar above you can now enter the GPS coordinates you found earlier, in this example: 1.212754, 34.794623

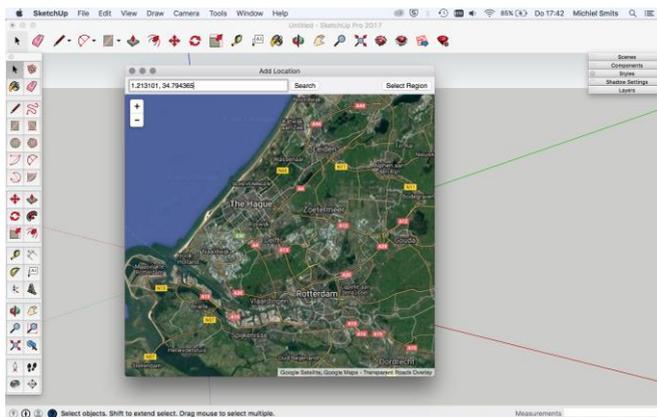


Figure 40: How to add Geo location to Sketch up

Now you can select the area and press grab to add it into your model.

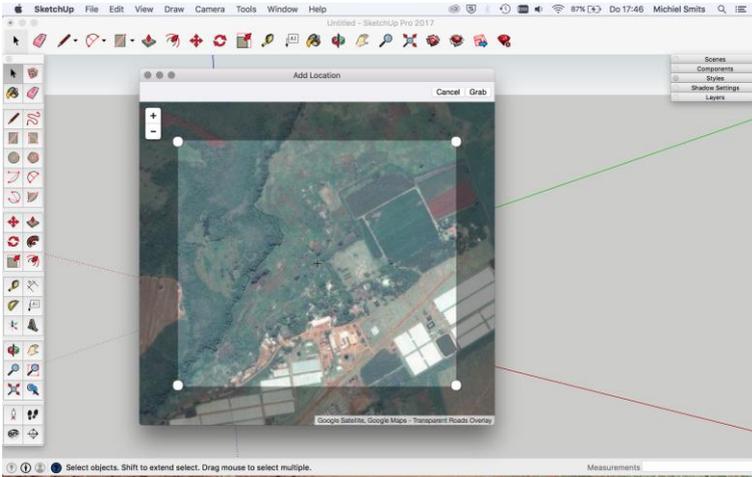


Figure 41: How to add Geo location to Sketch up

If you want to terrain information you can go to: *Geo-location* and click *show terrain*.

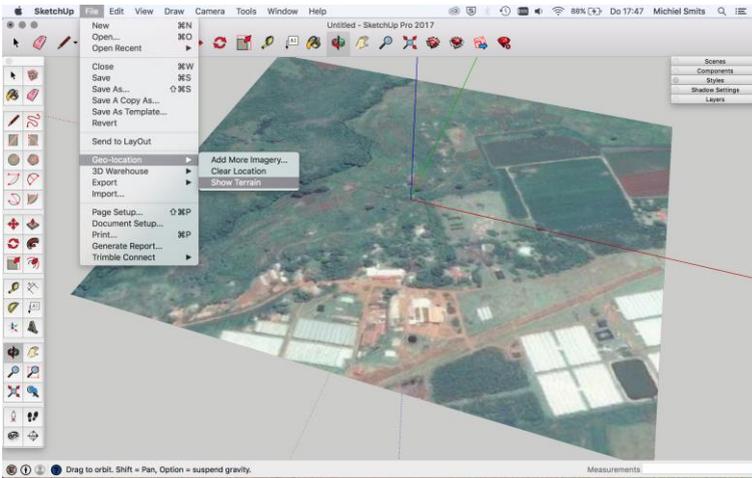


Figure 42: How to add terrain information to Sketchup

And the result is a scaled and terrain accurate community area plan!

notes:

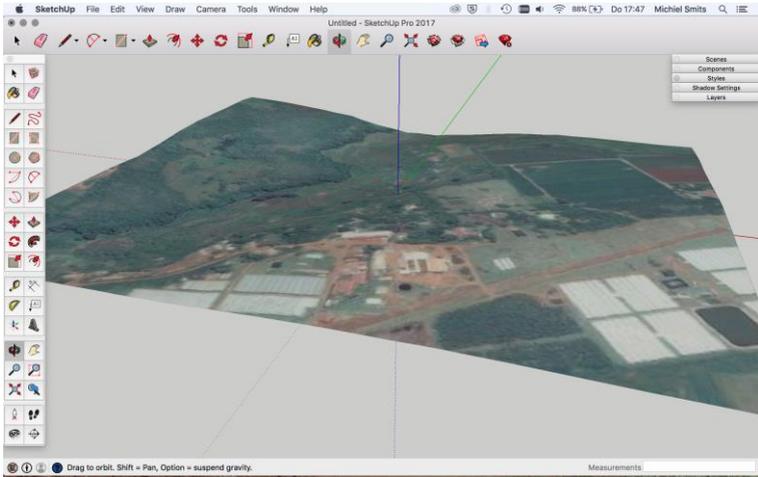


Figure 43: How to add terrain information to Sketch up

Now you can simply add the compound model to the file.

- Make sure you made one component/group of all the houses, trees, etc.
- Select the compound object (incl. all buildings, trees, etc.;) and copy (right mouse click)
- Go to the terrain file and paste the compound model on the right position.

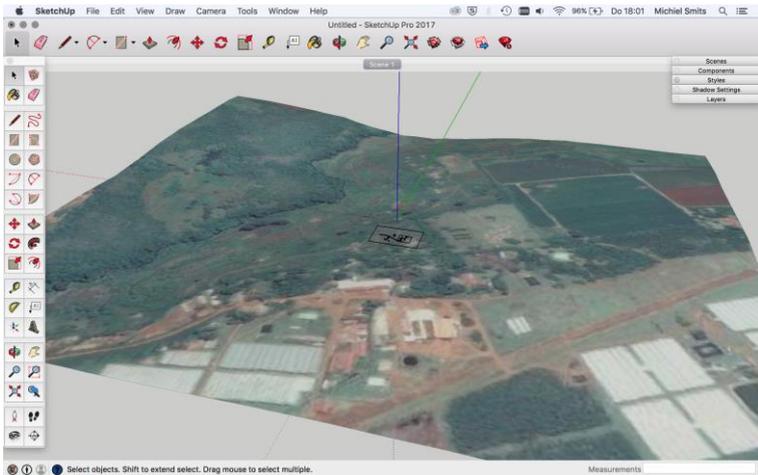


Figure 44: How to add the compound model to the terrain model in Sketch up

Now your map is set its time to export the map in order for you to print it to take with you into the field.

- Select circle tool

- Select the centre of the family compound
- Enter Diameter 250 meters
- Make a group of the circle and move it to the right position
- Offset the outer circle 10 meters and delete the centre of the circle (you should have something close to the image below)
- Select standard view: top
- Go to file, export and select 2d graphic (jpg)
- Go to options in the export menu
- Type in width: 420mm, height 297mm and resolution 150px
- Press export

You can send or give the file to the main researcher for printing (will be printed on A3, black and white).

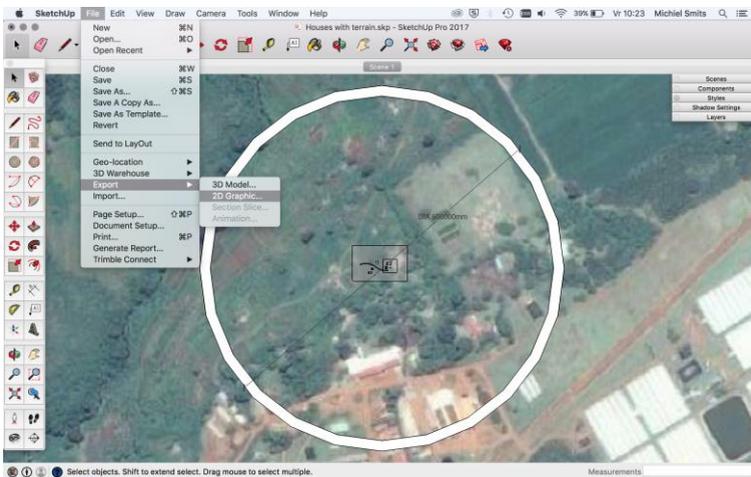


Figure 45: How to export model as map (jpg) in Sketch up

STEP 3: MAPPING THE SURROUNDING

In this section you will map out the community area, which basically is all the terrain surrounding the family plot. Be aware while walking through the area you will get a lot of attention from residents. If they are curious show them what you are doing and explain that you want to better understand the surroundings. Make pictures on any significant aspect you come across (tree, water point, church, shops, etc.). Mark the significant element on the map and use a time code so later on you can track the time and element easy to the element you have drawn. Remember there are a lot of impressions during such an investigation and you might mix them up. Make sure you don't rush the process, identifying elements are just as important as sitting

notes:

somewhere and identify use, behaviour and possible patterns (how busy a road is, often taken shortcuts, hidden toilets, etc.). Below we take you through the various steps you need to take.

PREPARING YOUR CONTEXT ANALYSIS: MAP LAYERS

In previous sections you located the target area of your community analysis (radius 500 meter) also see the image below.



Figure 46: Earlier made target area for context analysis (500 meter radius)

Obviously mapping on the level of zoom won't allow much detail in your analysis. Therefore go back to Google Maps and zoom in on the chosen location and export the image (or print screen).

Now open the image in Photoshop (or in similar program).

Now make different layers by clicking on the icon in the bottom right corner (as shown in the image above). We suggest you make at least the following layers:

- Borders and fences
- Water
- Infrastructure
- Trees
- Water points
- Places of interest

(more elaborate explanation is to be found in chapter VI *Context depth analysis*).

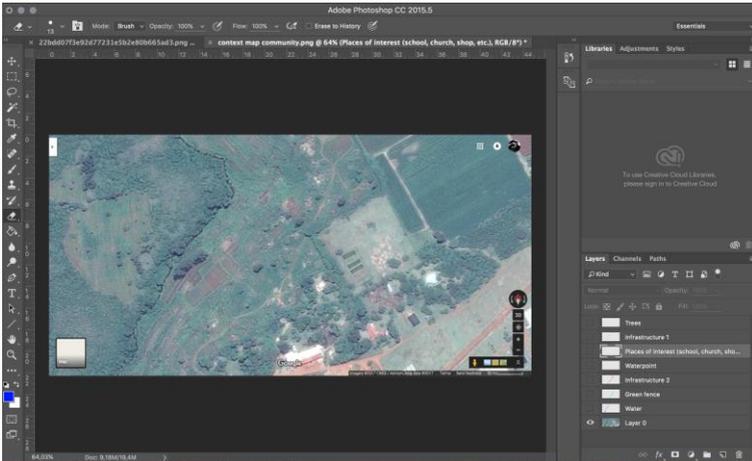


Figure 47: Target area made earlier for context analysis (500 meter radius)

You have noticed that quite a lot of things can be mapped based on the digital map. Anything you can already prepare before going into the field will help you orientating (especially; infrastructure, trees and water). For the examples below we chose random colours, make sure the colours you chose are the same as the markers you took with you.

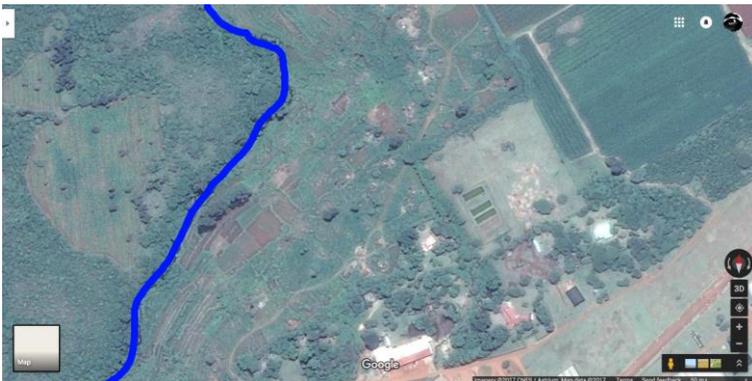


Figure 48: Example sheet of context map: river has been indicated

notes:



Figure 49: Example sheet of context map: large green fence has been indicated



Figure 50: Example sheet of context map: main- and sub-infrastructure has been indicated



Figure 51: Example sheet of context map: large trees have been indicated

Now you can decide to put all the different layers on one sheet and export or you print the layers separately and go through the surroundings per element. Before going into the field make sure you cover the printed map(s) with a layer of transparent paper and take the role and some scotch tape with you. We advise you to buy a clipboard (see image below) as you need a solid surface to draw on.



Figure 52: Example of printed map (infrastructure) with transparent sheet and a clipboard

- Use the family compound as a starting point for your mapping trip.
- Start mapping out the roads:

As you already prepared the main road and some of the sub roads we suggest you start with the closest sub roads and see where and how they end. Any sub road you find you can add to your map. Any smaller path between houses or a field you can mark with another colour or thickness. Below we show an example of the result of an infrastructure analysis.



Figure 53: Example of map including the field research.

Now continue with a new transparent sheet and start to map the fences, again use the family compound as departure point. Fences can

notes:

be 30-50 cm high shrubs, used to mark the family compound and the plot of the family. This plot is often a larger area around the family dwelling used for farming. Asking the family or neighbours to point out the borders will help you a lot. In the same we advise you also to mark the trees if there is sufficient space on your map. If not start with a new transparent sheet.



Figure 54: Example of map with marked fences and trees

Again continue with a new transparent sheet and start to map all possible places of importance. You will need a lot of local experience to find them all, don't worry in the next step (chapter V) we will use observations to better understand daily usage and place of importance. For now try to find as many of them as possible. Below we give some examples of possible places of importance



Figure 55: Example of map of important places

6. ROUNDUP

This chapter helped you to map the houses the family lives in and to

gain basic understanding of their interior. To better understand how they related within the family compound you mapped the edges of the plot and of the compound (inner circle). With many activities being conducted together with neighbours, family or other community members we need to understand how the compound relates to the surrounding. This is a great introduction to start understanding the surroundings a bit better and the surroundings you. Remember that from the moment you stepped into the community you became a part of it. Sharing, asking, chatting, playing and a good laugh all help to smoothing out your acceptance with the community. This on its turn will enable you to learn a lot more and a lot faster as shown in the movie you will also going to watch in the next chapter Kitchen Stories (Hamer & Bergmark, 2003).



Figure 56: Example of overview map

7. OUTCOMES

The expected outcomes of this chapter (from the actor) are:

1. Map with pinpointed location of the house
2. Inventory of the house:
 - a. Digitalised sketches
 - b. SketchUp drawings
3. Inventory of the plot and the compound
4. SketchUp drawing of a family plot (compound) with a location maps
5. Maps for context analysis and the overview map

The outcomes will be collected weekly. Please make folder named after the team and phase number and number of the week(week per phase) – e.g.: T1.P4.W1

V. OBSERVE: DAILY ROUTINE

One of the most essential steps to design a new house is to better understand the existing house. Besides the physical elements and their function (what you mapped in the previous chapter), there are many behavioural elements. We need to understand both in depth to grasp what preferences the family has and how they prefer to perform them. Later you can use what you found to discuss with the family. In this way you gain very detailed understanding what they prefer to do, where, when and how (for example where they wash, prepare food, fetch water, dry clothing, etc.). Obviously also what they do not prefer and would like to change in the future house. Before we can do so we will need to observe every family member to understand how routine takes place in the physical realm. The most important are the activities directly related to the house, compound and direct surrounding. The preferred method to perform such analysis is observation. Here an individual observes the behaviour (actions, movements, gestures, etc.) of an actor in its environment. This section explains how observations can be performed, what the difficulties are and how we advise you to perform yours.

1. INTRODUCTION

In preparation to this section we would like to ask you to watch the movie: *Kitchen Stories* (Hamer & Bergmark, 2003). This movie shows observation from a conservative perspective and explains with humour how subjective observations can be.



Figure 57: Still of the movie "*Kitchen Stories*" (Hamer & Bergmark, 2003)

notes:

STEP 1

We ask you to plan watching this movie in the same week as the other participants (with support); both students and architects.

STEP 2

During the movie write down the following things:

- What the observer does right and wrong?
- What the observed does right and wrong?
- How does the observer influence the observed?
- How does the observed influence the observer?
- What could be objective results of this research?
- What could be subjective outcomes of this research?
- Which valuable things did the observer find, when and why?
- Would outcomes of the research be different if there was a female observer? Explain.
- What would you explain as success factors to a successful observation on Mt. Elgon?

STEP 3

Discuss (Skype) your findings within your team (architect and student) and write down the final shared answers

STEP 4

Together describe and design your ideal observation on Mt. Elgon (try to show how you would dress, where you would sit, etc.)

STEP 5

Share your results on the GoogleDrive and review each other's work

FURTHER EXPLANATION (DON'T READ UNTIL AFTER ABOVE ASSIGNMENT IS PERFORMED)

The Kitchen Stories describes an observation research on how single men use their kitchen environment. In this case multiple single men within one region were selected for observation. Hopefully by better understanding what the observed men do, better kitchen infrastructure and appliances could be designed. To be able to compare results of the various observations it is essential to reproduce the various observations in exactly the same way. If one observer would wear another outfit (pink outfit for example) the behaviour of the observed could be completely change. Therefore, the results will be completely different between him and the other

observations and therefore incomparable.



Figure 58: Still of the movie "Kitchen Stories" (Hamer & Bergmark, 2003)

More importantly, the observer will influence the observed in his/her behaviour. This will make the research bias, as it forces other behaviour than the contestant would normally show. However, bringing any foreign element into an observation setting, will influence to some extent the final results. So don't be scared or awkward (as shown in the movie), try to be a great observer, if you have an important question wait till the right moment (nothing to do or monotonous activity) and ask the observed family member. It will enrich your observation and increase the depth and value of your observation. Describing what your limitations were and how you incorporate them in writing out your findings is essential in framing your research and its results.

Another great contributor to "good" research results is the wellbeing of the observer. Try to imagine what would happen if the observer was forced to sleep in a tent instead of a trailer (as seen in the movie). Possibly due to a poor night rest the observer will be less observant and might forget to observe many things (which is common among tired people). Make sure that you have sufficient night rest, food, water and motivation to organise an observation. If you have doubts don't worry you can always plan the observation a day later.

Therefore, having happy, involved and willing participant and observer is crucial for a successful observation. A common used stimulator for participants is the usage of incentives. An incentive is any form of compensation for participating in your research. Obviously, paying people is an often-used incentive, however, it can also create a distance (it's a job). Other incentives in the form of food, drinks or a fun activity have a proven more personal (positive) effect. However, in development aid scenario's you should be extremely cautious in the amount. The family you are helping might get dependent on your incentives and might eventually cause frustration in the development process. In the rest of this chapter we will help you to perform multiple observations of your family.

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2. OBSERVE THE DAILY ROUTINE OF ALL FAMILY MEMBERS SEPARATELY (GO TO THEIR WORK/SCHOOL/GARDEN/ETC.) INCL. DEPTH ANALYSIS OF THE USAGE OF THE HOUSE.

As explained in the introduction, you are performing the observations to better understand the behaviour of everyday life of the various family members. The first and most important observations are those that take place on and in the family compound and structures. These will tell you a lot about what the individual family members do, how and when they perform them. The second observations are those that are a part of the everyday community life. These will tell you everything what the individual family members do often together with other community members, where and when. Although they might seem remote and not closely related, they could expose problems or solutions (water fetching, washing, etc.). Thirdly, are the observations in public life outside the family and community sphere. These will show you what activities (work, school, leisure, etc.) take place when and where. When you add the three different observation spheres you can better understand the total scope of activities of the individual family members. As you are asked to interact as little as possible during the observations you will have the focus to register (time based) which activity takes place, where, when, how and with whom. If you don't understand something or you have a burning question feel free to address the family member on a convenient moment that no other activities are taking place. You will observe every family member separately at least once during a weekday and a weekend day.

PREPARATION

Before you can start observing family members it is extremely important to explain why the observations are needed, what they entail and when you would like to perform them. As you prefer to have full access to their houses, school, work and such, you will need a consensus. This means from getting up from bed, till going back to sleep. As you will notice people get up very early so make sure that you make arrangements with the family. If you are too late, you might have missed the most important parts of the day. In the example below I started the observation at 5:00 in the morning and remained with the family till 23:00. Although it was still dark upon arrival, I was able to observe where the family members washed themselves and many other things such as: where and who makes breakfast, who helps infants get dressed, etc.

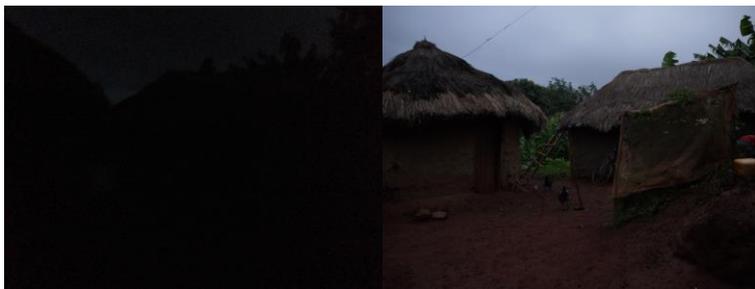


Figure 59: Observation Mount Elgon (Author, 2014)

Together with the family you can decide what they prefer and what they would rather not like you to do (where are you allowed to enter and at what moment of the day). Obviously, there are things you can't be a part of (dressing up, bathing, toilet, etc.) the family member might explain later when you ask them. Taking pictures can be very intrusive (as explained before), however looking at someone and writing down everything they do can be even more intrusive. Make sure you properly discuss what you can do and not. Again be aware, local families are very polite and most probably allow whatever you suggest. Make sure that they are comfortable to share their preferences and that they are welcome to have a look what you written down during the day (remember to write in English).

In the previous chapters you made the floor plans of the various houses and a map of the family compound/community area. You will need to take these maps to register which activities take place during the observations. In the larger map (left) you will be able to orientate yourself and place additional functions. The family compound map (middle) will help you to register movement, various functions and usages. Due to the size of the houses and the private usages inside them you most likely won't be able to register much inside the dwellings (it is rather intrusive). This doesn't mean that when you are able to enter the dwelling you could not register the various functions inside.

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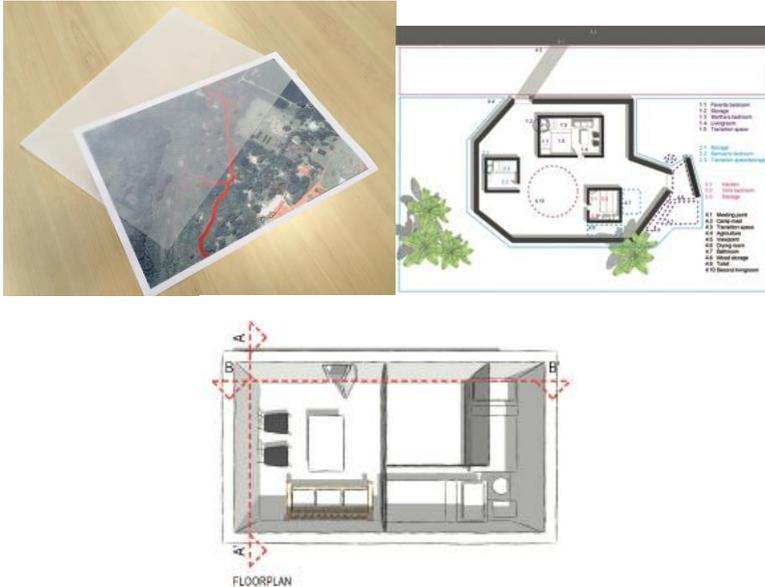


Figure 60: Community Map, Family compound, floor plan of the dwelling

Besides the map registration, you need to take your sketchbook and use timestamp notation (write the time before every observed activity) to keep track of the various observed activities. On top of that you can use the Lumix to make pictures/movies of important functions, actions and behaviour. Remember the more time you spend behind your camera the less attention you have for the actual observation. As you observe individuals during the whole day (without breaks) it is important to take sufficient food, water, batteries and other necessities with you. A break from the observation can lead to missing out essential parts of the daily routine, so make sure you have everything with you. As weather conditions might change rapidly make sure you have the right clothing, footwear and possible accessories (umbrella/poncho) to protect you.

Checklist

- Sketchbook
- Pencil, pen and some different colours
- Charged Lumix camera
- Solar charger
- Small tripod
- Map of the area (to draw on)

- Map of the compound (to draw on)
- Map of the houses (to draw on)
- Watch
- Disinfecting gel

The specific instruction to operate the Lumix camera are included in the *Observer section (p.170)* of this tool.

3. OBSERVING PARENTS

During this part of the observation you will follow one of the parents during an entire day. We ask you to observe them during one weekday and one weekend day, enabling you to better understand how the rest of the workweek looks like and what the weekend activities are. Be aware that many people work 6 days per week and only have one day off! Make appointments with the parents on which days you are welcome to observe them during the whole day. The weekday observation is meant for each family member separately, and weekend observation is meant for the whole family together. If there are infants who stay with mother the whole day, observe them during mother’s observation.

You will notice that your presence in the daily life of the family members will be quite a sight. Although it will influence the behaviour of the family members at some point they will become accustomed to your presence. If you feel the family member is stressed, worried or behaving different from normal (for example: constantly looking at you), please remind them that you are just there to understand their daily life. Moreover, that they should act as normal as possible in order for the observation to be as accurate as possible. The most important elements you should register in your sketchbook and maps/plans are stated in the following scheme below.

TEAM: 1
OBSERVATION: MOTHER
DATE: 21-08-2017

Time	Activity	Duration	Where	With Whom	Skills, Tools, materials	Problems/chances/solutions	Comments	Map/Plan/Sketch/Picture
05:00	Arrival							

Figure 61: Example empty observation sheet

It could be very useful to map where certain friends/family members live on the map or where certain activities take place. In the rest of this chapter we show an overview of daily activities and possible important points you could look for in an observation on Mt Elgon. Below we will explain what you will need to register per element of

notes:

the tool (see image below), **please be aware this is essential to read:**

- **Time:** here you will need to write down the starting time of any activity observed
- **Activity:** here any activity the family member is involved in should be written down, this can range from general activities such as working, walking, chatting, etc. to detailed activities such as writing, knitting, combing hair, dressing up, etc. **Please remember that especially the activities at or around the house/compound should be as detailed as possible.** The activities outside the compound can be more general.
- **Duration:** here roughly keep track of how long the activity takes place
- **Where:** where the activity takes place needs to be written down (should also be marked on the map/plan). For example: inside the main house, behind the kitchen or near the river.
- **With whom:** you will notice that many activities are jointly performed (family members together, neighbours, family, friends or acquaintances). One of the most essential aims of the observation is to know which activities are performed with whom and how frequently. This will help you to evaluate who normally helps with which activity and how you incorporate them in the new design and construction process.
- **Skills, tools or materials:** the second essential aim of the observation is to know which skills, tools and materials people use or have available. This does not only apply to the family members but also to their neighbours, family, friends and acquaintances. In this way you can generate an overview of everything that is available for deciding on the building method, construction and materialization. It is crucial for you to note as many skills tools or materials as possible. You will need this list for the next chapter.
- **Problems, chances or solutions:** while observing you might notice that certain activities are problematic (children sleeping in the kitchen, distance to get water, weight of carrying firewood, etc.), offer chances (knitting could be used in wall making, waste could be used as compost, etc.) or offer solutions (a lot of natural rock available for foundation work, soil is suitable for rammed earth walls).

- **Comments:** here any additional important information can be written down. You can think of emotions (cheerful, happy, sad, etc.) or the pace the activity is (fast, slow, etc.), the physicality of the activity (easy, heavy, etc.) or level of the skill involved (1 – expert- you are fluent in this skill, 2- proficient – you are comfortable using this skill in routine way, 3- familiar - you have basic knowledge of this skill, but plenty of room to learn more, 4- beginner – you are just starting to explore this skill, 5 – unskilled labour)
- **Map/plan/sketch/picture:** To show the activity or explain where and how it takes place you are asked to add any visual aid to prove the observed activities. In a later stage it can also help you to better understand what was necessary to carry out the activity.

GETTING UP

Depending on the time that you set with the parent you will most probably arrive in the dark at the house. Make sure that you sit somewhere close to the house where the parent is sleeping. Not too far as you will miss detailed things and not too close as it might feel intrusive. Normally a distance of 4-5 meter should suffice. Make sure you have a clear line of sight and that it's on a strategic position on the compound. As you already spend some time with the family you know where they often sit, cook, etc. so make sure you can grasp as much as possible. When you picked the spot clearly mark on the map where you sit down. A lot of rituals during the morning will take place behind closed doors, so you won't be able to see them. Do not worry on quiet moments you can ask them in more detail what their activities are and maybe they show how they take place. Also be aware that there might be some children sleeping with the parents in the same house and others sleeping in other structures. Make sure you clearly describe who sleeps where and why. Things you might observe during getting up:

- Praying
- Getting dressed
- Making fire
- Washing (body)
- Waking up children

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

notes:

MORNING

Now everybody is up, it's time to start the day. As you will notice morning rituals are quite different from your own. Stretching from the breakfast menu till the school uniforms the children wear to school. Although you will find yourself in the centre of many activities it is important you focus on the parent you are observing. Observing which activities they have (dressing up children, making fire, putting up a cattle of water, etc.) and how they are performed will help you understand what they need to do every day. Some of these activities (for example eating porridge all together round the fire) have a positive effect on family life, while others obstruct family life (for example: no inside living room to hide from rain). All the observations can be used to integrate in the design of the new house. Things you might observe during the morning:

- Dressing up children
- Making tea/porridge/etc.
- Cleaning part of the house or shoes
- Going to the toilet
- Children leaving
- Putting out the fire
- Packing for work

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

TO WORK

The parent you are observing either has a regular job (farming, teaching, preaching, etc.), is self- employed (farming, commercial selling, houseman/housewife, etc.) or has irregular jobs in or outside the community (small money helping others). Although it might be a little weird at first you will have to follow the parent during their daily activity. Most probably people/children want to talk to you or want to know what you're doing. Remember to have fun and interact with your environment a little, at the same time try not to lose track of your parent. In this way you better understand under which conditions they work (work hours, pressure, stress, etc.) and what revolves around a working day (meeting friends, eating together, buying things down the road, etc.). This network of activities will help you to better understand the network of friends, colleagues and acquaintances. These activities and people can later be used in the design of the new house (help of people, which skills they have, tools people have, etc.). Obviously these activities can take place at work,

home (houseman/wife) or any other place. Things you might observe during to work:

- Walking/cycling to work together
- Talking to friends/acquaintances
- Buying food/drinks
- Dropping children at school
- Distance between work and home

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

AT WORK

The situation you will find yourselves in will be very different. The golden rule is to properly introduce yourself and explain why you are there. Moreover, that you would like offer to work/help for free to better understand the working day of your parent (digging, planting, fetching water, cutting wood, etc.). In a company this might mean you will need to talk to a manager, in a community job any extra pair of hands is always welcome just as in the household. Again you will need to find a balance between observing, interacting and helping. Do not worry too much you won't have sufficient time to write everything down, you will be surprised how much you will learn and understand at the end of the morning. Reserve some time during a break or in between activities to write some words down. Make sure when you make pictures or movies you first ask the involved company or people if it's okay. Things you might observe during at work:

- How physically demanding the work is
- Chatting with colleagues
- Making & doing
- Used materials
- Skills involved in the work

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

BREAKS

During the breaks it is important to understand who the parent interacts with, where they are from and if they meet also besides work. Although it is a little strange to plunge yourself into a social group, you will be surprised how welcome you will be to join. Again start by introducing yourself, why you are there and what you would

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like to know. If you missed a name or you didn't get what they said please just ask them again. The fact you know someone by name and who they are is maybe the most appreciated thing amongst local residents. Yes, to remember all these people is sometimes really exhausting, however to be a part of the community now and in the future will make the difference between a success and a failure. Things you might observe during breaks:

- Eating
- Drinking
- Chatting
- Toilet

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

TO HOME

Is comparable to going to work. However, most of the family members shop for supper or other things down the road. Where in the western world we go to a supermarket in rural areas people visit family, friends or acquaintances to buy food. Everyone within the communities offers something for a flexible prices. Talking about everyday life and slowly moving towards a soft price is a century old tradition seen all around the world. Although it might be time consuming, it's a nice way of relaxing a little coming back from work. Obviously it is impossible to follow the conversations, but again don't be shy and introduce yourself to everyone. Ask them how they know each other and let the rest up to them. Although people will have difficulties to speak in English patience, hand gestures, drawing in the sand and a good laugh gets anyone involved. As you will understand mapping where these people sell their products, live and what they offer is very important. Things you might observe during go home:

- Walking with colleagues/friends
- Buying groceries
- Picking up children
- Sitting
- Relaxing
- Chatting

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

AT HOME

By the time your parent gets back home, most probably the sun is setting and everyone is busy to help preparing for the evening. Again you will focus solely on the activities the parent is involved in. Place yourself on a strategic position on the family compound. After preparing supper and eating there is time to relax, perform chores, meet friends or visit family and friends. By this time you are starting to get tired yourself. Being a whole day in the field observing, working and talking takes a lot of energy. There is nothing wrong to find a comfortable spot where you take a little more distance from the family and try to relax a little yourself. If the children, friend or family want to talk or play with you please do not hesitate to get involved. As long as you remember to gather as much information as possible and your main priority is to understand everyday life. Things you might observe during at home:

- Cooking
- Cleaning
- Fetching water
- Washing (clothes, house, etc.)
- Meeting friends

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

TO BED

Slowly everyone will prepare for night time. Most probably because you are there the children and parents will feel a little uncomfortable to leave you behind (as you are still a guest to the house). You can tell them a couple of times that they should do everything as how they would normally do. Make sure you keep track who sleeps where and which activities your parent is involved in.

Things you might observe during to bed:

- Washing (body)
- Toilet
- Brushing teeth
- Putting out fire

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

After a full day observing your family member you will be exhausted

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when you come back home. Before going to sleep it is important to write down the things you didn't get to write down yet. You don't have to write out everything however small notes will help you on the next day to write out everything.

4. OBSERVING CHILDREN

During this part of the observation you will follow one of the children during an entire day. If children are of similar age and attend the same school (same schedule) their observation can be combined. We ask you to observe them during one weekday and one weekend day, enabling you to better understand how the rest of the school week looks like and what the weekend activities are. In the occasion the children have comparable age (1-2 years) difference you can observe both of them at the same time. Some of the children are too young to communicate sufficiently in English. In this case make sure you group the children in such a way (comparable age, going to the same school, etc.) that at least one child can explain the activities. Although they might have different friends and habits most of the essential activities and behaviour will be comparable. Make appointments with the parents on which days you would like to observe the children and make sure the school is informed that you are joining the children at school. You could go to the school together (with parents) to schedule your observation days. You will notice that your presence in the daily life of the family members will be quite a sight (for both the family member as their environment). Although it will influence the behaviour of the family members at some point they will become accustomed to your presence. If you feel the family member is stressed, worried or behaving different from normal (for example: constantly looking at you), please remind them that you are just there to understand their daily life. Moreover, that they should act as normal as possible in order for the observation to be as accurate as possible. The most important elements you should register in your sketchbook and maps/plans are stated in the following scheme below.

TEAM: 1
OBSERVATION: MOTHER
DATE: 21-08-2017

Time	Activity	Duration	Where	With Whom	Skills, Tools, materials	Problems/chances/ solutions	Comments	Map/Plan/Sketch/Picture
05.00	Arrival							

Figure 62: Example empty observation sheet

It could be very useful to map where certain friends/family members

live on the map or where certain activities take place. In the rest of this chapter we show an overview of daily activities and possible important points you could look for in an observation on Mt Elgon. Below we will explain what you will need to register per element of the tool (see image below), **please be aware this is essential to read:**

- **Time:** here you will need to write down the starting time of any activity observed
- **Activity:** here any activity the family member is involved in should be written down, this can range from general activities such as working, walking, chatting, etc. to detailed activities such as writing, knitting, combing hair, dressing up, etc. **Please remember yourself that especially the activities at or around the house/compound should be as detailed as possible. The activities outside the compound can be more general.**
- **Duration:** here roughly keep track of how long the activity takes place
- **Where:** where the activity takes place needs to be written down (should also be marked on the map/plan). For example: inside the main house, behind the kitchen or near the river.
- **With who:** you will notice that many activities are jointly performed (family members together, neighbours, family, friends or acquaintances). One of the most essential aims of the observation is to know which activities are performed with whom and how frequent. This will help you to evaluate who normally helps with which activity and how you incorporate them in the new design and construction process.
- **Skills, tools or materials:** the second essential aim of the observation is to know which skills, tools and materials people use or have available. This does not only apply to the family members but also to their neighbours, family, friends and acquaintances. In this way you can generate an overview of everything that is available for deciding on the building method, construction and materialization.
- **Problems, chances or solutions:** while observing you might notice that certain activities are problematic (children sleeping in the kitchen, distance to get water, weight of carrying firewood, etc.), offer chances (knitting could be used in wall making, waste could be used as compost, etc.) or offer solutions (a lot of natural rock available for foundation

notes:

work, soil is suitable for rammed earth walls).

- **Comment:** here any additional important information can be written down. You can think of emotions (cheerful, happy, sad, etc.) or the pace the activity is (fast, slow, etc.), the physicality of the activity (easy, heavy, etc.) or level of the skill involved (novice, average, advanced, expert, etc.)
- **Map/plan/sketch/picture:** To show the activity or explain where and how it takes place you are asked to add any visual aid to prove the observed activities. In a later stage it can also help you to better understand what was necessary to carry out the activity.

GETTING UP

Depending on the time that you set with the parents and children you will most probably arrive in the dark at the house. Make sure that you sit somewhere close to the house where the child(ren) is sleeping. Not too far as you will miss detailed things and not too close as it might feel intrusive. Normally a distance of 4-5 meter should suffice. Make sure you have a clear line of sight and that its on a strategic position on the compound. As you already spend some time with the family you know where they often sit, cook, etc. so make sure you can grasp as much as possible. When you picked the spot clearly mark on the map where you sit down. A lot of rituals during the morning will take place behind closed doors, so you won't be able to see them. Do not worry on quiet moments you can ask them in more detail what their activities are and maybe they show how they take place. Also be aware that some children sleep with the parents or that they sleep together in one structure. Make sure you clearly describe who sleeps where and how. Some children (especially very young ones) might get scared when they spot you for the first time. There are some stories parents tell their children when they misbehave (the white man might come and take you, or other scary things), therefore its quite normal when you find a white man in the early mornings at your house. Be kind and give them time to wake up and adjust to your presence. The older children will show them everything is fine. Things you might observe during getting up:

- Praying
- Getting dressed
- Making fire
- Washing (body)
- Waking up brothers and sisters
- Dressing up brothers and sisters

Make sure you write down how, where and with whom the activity is

being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

MORNING

Now everybody is up, it's time to start the day. As you will notice morning rituals are quite different from your own. Stretching from the breakfast menu till the school uniforms the children wear to school. Although you will find yourself in the centre of many activities it is important you focus on the child(ren) you are observing. Observing which activities they have (dressing up brothers and sisters, making fire, putting up a cattle of water, etc.) and how they are performed will help you understand what they need during every day. Some of these activities (for example eating porridge all together round the fire) have a positive effect on family life, while others obstruct family life (for example: no inside living room to hide from rain). All the observations can be used on a later moment to be integrated in the design of the new house. Things you might observe during the morning:

- Dressing up children
- Making tea/porridge/etc.
- Cleaning part of the house or shoes
- Going to the toilet
- Children leaving
- Putting out the fire
- Packing for work

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

TO SCHOOL

The child(ren) you are observing either goes to school, has a regular job (farming, teaching, preaching, etc.), is self- employed (farming, commercial selling, houseman/housewife, etc.) or has irregular jobs in or outside the community (small money helping others). In this area its quite normal for children that do not go to school to help in the household or try to earn a living for the family. Although it might be a little weird at first you will have to follow the child(ren) during their daily activity. Most probably people/children want to talk to you or want to know what you're doing. Remember to have fun and interact with your environment a little, at the same time try not to lose track of your child(ren). In this way you better understand under

notes:

which conditions they learn or work (work hours, pressure, stress, etc.) and what revolves around a school/working day (meeting friends, eating together, buying things down the road, etc.). This network of activities will help you to better understand the network of friends, colleagues and acquaintances. These activities and people can later be used in the design of the new house (help of friends, which skills they have, tools people have, etc.). Obviously these activities can take place at work, home (houseman/wife) or any other place. Things you might observe during to work:

- Walking/cycling to work together
- Teasing
- Playing
- Talking to friends/acquaintances
- Buying food/drinks
- Dropping brother/sisters at school
- Distance between school/work and home

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

AT SCHOOL/WORK

The situation you will find yourselves in will be very different. The golden rule is to properly introduce yourself and explain why you are there. Moreover, that you would like offer to learn/work/help to better understand the working day of your child(ren) (reading, singing, playing, digging, planting, fetching water, cutting wood, etc.). In a school/company this might mean you will need to talk to a teacher/headmaster/manager (as explained before organise this preferably before you start your observation), in a community job any extra pair of hands is always welcome just as in the household. Entering a school and classroom at first will be total chaos! Don't worry just greet everyone and with time it will calm down. A good strategy is to introduce yourself in front of the class/school (who are you, where you from, etc.) and explain why you are observing. Again you will need to find a balance between observing, interacting, learning and helping. Do not worry too much you won't have sufficient time to write everything down, you will be surprised how much you will learn and understand at the end of the morning. During the teaching there should be sufficient time to write things you previously observed down. In case of working make sure you use some time in between activities to write some words down. Make sure when you make pictures or movies you first ask the involved

company or people if it's okay. Things you might observe during at work:

- How physical demanding learning/working is
- Chatting with classmates/colleagues
- Learning, Making & doing
- Used materials
- Singing, writing, sketching
- Skills involved in learning/working

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

BREAKS

During breaks it is important to understand who the child(ren) interacts with, where they are from and if they meet also besides school/work. Although it is a little strange to plunge yourself into a crowd, you will be surprised how welcome you will be to join. At school this means you will play together with the children. Again you can start by (re)introducing yourself, why you are there and what you would like to know. If you missed a name or you didn't get what they said please just ask them again. The fact you know someone by name and who they are is maybe the most appreciated thing amongst local residents. Yes, to remember all these people is sometimes really exhausting, however to be a part of the community now and in the future will make the difference between a success and a failure. Things you might observe during breaks:

- Playing
- Sitting
- Social groups (groups of children)
- Eating
- Drinking
- Chatting
- Toilet

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

TO HOME

Is comparable to going to school/work. However, most of the family members shop for supper or other things down the road. Where the

notes:

parents buy groceries, children are often trying to buy something small (sugarcane) and play while going home. Obviously it is impossible to follow all the conversations, but again don't be shy and introduce yourself to everyone. Ask them how they know each other and let the rest up to them. You can talk about the roads, the rain, dreams, basically anything. Although some children will have difficulties to speak in English patience, hand gestures, drawing in the sand and a good laugh gets anyone involved. As you will understand mapping where these children live and which favourite places to play or hangout are very important. Things you might observe during go home:

- Playing
- Walking with classmates/friends
- Buying groceries
- Picking up brothers/sisters
- Sitting
- Relaxing
- Chatting

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

AT HOME

By the time child(ren) gets back home, most probably the sun is setting and everyone is busy to help preparing for the evening. Again you will to focus solely on the activities the child(ren) is involved in. Place yourself on a strategic position on the family compound. After preparing supper and eating there is time to relax, perform chores, meet friends or visit family and friends. By this time you are starting to get tired yourself. Being a whole day in the field observing, working and talking takes a lot of energy. There is nothing wrong to find a comfortable spot where you take a little more distance from the family and try to relax a little yourself. If the children, friends or family want to talk or play with you please do not hesitate to get involved. As long as you remember to gather as much information as possible and your main priority is to understand everyday life. Make sure that in any activity you join and possibly help. Things you might observe during at home:

- Cooking
- Playing
- Cleaning
- Fetching water

- Washing (clothes, house, etc.)
- Meeting friends

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

TO BED

Slowly everyone will prepare for night-time. Most probably because you are there the children and parents will feel a little uncomfortable to leave you behind (as you are still a guest to the house). You can tell them a couple of times that they should do everything as how they would normally do. Make sure you keep track who sleeps where and which activities your parent is involved in.

Things you might observe during to bed:

- Washing (body)
- Toilet
- Brushing teeth
- Putting out fire

Make sure you write down how, where and with whom the activity is being performed. Note in the floor, compound and surrounding plans where this activity is taking place. Register what is positive and negative in the activity also explain why.

After a full day observing your family member you will be exhausted when you come back home. Before going to sleep it is important to write down the things you didn't get to write down yet. You don't have to write out everything however small notes will help you on the next day to write out everything.

5. WRITING OUT THE OBSERVATION

Make sure that you spend the next day at home to recharge and give yourself time to write out everything that happened. When you pressure yourself too much you will tend to forget things or become less receptive. Take your sketchbook, maps/plans and the notes you made the night before of the things you still need to write down. Start at the beginning of your sketchbook and try to retrace your steps throughout the day. If needed add notes to the sidelines of the booklet to complete your observation, the same counts for the maps and floor plans.

OFFICIAL REGISTRATION OF THE OBSERVATION

Now your notes, maps & plans are complete it is time to combine your

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data in one overview. For this purpose we developed the Observation Registration Tool (which can be found on the Google Drive and USB-stick attached to the book). With this tool you are able to combine the gathered observation data from your sketchbook, maps and plans with the pictures you have taken during the observation. In this way you are able to generate a full overview of all the activities the family member is involved in, when, where and with whom they take place. The overview will not only help you to prove vital design decisions in a later stage (where are the problems/changes/solutions), it also helps to discuss the your findings with the family after completing the observation. Because this support uses an observation method as main reflection method, every team member will observe half a day in a row. During noon you will swap your roles and therefore there is a need to combine the notes, pictures and plans at the end of the day. The observation registration tool will help you in your efforts to combine the data.

TEAM: 1
OBSERVATION: MOTHER
DATE: 21-08-2017

Time	Activity	Duration	Where	With Whom	Skills, Tools, materials	Problems/chances/solutions	Comments	Map/Plan/Sketch/Picture
05:00	Arrival							
05:15	Praying	10 minutes	Inside main house	Parents together	-			
05:25	Getting dressed	5 minutes	Inside Main house	Alone	-		Clothes are stored in a box in the living room	-
05:30	Making fire	5 minutes	Inside Main house	Alone	Fire making cutlery & wood		-	-
05:35	Washing	5 minutes	Outside In front of main house	Alone	Bucket, soap, water		By hand	-
05:40	Waking up children	5 minutes	Kitchen structure	Alone	-		All daughters sleep inside the kitchen structure with the youngest brother.	
05:45	Making tea	15 minutes		Alone	Mixing and stirring Pan, water, tea, milk & sugar			

Figure 63: Example of the filled in observation sheet

CONFIRMING OBSERVATION RESULTS AND ADDING MISSING INFORMATION

After performing the observation, registering all the activities and generating the overview (observation registration tool), it is time to confirm and discuss your findings with the family. Make sure you have finished all the observations (all family members) and hand over the file (two days in advance) to the main researcher (for printing). Plan a morning or afternoon with the family to go through your findings together. Start by explaining the observation of the youngest family member, most of the times this observation is the shortest and relaxes the rest of the family a little (on what you

registered). If you find it resourceful you can use your camera (Lumix) or laptop to show the pictures, sketches and maps.

Be aware that especially the problems are a very sensitive topic. However, they are essential to decide and prioritize what the family perceives as their problems. Discussing chances and solutions will help you to understand what the family finds acceptable and what is absolutely not preferred. For example you might find natural resources (soil, grass, wood, etc.) that you perceive as possible solutions, however, the family might completely disagree with you (traditional dwellings are not preferred). This does not mean this solution should not be considered, however, it will give you an indication in which solution directions you might need to find sufficient explanation to convince the family.

Take your time to go through each and every individual family member. In some cases parents or children will help each other to add information (for example: you always comb your hair before drinking tea in the morning), always make sure that you confirm this with the individual you are evaluating.

CHECKLIST

- Printed filled in observation registration tool (A3)
- Sketchbook
- Pencil, pen and some different colours
- Charged Lumix camera
- Solar charger
- Small tripod
- Made observation map of the area
- Made observation map of the compound
- Made observation plan of the houses

Roundup and room for questions

As you spend a lot of time with the family you are slowly becoming a part of it. From this stage it is important that you regularly ask the family members if they have any questions or comments they would like to share. Keeping them updated on which

VI. CONTEXT DEPTH ANALYSIS

To prepare for the design phase it is important to start analysing the context of your project in a more conventional approach. The mapping in chapter 7 helped you to get grip on the surrounding, here the registered elements followed mainly on your own observations while walking in the area. Here places of importance, usage and behaviour are perceived with the least influence from local opinions (family, relatives and community members). After observing the family members in their daily activities your insights in the area changed substantially, hopefully in a more objective way. Now you can weigh your own initial observation with those of the family. In most cases this means you are able to analyse in a more detailed matter. Some of the analysis will focus on the direct surrounding of the family (compound & structures, ground) some on the community scale (garden, public areas, etc.) and some on the regional scale (available materials & climate). This analysis you will use in the next chapter where you try to better understand which capacities there are in the community and to whom they belong to. Moreover, will it help you to make decisions which building typology, building technology and materials you should chose to design the new house.

1. COMPOUNDS, STRUCTURES & ORIENTATION

The most important departure point for your future intervention (house) is the immediate context in which it will stand. This context with its building traditions, customs and behaviour are most probably very different compared to where you come from. To stay as close as possible to the current building tradition when interpreting the surrounding, can be performed by mapping the exact location and orientation of the surrounding compounds & structures. As before your main departure point is the family compound of the family you are helping. In previous chapters you already mapped the compound and direct surroundings on a more general level. You can use the files you produced in these chapters as departure point to start you analysis. In the example below we use the Sketch up file of the family compound you produced earlier. We advise you to recheck the original measurements to make sure the basis of your context depth analysis is accurate (seen in the image below).

notes:



Figure 64: Checking the measurements of the family compound

One of the most important aspects is the orientation of the dwellings. In positioning the houses the families weigh a multitude of factors, sometimes deliberately but often intuitively. This makes it so much more difficult from an outsider to understand what contributes to the location and orientation of the house. We will describe you a common situation observed in the previous research performed by M. Smits on Mt. Elgon, however it is an example, and you need to fully analyse the context of the family's compound.

In most cases the entrance doors connect directly to the outside "living room" of the family (indicated with red arrows). In this "living room" the family prepares food, does their laundry and many other activities. The green low fences mark the family compound area. This is often only partially closed, allowing neighbours or other people to visit the family. The semi-enclosed way of "closing" the compound is meant to make people aware they are entering the living space of the family. Due to its semi-enclosed nature people can partially see what the family is up to (if they are at home, doing an activity, etc.) and they allow a distant chat (marked with green arrows). Often friends or relatives shout something over the fence to greet or make a short chat. Another important aspect is how in many situations the main entrance to the door is turned away from the main infrastructure (roads). This makes sure that no one walking past the compound can look into the house (seeing private activities). The same counts for multiple family compounds living close to each other, house entrances are positioned away from each other. The only exemption is when the families are related, here they will face towards a larger central living area. Giving direct entrance into the house and visibility for people passing by is highly uncommon and should be prevented.



Figure 65: Entrances and connectivity

Now you know a little more about the location and orientation of the house it is time to expand the mapping of the direct surroundings of the family compound (see image below). During the observations you have noticed with which direct neighbours the family has close contact or shared activities. These families will most likely also be possible helpers to the construction of the new house. Before you start you mapping make sure you inform the neighbours you want to visit them and for what purpose.

As explained in previous chapters start by measuring the plot (with long tape measure) and as soon you have identified the borders work your way inside. Measuring the exact location of the corners of the various structures (houses, kitchen, washing area, toilet, garden, etc.). Make sure you measure the size of the overhang of the roof & door and window openings (to register the orientation of the houses).



Figure 66: Checking the measurements of the family compound

notes:

Repeat this process to map out as many possible helpers to your project. To successfully build a new house for the family we advise you to find 10-15 families that are willing to help during the construction period. The family can advise you who they might be. Ask them whom they might have helped in the past or families they think would be interested to help.

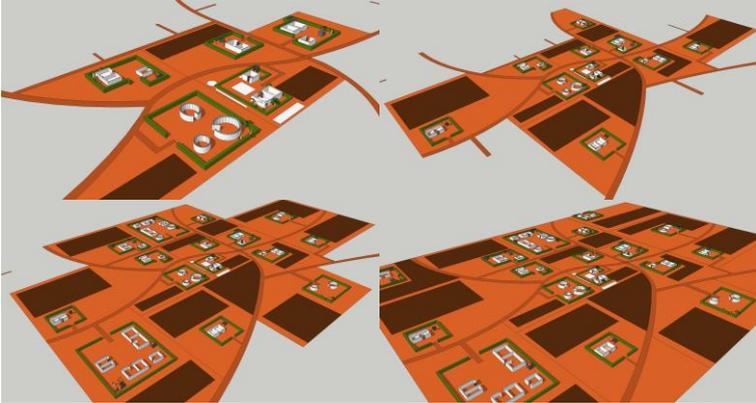


Figure 67: Mapping out the related families.

After mapping out most of the possible supporting families in the community you better understand where they live and under which circumstances. This map will help you in the next chapter to generate an overview of the available typologies, morphologies, building methods and used material. Moreover do you now know where the different boundaries are and which functions the various compounds hold (trees, gardens, toilets, etc.)



Figure 68: Mapping out boundaries and trees

2. TYPOLOGY, CONSTRUCTION METHODOLOGY AND MATERIALIZATION

By now you gathered a lot of information, you start to know the project surrounding well and have most likely slowly become a community member. You are eager to start and you have started dreaming about design, solutions or activities. Make sure that you always write ideas down in your booklet so you are always able to retrieve them later on. But before you can start to think about solution directions you first have to better understand what the community is actually able to do when building houses by themselves. In the community there are many different houses that could offer valuable solution directions. Therefore in this subchapter you will analyse the different typologies, as they will tell you the knowledge and experience that is present in the community. In the map you generated in the previous subchapter you will be able to identify various categories based mainly on their: shape and type of roof.



notes:



Figure 69: Various house typologies

In the *Figure 69* a schematic overview of basic typologies is given; rectangular, square and round. With three different typologies of roofing; tipped, angled and flat. In the image on the right two examples are given of a l-shaped and u-shaped floor plan. Although the majority of houses do not have any additions there are quite some cases where small attachments are made. This can have a wide variety of reasons: storage, additional bedroom, kitchen, etc. **Important is for you to investigate what (who) needs a separate space** –e.g. it is customary to give children (especially boys) when they become teenagers a separate room. They need to start living by themselves under their own roof.

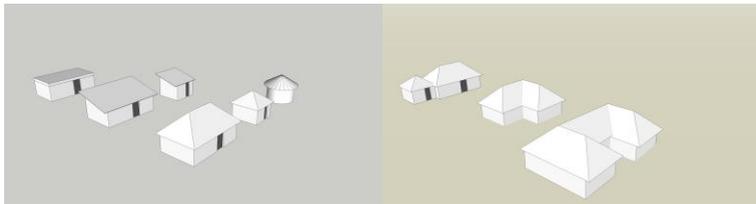


Figure 70: Various house typologies

Try to find a few key typologies (groups) that you would like to analyse that offer different typologies, building techniques and material (e.g. you could make four general groups: Mud based houses with a thatched roof, mud based houses with a iron sheet roof, brick based dwellings with a thatched roof and brick based dwellings with a thatched roof). Pick one house in each category and analyse the building methodology and used materials. Please make sure you talk with the residents how the building was made, who was involved, where (point out on the map you made) they got the materials and

which things they had to pay for (possibly indicating how much). In the image below we show a schematic section exposing the building methodology and materials used. Make sure you at least make one section and include a floor plan and facades all with measurements.

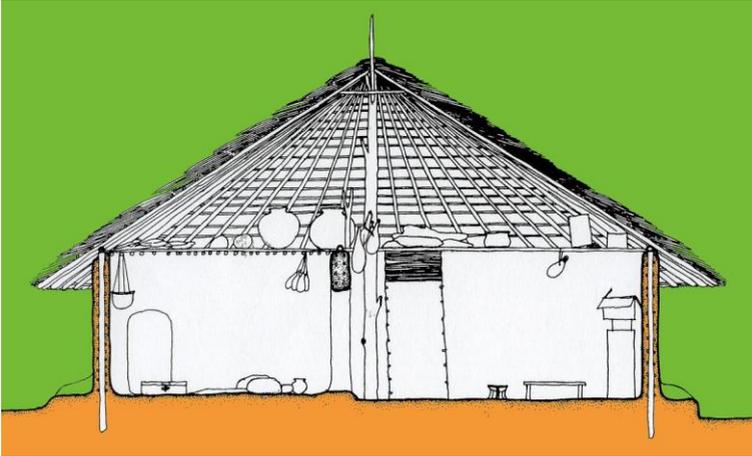


Figure 71: Section through a house

3. AVAILABLE MATERIALS IN THE AREA

GROUND

Soil in rural areas (including the Sub-Saharan Africa) is an essential part of the building culture. In the vernacular tradition on Mt. Elgon almost 80% of the dwelling was constructed out of local soil. The walls are filled with balls made out of sticky mud, the wall finish a mixture of fine sand with cow dung and the floors layering stones, clay and fine sand. Where you can find the best soil is a well-known fact in the community but for someone from outside a mystery. Knowing your soil and where to get is fundamental in a successful housing project.

SOIL LAYERS

Every project starts with understanding the ground you are building on. Starting by asking the family the potential building site. For this exercise we ask you to dig a hole of 50x50cm and dig at least 1 meter deep (depending how deep you can go) but we advise you to go at least 1,5-2 meters deep. Take at least 10 large (1 litre) empty bottles of water so you can store you precious found soil. While digging the hole you will notice that there are different layers of soil. Some loose and dry, others wet with a lot of clay or some with gravel. Make sure

notes:

that every time you find a new type of soil you collect at least half of it in a bottle and number the bottle according to the layer and note the depth you found it. After digging the hole, evaluate the most stable soil layer you found. This will become the foundation layer of the new house.



Figure 72: Soil sample collection

TAKE SOIL SAMPLES



Figure 73: Soil samples – location of samples

As explained there are many myths where you can find the best soil for a certain job (construction walls, finish, floors, etc.). This knowledge is based on the vernacular building methodology they still use or used to build with. The locations and types of soil are often shared over many generations; it would be wise to investigate the properties of this soil and where to get them. Therefore you will need to ask community members which soil they used and where they got it. Make sure that you clearly map where you got the samples (see image below), on which depth and what purpose the soil is supposed to have. If the previous map does not cover the area you need for

mapping the samples make a new one that is large enough. In the next subchapter you will need this map anyway to map out all available materials in the area.

TEST SOIL SAMPLES

Most likely you made at least 10 bottle samples in the field. Take them to the families home and fill them with water. Give them a good shake till there is no soil sticking to the bottom and everything is mixed properly. Over the period of approximately a week the sample will slowly become clearer and the soil will settle down. Be aware this will only work if the samples are not touched or moved! Therefore, find a good spot to store the bottles preferably in a spot where you are able to inspect the bottles with light without moving them. Any movement will disturb the measurement and therefore mislead you if you want to use it later on when building the house. In the image below you can see a test experiment made a few years ago in the same area you will be working.

Logically the heaviest particles will start to sink immediately to the bottom of the bottle. These particles will most likely consist of rock, stones and metals. They create a dark layer on the bottom and when inspected from the bottom the pieces are visible. The second layer consists of clay particles, in the area you are working in; the percentage of clay is very high. The third layer consists of sand particles and the fourth of any light organic particles such as leaves, twigs, etc. Depending on the house component (floor, walls or finishes) and the construction methodology you will be able in a later stage to assess where to find the right type of soil and how to mix different soils till you have the perfect mixture! This test can be repeated during the construction to make sure the mixture you want to use has the right balance.

If you want more elaborate information on how you can use soil in cobb building, rammed earth or their stabilized earth techniques please browse the internet.

WOOD

The second most important building material in the vernacular tradition of Mt. Elgon is wood. This renewable and biobased material is used to make the main load bearing construction; wall posts and roof construction. As Mt. Elgon is a very fertile and green area there seems to be a lot of wood available. However, due to the rapidly increasing population in the area wood has become a scarce material, due to three main reasons. Firstly, the hardwood used in construction

notes:

takes decades to grow mature and the forest of Mt. Elgon simply can't keep up with the increasing demand. Secondly, more and more people want to farm the fertile slopes of the mountain, which means patches of the forest are being burnt down every year. Thirdly, most people cook on open fires and they prefer to use small branches and trees. These small trees normally are the new generation of trees to grow; as a result the forest is not producing enough mature trees anymore. However, wood remains an important material in any house and it is very important to know where wood can be found and bought. Ask the family or community members where you can buy raw wood (uncut wooden posts) and timber (planks, beams and posts). It would help to inquire prices in order to plan possible future decisions, as you will notice wood and timber are very expensive in the area. Like the previous subchapter mark the locations where you can find the materials, note who owns it and keep in mind the distance you would have to travel to collect the materials.

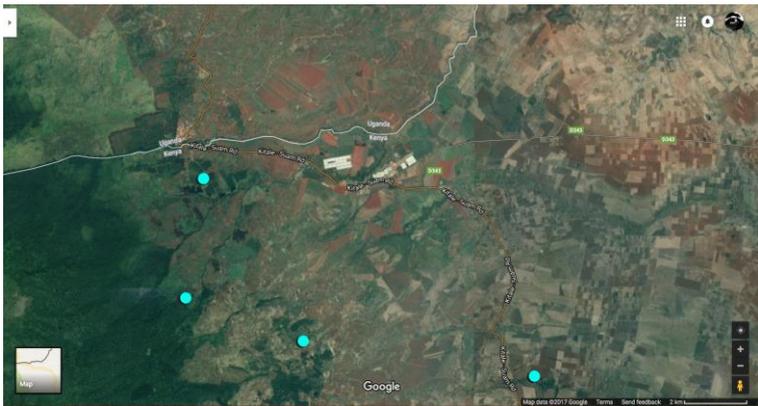


Figure 74: Location of wood

GRASS AND THATCH

There is a wide variety of grasses and thatch in surrounding of your project. Some of them are highly valuable in finishing roofs, others for the cattle of the inhabitants. Although grass grows very fast the one used for roofing can take years to mature (sufficient length and thickness). Where in the past there were many natural grass fields, there are now not too many left. As people want to cultivate as much land as possible most of them prefer to grow food. Resulting in less available grass and an increase on the price of grass. The family and community can help you to locate the right thatch. Again map the locations, note who owns them and what they would like in return for the thatch per bundle.



Figure 75: Thatch

notes:

FARMLAND

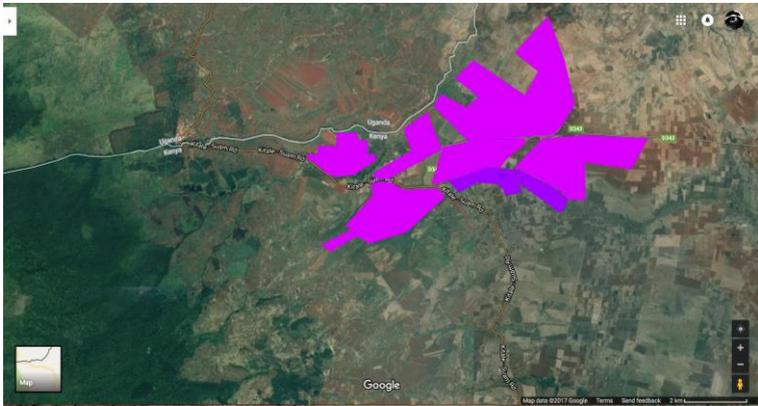


Figure 76: Farmlands

The largest source of income in the area is generated through farming. The largest employers (such as: Governmental and commercial farms) in the area are all farms. Almost all families have a small farm at their house or in proximity to where they live. Here they mainly produce the food for own consumption and is of vital importance to their daily livelihood. Moreover, are there many families that produce food for selling in their community, at the road or on one of the local markets. Therefore, it is of vital importance to know where the family and their community produce food and in which quantity. Moreover, how much is used for own consumption and how much is leftover to sell. Although quantities can vary a lot between years, there is an average yield the family is counting on. This can tell you a lot on the building capacity of the family as it forms the main exchange good for labour and materials. In the next chapter this will be evaluated more elaborately. Again clearly mark where they family have their farmland, where the community farmlands are

and where the commercial ones can be found.

WATER POINTS & ELECTRICITY POINTS



Figure 77: Water points and electricity points

Previously you made a map of the most important places in the community. In the observations you have been following each family member on their daily route through the community. On a very young age children are expected to help in everyday life, which can involve; fetching water, searching fire wood, washing clothes, cooking and helping on the farmland. For both the children as the parents every day activities takes most of the time available. Therefore, sitting down for a cup of tea just chatting is a rare activity. Most of the community members work together during their daily activities and as a result most of the public areas are defined by the “function” they offer. Trails of children in the afternoon carrying water or firewood are therefore a common sight. The water points are a vibrant place

notes:

where the children play with each other and fulfil their daily chores. In the evenings most of the activities evolve around light. If there is electricity this will centre at the light points in the community, a light bulb, a scarce television or a mobile phone. Although the points seem unimportant to map, the social groups they involve are essential to understand the established and potential social network of your family. Make a map of all the water points and fixed light points in the area. Try to be as detailed as possible, for example: which families are at the water point, with whom do the family members interact, etc.

PUBLIC AREAS: WORK/SCHOOL/SHOPS/CHURCH//ETC.

Besides collecting water, washing points, or evening meetings there are many other daily activities worth to better understand. Not only where they are located also the route taken by the family member tells you a lot about their social network. Often they will visit different families on their way to work or school to walk or cycle together. Others will visit on "meeting points" down the road or on main infrastructural nodes. Map these meeting and arrival points; also make sure you map the routes the family members take (including where they stop to collect each other). For most families the main source of income is generated within the informal economy. Here people exchange their own produced goods and skills for those of others. Some of the families setup a small shop down the road where others sell the goods directly from the farmland at set times. Not only are these exchange spots important for the survival of the families, they also form an important social node in the total network of the family.

Another example of such an important social node are the churches. Although few of them have an official church status, there are many families that run a small chapel or service at their own house. Many men are pastors or have another important function at church, as social status is more and more connected to religion instead of the community status (chief, elder, advisor, etc.) being an important person of a church community is very important. Although the status is not that important for this analysis, it tells you there is much more to see than the naked eye. On their turn they form an important social node within the community, which could be turned beneficial for your project. Building churches or helping church members in building their dwelling is common practice and could be of high value. To properly map these churches ask the family and community members where they can be found.



Figure 78: Examples of places of importance: church, water point, shops & soccer pitch

Besides the formal places of importance (e.g. church) there are places where people like to meet, have a break, sit down. Sometime it would be a shade under a big tree, a crossroad or a rock. It is very important to mark those places too, as they are part of social lie of the community

CLIMATE

Climate conditions have major impact on the design decisions. Because climate on Mount Elgon differs so much from ours it is crucial to study it.

SUN AND TEMPERATURE

Due to geographical location of the region, sun on Mt Elgon is very strong. There is however little variation in angle during the year (as it is very close to the equator), which has a consequence in forming of the roof. In order to create a shadow, there is no need for the long overhang (although it might be needed for the type walls you intend to build).

Sun creates also big difference in temperatures in between night and day. To achieve a comfortable interior it is necessary to think of wall building materials which are capable of accumulating the heat of the day and give it back during the night. Second aspect is a roof. Material

notes:

which does not insulate from the heat of the sun is radiating heat into the inside, while losing all the heat instantly when the sun goes down. Very common example of such material is the iron sheet. A climate roof could however insulate against sun radiation.

Annual mean temp	> 20°C		15-20°C		< 15°C	
Average relative humidity	Day	Night	Day	Night	Day	Night
0 - 30 %	26-34	17-25	23-32	14-23	21-30	12-21
30 - 50 %	25-31	17-24	22-30	14-22	20-27	12-20
50 - 70 %	23-29	17-23	21-28	14-21	<i>19-26 wij</i>	<i>12-19 wij</i>
70 - 100 %	22-27	17-21	20-25	14-20	18-24	12-18

Table 2-1: Human Comforts Limits Source: Overseas Building Note 158 (1974) Building for Comfort, p.4

Figure 79: Human Comforts Limits Source

RAIN AND HUMIDITY

During raining season, the region gets very sudden, heavy rainfall. Houses will need to be protected from it and its consequences. Location on the slope of the mountain makes the water run quicker and in river-like manner. This makes foundation work vulnerable – soil can get washed away quickly. Rainfall is also a significant for roof choice. Heavy rain creates incredible noise when dropping on e.g. iron sheet. It becomes impossible to hear your interlocutor.

WIND

Wind on Mount Elgon differs depending on the season. Even though by talking to locals (or investigating) you can find the general directions of cold wind (and rain). Strong wind can turn into dust devils, which are giving extra pressure on the roof. The construction needs to either give up easily – without damaging the walls, or be strong enough to sustain the suction.

4. RECOMMENDATIONS

Figure 80 shows the general recommendations for sketch design in the climate conditions to be expected on Mt. Elgon.

Sketch Design Recommendations						
Indicator totals						Recommendations
Humid			Arid			
H1	H2	H3	A1	A2	A3	
						LAYOUT
			0 - 10		5 - 12	1. Buildings orientated in east-west axis to reduce exposure to sun
			11 or 12		0 - 4	2. Compact courtyard planning
						SPACING
11 or 12						3. Open spacing for breeze penetration
2 - 10						4. As 3, but protect from cold/hot wind
0 or 1						5. Compact Planning
						AIR MOVEMENT
3 - 12						6. Rooms single banked. Permanent provision for air movement
1 or 2			0 - 5			7. Double-banked rooms with temporary provision for air movement
0	2 - 12		6 - 12			8. No air movement requirement
	0 or 1					
						OPENINGS
			0 or 1		0	9. Large openings, 40-80% of N and S walls
			11 or 12		0 or 1	10. Very small openings, 10-20%
			Any other condition			11. Medium openings, 20-40%
						WALLS
			0 - 2			12. Light walls; short time lag
			3 - 12			13. Heavy external an internal walls
						ROOFS
			0 - 5			14. Light insulated roofs
			6 - 12			15. Heavy roofs, over 8 hours' time lag
						OUTDOOR SLEEPING
				2 - 12		16. Space for outdoor sleeping required
						RAIN PROTECTION
			3 - 12			17. Protection form heavy rain needed

Table 2-6: Mahoney tables: Sketch design recommendations
 Source: Climate and House Design, 1971 (TUE RLM 71 CLI)

Figure 80: Sketch design recommendations

VII. INTERVIEW: CAPACITY ANALYSIS

In the previous chapter you assessed everything you could find in and around the family compound. All these elements together enable you to make valuable decisions, however the ownership and usefulness of the objects(resources) remain abstract. In order to clarify it in this chapter we will try to transform all available elements into capacities. Capacities are all things that possibly enable us to do or make certain things. In the realm of the built environment they can be described in 4 different categories:

- Resources (wood, grass, soil, etc.)
- Tools (hammer, saw, machete, needle, brush, etc.)
- Skills/knowledge (weaving, digging, thatching, cooking, washing, etc.)
- Income/labour (farmer, carpenter, cook, etc.)

At this moment the family is using their capacities to sustain their current life. Some of the family members are working to get food and drinks, others are going to school or helping with the daily activities. All of them are based on certain capacities and in their turn generate other capacities. Because the parents are generating income, the family has a place to live in, food and water. This enables the children to go to school and generate more skills/knowledge hopefully in time generating more capacities for the family.

As engineers we need look in detail onto the capacities which enable the family to build/maintain a house. Specifically – to understand the difference between the house they have and the one they desire. Although the reasons might be complex and interrelated, at the end they all come down to the capacities they currently have and ones they do not have. For example if the family would have sufficient income this most likely would enable them to build the desired house. Due to a lack of income they can't buy the needed resources capacity (brick, cement, steel, iron sheet, etc.), tools capacity (hammer, shovel, saw, etc.) and do they lack the skills/knowledge (mixing cement, foundation work, masonry work, etc.) to build the house themselves. When you compare the desired capacities with the existing capacities most likely you will conclude that there is simply no way that they could build the desired house.

When we look at traditional development aid we would give the family the needed capacities (money, resources and/or labour). A similar approach that was used in the neighbourhood on Mt. Elgon.

notes:

Here one hundred houses were built for the inhabitants. The solution which was offered completely depends on a mortgage (the income generated by the family), in case they lose their job (and can't pay the monthly instalments) they automatically lose their house. On top of that the inhabitants were not involved in the development process. As a result they do not know how the dwellings were built and more importantly do not know how they should be maintained or could be extended (replicated). Therefore, the inhabitants became completely dependent on skills/knowledge and resources outside their own capacities. In case the developer would leave the community it would mean the inhabitants are unable to sustain (maintenance or extensions) their houses.

In order to prevent insensitive solutions that are harmful to the inhabitants of Mt. Elgon we have to better understand what the current capacities are and how we can use them/improve them to articulate solutions. As most inhabitants still build their own house we might only have to train certain skills or give specific knowledge. For example: how they could use the available resources and skills to make more durable materials/houses. This is what Michiel Smits has coined as capacity based decision-making. These decision-making process is based on three steps:

1. Assess existing capacities of the family
2. Assess desired capacities of the family
3. Making decisions on improvements based as much as possible on existing capacities

Add only skills and knowledge capacities to the families you are helping

In rural communities not only the individual but also the community's capacities are important to the realized house. Family relations, friends and neighbours are essential in most parts of realizing a house. For this purpose the interview in this section will help you to evaluate all capacities of both family and parts of the community they live in. From tradition sharing building knowledge and helping each other construct houses was an everyday practice. In return often for some food, beverage and a nice chat, neighbours would help each other in building, farming and many other activities. Therefore the reward was not directly financial but there was a common understanding of helping, which was based on local materials, skills and tools. This section will help you to assess which materials, skills and tools the family and community have. This will be fundamental in choosing the right capacities to improve;

resources (building materials), skills (building method), design and help you plan the construction in a cheap and effective way.

1. CAPACITY INTERVIEW INTRODUCTION

While mapping and observing you made the first preparations for the interview. By now you should have a draft list of tools, resources and skills of the family members. This draft list comes out of the interviews you performed, observations and the many days you spend in the community. In the following subchapter we will guide you through preparing the capacity interview with the family. One of the most important aspects will be the translations of your list into interview questions which you will ask during the interview. At the end of this chapter you will find a frame (example) sheet of the questionnaire, which you will need to expand according to the family you are working with on the base of the draft list you already made in previous chapters.

2. PREPARING QUESTIONS (BASED ON THE LIST OF CAPACITIES MADE EARLIER)

Remember to formulate questions not in an intrusive or suggestive manner; you want the family to open up and give you true answers, not answers that will suit you the most. Therefore, do not use suggestive questions. After closed question (yes or no) ask follow-up questions. Think of control questions or ice breakers (example is shown in the appendix).

All the quantifiable answers you will put into the answer sheet, which will be the base for the capacity evaluation of the family.

3. FAMILY MEMBERS

Prepare a list of questions based on the mapping, observations and context depth analysis you have made. Ask about materials and financial resources of the family:

Financial resources e.g.:

This can be considered a sensitive topic, be patient and polite. Ask first if you should continue with question with the whole family listening or only with parents (or father).

- Is there money available for construction of a house
- If yes:
- How much? How much would you like to (and can) spend?
- When is it available (stable or occasional income)

Assets and related belongings:

notes:

- Ask about means of transport (water, materials),
- objects (door, window etc.) to reuse

Natural and material resources e.g.:

Remember to ask about all listed resources and to ask family if they have some other materials that you have not yet seen. Per item ask for the available amounts (and time if applicable).

- Soil (properties for foundations, building material)
- Water(accessibility)
- Vegetation(thatch)
- Trees(timber)
- Sand
- Cattle (cows)

Etc.

Tools

Check the draft list that you have already made. Add all the tools that you have noticed during context depth analysis.

Write down the list for tools owned by family and owned by other members of the community.

- Discuss the list with the family, ask whether those tools are indeed theirs.
- Ask if they can use it (per object)
- Ask about any other tools they might have (maybe it's stored somewhere else or borrowed by a friend or family)

Skills and knowledge

Now, having the full list of tools, you can begin interviewing the family on their skills. During the observations you had an insight into what the family does, now you will ask them what they can do.

- Ask about any skills that each family member has, begin with strictly construction related tasks, then move to the general skills (e.g. bargaining).
- Ask a control questions:
 - Did the family (members) build their own house
 - did the family (members) helped with building a house of somebody in the community
 - if yes:
 - what tasks did they do during those constructions
- Consult the tool list which you have just completed. Ask if

family member(s) can use them; note also all those they can't use.

- If there are teenagers in the family ask (if you don't know) if they are studying by vocational training centre - they might have skills or knowledge

Labour time

Ask each family member about the time they can spend on the construction of the house. Ask about when (per day, per week, per month) is it available. If there are teenagers in the family ask about when the school holidays are.

Community member

Ask about natural, material resources of the community. Adjust the questions below after getting the answers from the interview on the family resources (e.g. if the only trees in the area belong to the family). Per topic ask if they are available for free or not. If not always ask for the price/conditions and amount

Assets and related belongings:

- Ask about means of transport (water, materials),
- objects (door, window etc.) to reuse

Natural and material resources e.g.:

- Soil (properties for foundations, building material)
- Water(accessibility)
- Vegetation(thatch)
- Trees(timber)
- Sand
- Cattle (cows)
- Etc.

Community tools

- Ask about all tools you noticed in the community;
- Ask about any more tool the family knows are in the community, list them, ask who the owner is; not if the owner is a friend or not;
- Per tool ask if it's possible to borrow them
- What are the conditions (do need to pay; can you borrow only the tool or you have to ask the owner to come)
- What happens if the tool breaks

notes:

Skills and knowledge in the community

Ask about the skills and knowledge in the community. Identify the people (note their name, skill). Ask about the relationship with that person, are they friends, can he/she help. Ask about type of compensation which would be expected. Use a control question – if community members helped the family in the past (ask what tasks did they do, who, when for how long and for what compensation)

Labour(time) in the community

This section you will ask individually to each identified community member.

4. INTERVIEWING THE FAMILY

The following section will help you to gather all the capacities of the family. Based on the list of possible capacities you made in the past weeks, you finalized the Interview guide. Make sure that you checked multiple times if your guide is complete before starting the interview!

INTERVIEW INSTRUCTIONS

Before you can start interviewing there are many things you need to organize before, during and after the interview. Although you don't have to mention them in the interview you are required to take them into account or execute during the interview. The instructions will help you not to miss anything being said or expressed. Please follow the instructions in the appendix at least one day before conducting the interviews (*VI - Interview instructions: Family Capacities*).

INTERVIEW GUIDE

In an interview guide you write basically everything you want to explain or ask while conducting it. The guide helps you step by step what to say and ask. You will notice that often while talking to your interviewee you will easily lose track. This is exactly why you have the guide. It will help you keep track. In any case you can always come back to some of the questions on a later moment.

BREAKS

Some of the family members will require more time to be interviewed than others. As soon as you start to notice that the interviewee lacks energy, enthusiasm or attention, most probably they have other matters to attend to. Ask them if they need to do something and if you could maybe help them a bit with the activity. You can for example help fetching water during the break of the interview. Helping the

family member is a small reward that can really make the difference in mood and understanding.

5. INTERVIEWING A COMMUNITY MEMBER (NEIGHBOUR, FRIEND OR FAMILY) ON TOOLS, BORROW VS. REWARD (REWARD BASED ON CAPACITY ANALYSIS), SKILLS/LABOUR TIME AMOUNT, DURATION, AVAILABILITY

PREPARING QUESTIONS FOR THE COMMUNITY MEMBER

Earlier in this chapter you already prepared the general questions you have for the community members identified by the family members. From the interview with the family you most likely found more detailed information who can and would like to participate in constructing the new house or which possible tools are available and from whom they could be borrowed. Prepare individual guides per community member you would like to interview. The general question might expose additional capacities and your detailed questions will enable in-depth understanding on which conditions these capacities could be used.

INTERVIEW INSTRUCTIONS

Before you can start interviewing there are many things you need to organize before, during and after the interview. Although you don't have to mention them in the interview you are required to take them into account or execute during the interview. The instructions will help you not to miss anything being said or expressed. As this interview will take place in a more informal matter for short periods the layout is also more flexible. Please read the instructions in the appendix at least one day before conducting the interviews (*VIII-Interview instructions: Community Capacities*).

INTERVIEW GUIDE

In an interview guide you write basically everything you want to explain or ask while conducting the interview. The guide helps you step by step what to say and ask without forgetting anything. You will notice that often while talking to your interviewee you will easily lose track. Not to worry you have the guide to help you and if not you can always come back to some of the questions on a later moment. The difference to earlier interviews is that this time a family member will join. In this way the family member remains responsible for the project and in the same time understands under which conditions they might be able to borrow capacities.

notes:

BREAKS

Some of the family members will require more time to be interviewed than others. As soon as you start to notice that the interviewee lacks energy, enthusiasm or attention, most probably they have other matters to attend to. Ask them if they need to do something and if you could maybe help them a bit with the activity. Helping the family member is a small reward that can really make the difference in mood and understanding.

6. TRANSCRIBING THE INTERVIEWS AND ASSESSING CAPACITIES

Similar to the pilot study you will need to transcribe the interviews according to the provided tool (see appendix: *V-Interview Transcribing*). This will help you to recall everything that was said during the individual interviews, hopefully assessing most of the capacities of the families and their community members. In addition to transcribing the interviews we made a file (including: inhabitant capacity overview & community capacity overview) that will allow you to sum up all the capacities you found. Make sure you write them down with the most possible care and detail. Especially details concerning trading and borrowing will be very important as they hold the key to successful community participation. See the examples in the file to understand how the capacities could be described.

7. OUTCOMES

The expected outcomes of this chapter (from the actor) are:

1. Family:

- a. List of questions (guide)
- b. Filled in answer sheet (with list of identified supporting families/people)
- c. Recordings of all the interviews
- d. Transcription of all interviews

2. Community members:

- a. List of questions (guide)
- b. Recordings of all interviews
- c. Filled in answer sheet (in one file together with the family)
- d. Transcription of all interviews

notes:

VIII. CAPACITY IMPACT ANALYSIS (USE MODEL)

In the previous chapter you assessed the capacities of the family, their neighbours, friends, family and other community members. Most likely you now have an elaborate list of resources, tools, skills and many other things. The overview will be tremendous and to calculate and plan how to use it is difficult and a precision job. That's why this section describes the main support tool that was developed as a part of the PhD research of Michiel Smits. It will help you to weigh the options and identify the most suitable solution according to the available and desired capacities. Before we can start the comparison we will need to set some limitations. With too many variables you will be unable to properly compare options.

Therefore, we begin by setting the three main limitations to the (framing) analysis. First of all, the finance. The family you are helping stated the amount of savings they have for building a new house. Although the savings will fluctuate heavily (between KSh25.000-100.000) and might give completely different possibilities, you will see at the end of this chapter this is only a small part of the total project. Secondly, is to set the time limitation. By the time you are working on this chapter you have approximately 100 days left. Some of the options will have such major impact on time and finance that they immediately fail as an option.



Figure 81: House design - example

The third import limitation is the estimated quantities used in the project. Without an existing design this is extremely difficult to set. For this purpose we ask you and the family to identify the minimal

house measurements for the family to have an “improved” house. Most likely the dimensions will be comparable to the house they currently live in (as they are able to sustain life there) or you already set the dimensions during the dream house game. Based on the set floor plan (in our example: 4000x7000mm) and the existing basic typology (tipped roof, gutter height, rooftop height, etc.) you can make a sketch design of the new house (like the example above). This model you will use in order to estimate possible capacities like: materials, transportation, tools, labour and to weigh various different options to see if they are more suitable according to the existing capacities of the family.

1. INTRODUCTION TO CURRENT BUILDING METHODS AND USED MATERIALS

Analysis of the current houses developed in the area show the most of the households that make an improvement on their house choose for: cement foundation and floor, plastered masonry walls (in and outside with cement), wooden roof construction and iron sheets as roofing material. Although it is difficult to define a specific trend in house design and materialization, it seems that the materials mentioned above-mentioned are used in most of the new houses. We will use these preferences in the upcoming subchapters to estimate the needed amounts of materials for the house of a size mentioned earlier. This will also be used to show how they relate to the financial capacities of the family. The outcomes will help you to discuss the desired house, materials and building method. More importantly it will explain why this type of house design does not suit the capacities of the family and which alternatives might there be.

CURRENT HOUSE DESIGN & BUILDING ORDER

Before we can start analysing we will need to explain a little about what the current building technique consist of, how traditional houses were build and list some of the major differences between the two. *Figure 82* shows the “desired” house explained in the previous paragraph.

notes:



Figure 82: Desired house typology

We can describe the construction of the house in the following general steps:

3. Setting out the location and size of the house + marking the foundation trench (400-600mm wide).
4. Excavating the soil to approximately 600-800 mm deep
5. Pouring 100mm of marram soil (clay soil with small stones; often used in roads) + compacting of the marram
6. Mixing of concrete and pouring 100mm on top of the marram (foundation slab)
7. Depending on the depth of the trench then multiple layers of brickwork are laid until the masonry work sticks out 100mm above ground level
8. The soli within the walls of the house are excavated 150-200mm and then hard-core (large rocks) are set on the soil.
9. Marram soil is poured on top until it reaches the top of the brickwork & compacted till it forms a solid under floor
10. On the outside edge of the masonry work a fascia board (wooden planks) is set. These boards are set 200mm above the top of the masonry work to enable the casting of the concrete floor.
11. Spacers are divided and set on top of the compacted marram, and then the BRC mash (wire mash reinforcement) is set on top of the spacers and connected to each other with steel wire.
12. Concrete is mixed and poured inside the set fascia boards until it reaches the top of the fascia boards (creating a 200mm thick floor

- slab).
13. After the floor is set a slab of black foil is set where the walls of the house should come (this prevents moist to run into the walls).
 14. Five to six layers of masonry work are set + the doorframe(s) (nails are hit into the frame just where the masonry work currently ends to provide as anchors)
 15. The masonry work is continued till window level and the windows are set. Again nails are hit into the sides to provide anchors to the window(s) and doors
 16. This process is repeated till the top of the door is reached. 300 mm before reaching the top of the doors binding wire is put into the mortar to later on connect the wall plate to. Now normally a concrete beams would be casted above the doors and windows (all around the house) however most people lack funds to do so, therefore finishing just with brickwork.
 17. The wall plates are laid on the long side of the dwelling and connected to the earlier set binding wire (in this way the wall plates are connected properly to the house)
 18. Trusses are made and set on top of the wall plates + runners are made and connected on top of the truss (to connect the roofing sheets on)
 19. Now the masonry work on the sides of the house can be continued till the tip of the roof. The runners continue 200-300mm over the wall in this way carrying the load of the roof.
 20. Roofing sheets are laid on top of the rafters and connected with roofing nails + the metal ridge is set over the top edge of the roof closing of the gab.
 21. Fascia board is set on the two bottom ends of the roof, gutter brackets are set and the gutter can be laid in the brackets.
 22. Walls inside and outside the house are plastered with cement
 23. Floor is being screed and also plastered with cement
 24. Downpipe brackets are being connected to the outside walls and the downpipes are set and connected to the gutters.
 25. Windows and doors are being fixed into the frames

TRADITIONAL HOUSE DESIGN & BUILDING ORDER

In 2014 a field study was organized in order to better understand local building culture. Together with a local community a kitchen was realized for the local church. All materials came from the direct surrounding, were natural and transported on foot to the building site. During two weeks the structure was realized with a group of 15 community members. Below we list the steps taken during the construction process. Again this is not an exact replication of all houses being traditionally constructed in the area. It is only meant to

notes:

give an idea how in general traditional houses/buildings are realized.



Figure 83: Church kitchen

In the example below we describe the steps that were taken during that test project in the area. A circular house was built together with the local community and solely made from local available materials and skills. We can describe the construction of the house in the following general steps:

1. Set out the location and size of the house + mark the foundation holes (diameter 400-600mm and should be set along the outer wall of the house every 600mm).
2. Excavate the soil from all the marked areas to approximately 600-800 mm deep this includes the centre of the dwelling (here the main post will stand which will carry the roof)
3. Pour 50mm of marram soil (clay soil with small stones; often used in roads) + compacting of the marram
4. Place wooden post (100-150mm), fill up the holes and compact the soil until the post stands straight.
5. Bind one ring of branches as rafter (horizontal connector that runs around the dwelling) with ropes.
6. Setting of the “king post” again repeating the filling and compacting process comparable to the other posts.
7. Bind four long branches to the “king post” and bind them to the top rafter of the wall. The branches should extend 400-600 over the wall to enable the extension of the roof later on.

8. Continue making rafter every 300 mm downward on both the in and outside of the dwelling. Where windows and doors are located place large branches as lintels to carry the future loads above the openings.
9. Place and bind one long branch on every post to the king post
10. Bind bundles of thatch on the bottom edge of the roof to the rafters. Continue all the way to the top; leave a gap for smoke and hot air to pass out of the house. The edge of the roof is trimmed to suit the contour of the house.
11. From a wet soil mixture (high percentage of clay) large balls are rolled and compressed to place in the wall. Because they are rafters on the in and outside the balls can sit easily in the wall. With smaller balls patch up holes until the whole wall is closed (except doors and windows).
12. With a wetter mixture and less clay the out and inside of the walls are smeared of. This will need to set for some time to dry.
13. A mixture of soil, clay and cow faeces is used to finish the wall on the outside. This mixture is more elastic and able to withstand rain.
14. The same mixture as in the walls is mixed with marram and put on the inside floor. With a wooden large piece of timber the floor is being compacted.
15. Use ash to finish the floor on the inside, which makes it hard and resistant against walking and small insects.
16. Place the windows and doors to finish the house.

TRADITIONAL VS. NEW HOUSE DESIGN

In this research already much has been said about the contradictions between traditional and current way of house design and materialization. One of the most important differences is that the new way of building demands many non-local and industrialized materials. As an effect many of these materials need to be imported into the area and are therefore often expensive. Ballast, construction sand, cement, nails, iron sheets and most of the tools, need to be transported to the area. On top of that this way of constructing demands a high skill level to build the house. This forces the family to hire labour to execute the construction for them, which makes it financially almost impossible. We can generally conclude that only few (financially) capable families will be able to build such dwellings.

When we look at the traditional house the materials come from the direct surrounding, are relatively cheap and can regrow. Moreover both materials and building methodology fit the existing skills. As a result the family only depend minimally on the additional help. It can

notes:

be easily offered by other community members as it also fit their skill level. However, according to the field research performed in the area (Michiel Smits, 2017) the families prefer not to live in “traditional” houses and want to build better and more durable houses. Therefore in the section below we will have a look on what the existing capacities are, what the desired capacities are and how to weigh alternatives. The example of house foundations is used to explain how the capacity calculation model works.

2. DESIRED HOUSE - SKETCH DESIGN

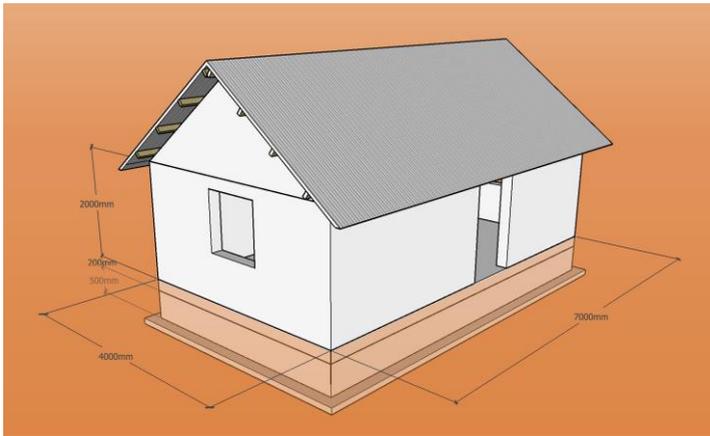


Figure 84- Example sketch design

In earlier chapters you organised workshops (sketching, drawing and model making) and had multiple interviews about the desired house. Based on conclusions you are able to make a first sketch design. Here the design follows the logic of the minimum house size set by the families, the pointed out/explained house typology and preferred materialization. Make sure that you do not make any adjustments according to your own preference or any other forms of own interpretations. The sketch design should only show the perspective of the inhabitants. In the following subchapter we will elaborate how this base design can be used to estimate the suitability according to the necessary capacities to build this house.

3. MATERIALS & TRANSPORTATION

Till now you made many observations, interviews and conversations with the family their friends, neighbours, family members and other community members. As a result you were able to list all the capacities they currently have and which they have access to (might involve some form of a reward). In the previous chapter you

interviewed the family and community members to assess the financial capacity of the family. In the *Figure 85* we show the interview answer sheet (as used in the previous chapter).

Materials/resources							
nr	item	amount	unit	ownership	name of the owner	payment	need of tranport
1	clay soil	unlimited		family		free	wheelbarrel
2	timber	5	st	family		free	cart/on foot
3	wood: post	11	st	family		free	cart/on foot
4	dried grass	150	bundle	family		free	cart/car
5	window	2	st	family		free	
6	door+frame	1	st	family		free	
7	water	unlimited	bucket	community	common	free	bucket/cart
8	clay soil	unlimited		community	Francis Kibue	free	wheelbarrel
9	rocks	unlimited		community	common	free	cart/wheelbarrel
10	timber	15	st	community	Francis Kibue	paid	cart/on foot
11	wood: post	5	st	community	Francis Kibue	paid	cart/on foot
12	dried grass	50	bundle	community	Francis Kibue	paid	cart/car
13	cement	unlimited	bag	other	shop	paid	motorbike/car/cart
14	roofing sheet	unlimited	st	other	shop	paid	foot/bike/motorbike/c ar/cart
15	ridge/ gutter/downpipe/brack	unlimited	st	other	shop	paid	foot/bike/motorbike/c art
16	nails/screw/etc.	unlimited	st	other	shop	paid	foot/bike/motorbike/c art
17	ballast	unlimited	ton	other	contracter	paid	cart/truck
18	construction sand	unlimited	ton	other	contracter	paid	cart/truck
19	timber	unlimited	m1	other	contracter	paid	cart/on foot
20	bricks	unlimited	st	other	contracter	paid	cart/on foot

Figure 85 – Capacities- materials

Now if we compare the available resources to the resources that are needed for the foundation of the “desired house” we notice that the family and their community lack the necessary resources (see image below). This basically means that the current material capacities do not meet the material capacities needed to construct the foundation of the “desired house”. This means that the family will have to buy the materials to be able to build the desired foundation of the house.

notes:

Materials (Needed)	Quantities		Available	Transport
Branches	15	m1	yes	0
Marram Soil	1,32	m3	yes	500
Cement	1396	kg	no	500
Riversand	2,828	m3	no	1000
Brick	600		no	1000
Small Ballast (1/4 inch)	0,6996	m3	no	400
Transparent hose	8	m	no	0
Mixed Soil	3	m3	yes	0
String	22	m	no	0

Figure 86 – Materials - requirements

With most of the materials not available in proximity to the project most of the materials for the foundation will have to come from elsewhere. As you won't be able to get help from your community on this location you will need to hire labour locally to get the materials onto the transportation. This makes most of the materials extremely costly. In the end of this section we will explain how this influences the budget of the project and why this is problematic for a successful project.

WEIGHING ALTERNATIVES



Figure 87: Alternative foundation technologies

Although the options are limited to make foundations, there is always a way to come up with local, financially friendly solution. Look at what is available . With an abundance of free rocks, soil and clay, you have a good direction for a possibly better solution. Next step is to perform a research on typologies involving the resources which are on hand. In our case this brought us to the example below. Here only a fraction of the cement is needed with some reinforcement to stabilize the foundation. In other examples there is even no cement or reinforcement used. Now these examples are not meant as a solution for your project, but only to explain how phase by phase you can come up with alternatives that require less purchased materials.

In the

Materials (Required)	Quantities		Availability	Transport	Materials (Alternative)	Quantities		Availability	Transport
Branches	15	m1	yes	0	Branches	15	m1	yes	0
Marram Soil	1,32	m3	yes	500	Marram Soil	1,32	m3	yes	0
Cement	1396	kg	no	500	Clay soil	1,5	m3	yes	0
Riversand	2,828	m3	no	1000	Soil	2,828	m3	yes	0
Brick	600		no	1000	Stones	300		yes	0
Small Ballast (1/4 inch)	0,6996	m3	no	400	Marram Soil	0,6996	m3	yes	0
Transparent hose	8	m	no	0	Transparent hos	8	m	no	0
Mixed Soil	3	m3	yes	0	Mixed Soil	3	m3	yes	0
String	22	m	no	0	Sisal rope	22	m	yes	0

Figure 88 we show the desired capacities for the foundation and weigh the alternative example (Figure 87). As a result you can see that almost all the materials are available in the area (for free) and that no additional transport is needed to get the materials to the site. This however will require different skills (and skill levels), more labour and different tools. Every investigated alternative to each building phase should be therefore always weighed on all the capacity criteria. How this weighing of the other capacity criteria we will discuss in the upcoming subchapters.

Materials (Required)	Quantities		Availability	Transport	Materials (Alternative)	Quantities		Availability	Transport
Branches	15	m1	yes	0	Branches	15	m1	yes	0
Marram Soil	1,32	m3	yes	500	Marram Soil	1,32	m3	yes	0
Cement	1396	kg	no	500	Clay soil	1,5	m3	yes	0
Riversand	2,828	m3	no	1000	Soil	2,828	m3	yes	0
Brick	600		no	1000	Stones	300		yes	0
Small Ballast (1/4 inch)	0,6996	m3	no	400	Marram Soil	0,6996	m3	yes	0
Transparent hose	8	m	no	0	Transparent hos	8	m	no	0
Mixed Soil	3	m3	yes	0	Mixed Soil	3	m3	yes	0
String	22	m	no	0	Sisal rope	22	m	yes	0

Figure 88 – Weighing alternatives - materials

notes:

4. TOOLS

Tools							
nr	item	amount	unit	comments	ownership	name of the owner	payment
1	bicycle	1	st	male bicycle	family	father	free
2	hammer	1	st	heavy duty	family		free
3	knife(Panga)	3	st	panga(good for cutting branches)	family		free
4	shovel	2	st	shovel for digging foundations	community	Joseph	free
5	bucket	6	st	20l plastic bucket	community	Francis	free
6	ladder	1	st	2m wodden ladder	community	Francis	free
7	wheelbarrel	1	st	metal wheelbarrel	community	Noah	free
8	wooden compacter	1	st	to compact soil	community	Noah	free
9	saw	1	st	wood saw	community	Geoffrey	free
10	motorbike	1	st	motorbike (to transport materials too), only to be used by the	community	Noah	paid
11	drilling machine	1	st	battery owered drilling machine with drills for wood	other	shop	paid
12	transparant hose	1	m1	as spirit level	other	shop	paid
13	measuring string	1	m1	to set structures (measurement)	other	shop	paid
14	stone hammer	1	st	to break stones	other	shop	paid
15	steel bar	1	st	to compact between large stones	other	shop	paid
16	square	1	st	steel square to measure perpendicular corners	other	shop	paid

Figure 89: Available tools

Figure 89 shows an example of tools available within the family and their community. For the foundation phase only few tools will be needed. Therefore, the impact of alternatives will be minor. You can however imagine that for the others phases (floor, walls and roof) the difference can be tremendous. In the example below we show the interview answer sheet (as used in the previous chapter).

In the Figure 90 you can see that only one tool is not available within the family and their community. In the alternative (large rocks with compacted soil) only one tool will be changed; which is also not available in the family and their community. Although the improvement might not be made in this criterion, you will know that the alternative at least has the same impact as the tools needed to construct the desired foundation.

Tools(Needed)	h	Available
Measure(ruler, Tape: 1m1=0,5h)	11	no
Shovel(1m3=3h)	130,42	yes
Compacter(1m2=1,5h)	12,1	yes
Measure(volume unit(container, wheelbar)	2	yes
Trovel(mortar(0,75h=3m2(masonry)	54	no

Tools (Alternative)	h	Available
Measure (ruler, tape: 1m1=0,5h)	6	no
Shovel (1m3=3h)	130,42	yes
Compacter (1m2=0,5h)	12,1	yes
Measure volume unit (container, wheelbarrel)	2	yes
Stone Hammer	26	no

Tools (Traditional)	h	Available
Shovel branch (1m3=24h)	391,26	yes
Compacter branch (1m2=7,5h)	36,3	yes
Panga (to trim tools and foundation holes)	9	yes

Figure 90 – Weighing alternatives - tools

If you have doubts if the alternative shows a substantial benefit or disadvantage in comparison to traditional practice (closer to existing capacities), we advise you to inquire the tools needed to build traditionally. In the example of the foundation the traditionally used tools are: branch (digging/loosening soil) and a panga (machete). Although fewer tools were needed, the time it took to build the foundations might have been doubled or tripled. To surmise: in traditional practice fewer tools were needed, however, certain tools should be used to shorten the building time.

For this reason it is vital that you take necessary time in weighing the alternatives. Even though you estimated the working times (one can never know them exactly) it will help you in making the right decision for your project. As you have only 5 months to realize the project some of the tools will not only make the project feasible but also reduce the physical work needed to realize a phase of the project. Another important dimension is the relation between the tool, the building activity and the required skill, which will be evaluated in the next chapter.



Figure 91 – Tools – contemporary vs. traditional

notes:

5. SKILLS VS. LABOUR

Let's look into the existing skill capacities of the family and their community. Most of them are daily household skills, some of them lead to providing an income (food production or labour) and some of them directly relate to the building knowledge people still have to realize a traditional house. Although many of the desired capacities are available in the community most of them will depend on a payment. *Figure 92* shows the interview answer sheet (as used in the previous chapter).

When we compare the skills necessary for the alternative (rock/compacted soil) foundation to the desired (concrete/masonry) foundation, we conclude that most of them are available (unpaid) within the community.

Skills/knowledge and labour				
nr	skill	level	comments	affiliation (ownership)
			concerns main dishes: Ugali, Kitheri, etc.	family
1	Cooking	1		family
2	chopping wood	3	rough cutting of small branches	family
3	Cutting trees	2	cutting down large trees	family
			collecting and carrying of vast amounts of water	family
4	Fetching water	1		family
5	weaving	3	weaving textiles, twigs	family
6	Fixing textiles	2	repairing holes and such	family
7	calculating	2	calculating materials, costs etc.	family
8	cutting stones	2	rough cutting stones	family
9	digging	4	trenches, post holes, etc.	family
10	compacting	3	Walls and floors	family
11	Placing wooden columns	1	digging foundation holes, placing, leveling and fixing wooden columns	community
12	Mixing soil	3	mixing of soil for making earth walls	community
13	Plastering (cow dung)	2	mixing and placing of traditional plaster	community
14	Mixing mortar	2	mixing and placing of cement plaster	community
15	Mixing concrete	2	mixing and pouring concrete	community
16	Masonry	3	laying bricks	community
17	Digging	4		community
18	Mixing cement	4		other
19	Mixing concrete	3	mixing and pouring concrete	other
20	Masonry	3	laying bricks	other
21	Steelwork	3	setting reinforcement	other
22	burning bricks	3	burning and selling bricks	other

Figure 92 – Capacity - skills

Labour (Needed)	hours	Skill Level	Labour (available family)	Labour (available community)	Train/Develop Skill: Free
Measuring setting	11	3	1 Skill level not available	Skill level not available	no
Measuring volume	2	3	1 Skill level not available	Skill level available	yes
Digging	97,92	0	3 Skill level available	Not needed	Not needed
Compacting	6,6	1	1 Skill level available	Not needed	Not needed
Compacting	5,5	2	1 Skill level not available	Skill level available	yes
Mixing	32,5	2	1 Skill level not available	Skill level available	yes
Brick Laying	10	4	0 Skill level not available	Skill level not available	no

Labour (Alternative)	hours	Skill Level	Labour (alternative family)	Labour (alternative community)	Train/Develop Skill: Free
Measuring setting	11	2	1 Skill level not available	Skill level available	yes
Measuring volume	2	3	1 Skill level not available	Skill level available	yes
Digging	97,92	0	3 Skill level available	Not needed	Not needed
Compacting	6,6	1	1 Skill level available	Not needed	Not needed
Compacting	5,5	2	1 Skill level not available	Skill level available	yes
Mixing	32,5	2	1 Skill level not available	Skill level available	yes

Figure 93 – Weighing alternatives – skills and labour

CREATIVE SKILL USE

Most skills are connected to daily household activities, some of them are directly related to building houses and others could possibly be used in the construction of the future house. Weaving for example is a common activity in fixing clothing, making fences or making household utensils. The Maasai women, however, use this technique also to build their houses with.



Figure 94 – Skill - weaving

Another example could for instance be local pot making. A craft that is found all over the world and has been used by some architects to construct parts of buildings.

notes:



Figure 95: Skill – pot making

Other skills are already developed but do not meet the required level. Now the easiest would be to hire the labour to do it for you, which will financially burden the project. Some skills are just as easily developed by organizing a training or simply taught by doing (learning by doing).

6. BUILDING METHODOLOGY VS. FINANCE

All materials, tools and skills/labour together form the building method of the house. This methodology and all included capacities influence eventually the financial capacity of the family. Design and building a viable new house for the family will largely depend on the financial decisions you make. In this last subchapter we will look at what the financial consequences of the desired house are. This will be compared with those of the alternative we are considering in this example: foundation. As a team you will need to repeat this process for all phases of the project and make a final overview. *Figure 96* shows the interview answer sheet (as used in the previous chapter) of the financial resources the family has. We included the vegetables and others grown on their garden (this because a part of it is used for trading products). We can estimate that the family has a project budget of KSh30.000.

Finance					
nr	item	who	amount	unit	comments(per month/week/day)
1	Shamba (garden) tomatoes	father & children	15	st	per week
2	Shamba (garden) cabbage	father & children	2	st	per month
3	Shamba (garden) mais	father & children	40	bag	per season (twice a year)
4	Selling produced goods shamba	father	100	KsH	per day
5	Labour/income: helping on community members shamba	son	100	KsH	per day 93 days per week average)
6	Income: teaching primary school	mother	9000	KsH	per month
7	Total Monthly income		11000	KsH	per month
8	Total Monthly expenses		-8000	KsH	per month
9	Available monthly funds		3000	KsH	per month (project duration 5 months)
10	Current Savings		15000	KsH	
	Estimated House budget		30000	KsH	

Figure 96: Capacity- finance

FINANCE: MATERIALS FOUNDATION

Previously we looked at the availability of material capacities within the family and their community. Here we were able to identify on a more general level that most of the desired material capacities were not available within the family or their direct surrounding (free or trading). Moreover that many of the materials would need to come from large distance and transport therefore is required. In order to explain what the consequences of the desired materials are its important to make an estimated financial impact of the desired house. Below we continue explaining using the foundation example/

notes:

Materials (Desired)			Costs /Reward	Transport	Sum
Branches	15	m1	0	0	
Marram locally available	1,4	m3	0	500	
Cement locally available (50kg)	27,92	bag	13960	1500	
Riversand not locally available	3	m3	2500	1000	
Brick locally produced	600	pcs	6000	1000	
Small ballast needs to be transport		m3		400	
String lasts briefly needs to be bought	10	m	800	0	
Mixed Soil: free: available on site	5,5	m3	0	0	
String lasts briefly needs to be bought	25	m	400	0	
			23660	4400	28060

Figure 97: Desired materials - cost

In the attachments of the support (Google drive & usb) you can find the excel sheet used for this example. It shows the rough financial estimation of the average “desired” house and gives details on all the specifications of the exemplar foundation used in this chapter. More importantly it shows mixing ratios and quantity estimations per m3. In the above image these details were used to make a financial estimation of the “desired house” foundation. We would demand an estimated KSh28000 (200 euro) to build the foundation of the house. Although the prices are relatively low we have to keep in mind that the involved families savings range between KSh25.000-100.000. With an average family income between KSh10.000-25.000 and an average family size (5-8), most families are left with KSh50-150 per person per day (far below the international poverty line). Saving is therefore extremely difficult and is financial investments risky for the family to make. In the case the families invests all their savings into the house they won't be able to pay unforeseen costs in the future. It is for this reason that you should at all times try to design and built with as little financial capacities as possible.

Materials(Alternative)	Quantities		Costs/Reward	Transport	Sum
Branches	15	m1	0	0	
MarramSoil	1,32	m3	0	500	
Cementlocally	12,5	bag	6250	500	
Riversandnotlocallyavailable	3	m3	2500	1000	
Stones	300	pcs	0	250	
MarramSoil	0,6996	m3	0	0	
Transparenthose	8	m	800	0	
MixedSoil	3	m3	0	0	
Sisalrope	22	m	400	0	
			9950	2250	12200
Materials(Alternative2.0)	Quantities		Costs/Reward	Transport	Sum
Branches	15	m1	0	0	
MarramSoil	1,32	m3	0	500	
ClaySoil	1,5	m3	0	0	
Soil	2,828	m3	0	0	
Stones	300	pcs	0	250	
MarramSoil	0,6996	m3	0	0	
Transparenthose	8	m	800	0	
MixedSoil	3	m3	0	0	
Sisalrope	22	m	400	0	
			1200	750	1950

Figure 98: Weighing alternatives – material cost

When we look at the estimated costs for the alternative foundation, we could possibly reduce the costs by more than 55%. With the alternative 2.0 we could even reduce the costs to 95%. Moving the stones manually and excavating marram soil locally could reduce all transport costs. In this way adjusting to the low financial capacities enabling the family to sustain their capacities as much as possible. Therefore we advise you to make multiple options and for each find alternative materials lowering; skill level, tools and costs. Here you will be able to move from a complex/high skill level/expensive (brickwork) to an average complexity/medium skill level/cheaper alternative (stones laid in cement) and even a uncomplicated/easy skill level/cheap (stone in compacted soil with ash) building method. As funds might suddenly evaporate there will be a need to adjust accordingly, the various options we enable you to make fast readjustments.

FINANCE: TOOLS FOUNDATION

Previously we looked at the available tools at the family/their community and compared it to the desired foundation design. For this example we estimated the duration of each activity and the relative tool time needed per activity. Although the amount of hours does not influence the costs involved to buy the tool, they can be reduced when borrowing or buying two tools. In the overview below the tool costs for the desired foundation design can be reduced with

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more than 30%.

Tools (Needed)	h	Available	Costs/Reward	Sum
Measure (ruler, tape: 1m=0,5h)	11	no	1100	
Shovel (1m3=3h)	130,42	yes		
Compacter (1m2=10,5h)	12,1	yes	200	
Measure (volume unit (container, wheel))	2	yes		
Trovel (flatboard)	54	no	3500	
			4800	4800
Tools (Alternative)	h	Available	Costs/Reward	Sum
Measure (ruler, tape: 1m=0,5h)	6	no	1100	
Shovel (1m3=3h)	130,42	yes		
Compacter (1m2=10,5h)	12,1	yes	200	
Measure (volume unit (container, wheel))	2	yes		
Stone Hammer	26	no	2000	
			3300	3300
Tools (Alternative 2.0)	h	Available	Costs/Reward	Sum
Measure (with feet: 1m=0,5h)	6	no	0	
Shovel (1m3=3h)	130,42	yes		
Compacter (1m2=10,5h)	12,1	yes	200	
Measure (volume unit (container, wheel))	2	yes		
Break (with stones)	26	yes	0	
			200	200

Figure 99: Weighing alternatives – tools cost

If the family does not have the financial capacities, they could decide to measure with their feet and break the stones with each other. However, this will increase the time needed to build the foundation and will decrease the accuracy of the building (which will also most likely take more time for the whole project).



Figure 100: Alternatives for stone cutting

Considering building methods that have more flexibility in the tools they need, will ultimately increase the success of the project. Funds might suddenly evaporate and there will be a need to adjust accordingly. Therefore we advise you to make multiple alternatives and per alternative write down a multitude of tools/skills variations (like the above mentioned alternative). Here you will be able to move

from a complex/high skill level/expensive (brickwork) to an average complexity/medium skill level/cheaper alternative (stone cutting with tool) and even an uncomplicated/easy skill level/cheap (stone breaking) building method.

FINANCE: SKILLS FOUNDATION

Previously, we assessed the skills of both the family and their community indicating which knowledge level they have and what possible reward they would like to receive per working day. In the case of the desired house a substantial amount of the labour will need to be hired. Here the skill level exceeds most of the inhabitant capacities and the only way to receive training in the skill is by investing time and education. Therefore, most inhabitants making such investments request financial compensation for the time they are investing. Comparing such tendency with the traditional skills exposes the vulnerability of instating “formal” skills as a part of the building culture. Traditionally building knowledge was shared and a community owned. As everyone shared the same capacities people helped each other in building each other’s dwellings. Finding alternatives, which are closely related to existing building knowledge, will possibly enable the community to continue this “free” communal building tradition.

Labour (Desired)	hours	Skill Level	Available family		Available community	Reward	Labour (h)	Labour costs	Sum
Measuring setting	11	3	1	no	Skill level not available	le	50	550	
Measuring volume	2	3	1	no	Skill level available	food (p.p)		150	
Digging	97,92	0	3	yes	Not needed				
Compacting	6,6	1	1	yes	Not needed				
Compacting	5,5	2	1	no	Skill level available	food (p.p)		150	
Mixing	32,5	2	1	no	Skill level available	food (p.p)	25	812,5	
Brick Laying	54	4	0	no	Skill level not available	le	75	4050	
								5713	5712,5
Labour (Alternative)	hours	Skill Level	Available family		Available community	Reward	Labour (h)	Labour costs	Sum
Measuring setting	11	2	1	no	Skill level available	food 150(p.p)		206,3	
Measuring volume	2	3	1	no	Skill level available	food 150(p.p)		37,5	
Digging	97,92	0	3	yes	Not needed				
Compacting	6,6	1	1	yes	Not needed				
Compacting	5,5	2	1	no	Skill level available	food 150(p.p)		103,1	
Mixing	32,5	2	1	no	Skill level available	food 150(p.p)		609,4	
								956,3	956,25

Figure 101: Weighing alternatives – labour cost

The alternative for the foundation mentioned above has all the capacities needed for its realization. The only consideration is to calculate the necessary food for all the working days as compensation

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for the labour. Here you should consider the seasonal yield of the farmlands they own and how much they have available to offer community members as lunch. In the *Figure 102* we show that the costs could be compensated entirely and make the labour to realize the foundation “free”.

Labour (Alternative 2.0)	hours	Skill Level		Available family	Available community	Reward	Labour (h)	Labour costs	Sum
Measuring setting	11	2	1	no	Skill level available	food garden(p.p)	0		
Measuring volume	2	3	1	no	Skill level available	food garden(p.p)	0		
Digging	97,92	0	3	yes	Not needed				
Compacting	6,6	1	1	yes	Not needed				
Compacting	5,5	2	1	no	Skill level available	food garden(p.p)	0		
Mixing	32,5	2	1	no	Skill level available	food garden(p.p)	0		
							0	0	

Figure 102: Weighing alternatives – labour cost 2.0

FINANCE: CONCLUSION

In the previous subchapters we were able to identify the needed capacities for the desired house and to compare them to two alternatives. The estimated sum of the costs for the foundation of the desired house would be KSh38570. The alternative design would cost KSh16455 and the second alternative (2.0) KSh2150. The alternatives offer different solutions that are closer to the existing capacities of the family and their community. Realizing alternative solutions will offer the community different insights how they could organize their build environment together. In the past there was a communal understanding what this environment should look like and how it should be produced (helping each other). One of the vital aims of the support is to reinstate or establish this common idea of shared building knowledge. Participation of community members in the building process will enable them to learn how they could build the same house for themselves most likely with the help of the family they supported.

Please not that in the past subchapters we assessed only the example of the foundation. This procedure should be followed for all the other phases: floor, walls, roof and finishes. The next step is to visualize the options into various sketch designs, which can be used to evaluate with the family.

MAKING & PRESENTING DESIRED AND ALTERNATIVE DESIGNS (3X SKETCH DESIGNS)

Based on the outcomes of the past subchapter you are able to make

rough sketch designs, which are not based on alternative spatial designs. They follow the desired size, typology and materialization of the family. According to the investigated alternatives we advise you to make at least 3 variant sketch designs. It does not matter how you present the alternatives (hand sketched, digital, model, etc.) however, it is important that you take the results and leave them for some time with the family. Make sure that you clearly number the house designs and offer the worked out estimated cost sheets with them. Clearly state which materials and skills are used in building the house. It is of vital importance that you explain not only what the financial consequences of certain choices are, but also what possible negative effects it has from a climatological, self-reliance and adaptability point of view. Therefore, makes sure you include the frequency of required maintenance, the needed skills, tools and the possible costs. Below we show possible visualizations of the alternative sketch designs made in Sketch up.

After finalizing the sketch designs and printing all the estimations you have to present them to the family. Just like an interview setting you should consider a private location within the safe confinements of the family home. You need to make a video recording of your presentation.

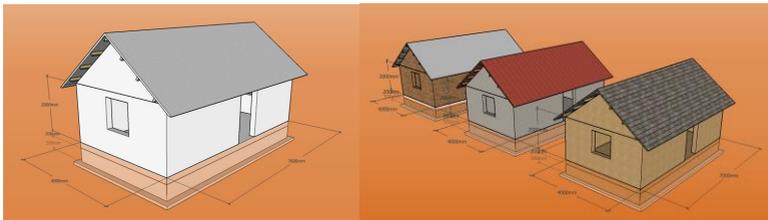


Figure 103: Example sketch designs

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Figure 104: Presentation of the sketch design

Take the desired house sketch design to start with and follow the steps (make sure you give everyone the opportunity to ask questions during the presentations):

1. Start by thanking for the time everyone has taken and the great journey that lies behind you. Weeks of observing, interviewing, mapping and much more has come to an end. Now it's time to explain what you have analysed, found and concluded.
2. Explain again the main focal point of you analysis (capacities) and what is considered as the most important ones for building a house: resources/materials, tools, skills and finance.
3. That all the mentioned elements in step 1 were used to evaluate all the capacities of the family (maybe make a separate overview of the family capacities) and concluded in one main overview listing all of their and their community capacities.
4. Based on the drawings, models and suggestions you made considering your desired house design we made a base sketch design to calculate all capacities needed per sketch design. This came down to the following house:



Figure 105: Desired house sketch design - example

5. The capacities required to build this “desired” house are listed in this overview; show the excel printout of the desired house.
6. Now go through all the building phases and explain the necessary capacities.
7. You should finish by showing an overview of all the capacities (incl. peoples names). Here you can clearly show how many of the needed capacities are not available within the family or their community. Secondly, you can indicate the costs needed to hire labour to do the work for the family.
8. Although the prices are estimated they exceed the capacities of the family greatly. Therefore, you made three alternatives, which are closer to the existing capacities and more affordable.
9. Now repeat steps 2 to 9 for the three alternatives.

After finishing the presentations ask if anyone has questions left. Explain to them that you would like them to think about the options for some time. In this way they can elaborate on the options with family and friends, list questions or remarks and invite you for a visit to go through everything.

DISCUSSION INTERVIEW

Part 1

The first part of the meeting is an unstructured interview in which you go through the questions and remarks the family has. This gives them the opportunity to explain what their preferences are. It is vital that you try to ask as many why, how and where questions. This will give you great insights into the reason that they prefer certain options. Make sure you again video record the meeting to retrieve arguments on a later moment, try to write as much as you can down. You can react on some of the points, however we advise you to let the family ventilate all their ideas and hopes. After some time the people will have addressed most of their points most likely leaving some essentials out. In the second part of the meeting you will systematically go through the different building phase to elaborate on the preferences and discuss their suitability.

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Part 2

In this second part of the meeting you will use a semi-structured interview go through all the preferences the family has, weigh the suitability to their capacities and make a final decision together. During the course of this support you have used the instructions and guides we prepared for you. As all project outcomes will be very different you have become the family expert. Therefore, you are the most suitable candidate to prepare the interview instruction and guide. Please use the formats we offered in this support to formulate your own.

7. CONCLUDING

With the outcomes of the interview you will be able to set all the design criteria for the house. Based on the previous chapters (collecting all context data) you should have all information to make a design proposal. In this research we won't elaborate on how to make a design based on the findings as we believe that the involved architects have the necessary education and experience to do so. In the closing chapter we will focus on how you can make a planning for the family and their community to access their capacities on the moments they are available.

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IX. USER/COMMUNITY PARTICIPATION PLANNING (USE MODEL)

1. USER/COMMUNITY CAPACITY & PARTICIPATION PLANNING

In the previous chapters you were able to identify the capacities of the family and their community, formulate alternative desired houses (based on the capacities), make sketch designs, discuss the different chosen options by the family and finally use these in a final design proposal for their new house. Weeks of analysis, talking, observing and much more have come to an end. Most likely you have reached this chapter by mid/end September (according to our estimations: see *Figure 106*). All you decided upon with the family has to be built by them, their family, friends, neighbours and other community members. All with your help, expertise and skills. The key to a success realization for your project is in your grasp, however you will have to do one last preparation before you can start digging! Starting the foundation work without involving everyone that offered their resources, tools and skills might make them feel excluded from the project. This might cause them to redraw from the project leading to a lack of resources, tools and skills. Therefore this chapter will firstly advise you how to make a detailed planning. Secondly to prepare and present the future house of the family including an detailed planning when, who and what is needed of the community.

Of course planning in rural areas is difficult and very complicated. With people struggling to meet ends every day. So although people really want to help they do not always remember what they agreed upon. Going through the planning regularly with the family and asking them to make sure the involved people are aware of what is expected two to three days in advance will majorly improve the success of the project.

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MAKING THE PLANNING PHASE BY PHASE

We will not elaborate on how to plan all the phases, we merely want to show how it works. In the previous chapter we roughly divided the project in 5 phases:

1. Foundation
2. Floor
3. Walls
4. Roof
5. Finishes

The foundation phase was selected as example and we will continue to do so in this chapter.

In the *Figure 107* you can find the planning for the foundation phase of the desired house. As explained before we divided the foundation works of the desired house in the following steps:

1. Measuring
2. Excavation
3. Substrate
4. Compacting surface
5. Foundation slab
6. Masonry mixing (mortar)
7. Masonry Brick laying
8. Covering trench
9. Compacting surface

Based on the capacity calculations (previous chapter) you estimated the time needed per step including time needed for the tools and labour for that step. Moreover, did you estimate the type and amount needed per step. Now for all these capacities you know who is willing to share, lend or sell the various capacities. Based on all this information you can now make a very detailed planning for the phases stating per phase what is needed, by whom and when. In most left column we numbered the steps, and then stated the activity and underneath it repeating the involved materials, tools and people. The names we put behind the materials and tools are the actual people that will need to give, borrow or sell the capacity. Based on the earlier estimated time you can now project the capacities in time on your calendar.

Stepnumber	Activity	month							September							October		
		Date	20	21	22	23	24	25	26	27	28	29	30	1	2	3		
		Day	WE	TH	FR	SA	SO	MO	TU	WE	TH	FR	SA	SO	MO	TU		
1	Measuring		1															
	Materials: string (Josephine), branches(1															
	Tools: tape measure (John), panga (Family)		1															
	People: Joseph, George, John		1															
	2	Excavation				2												
		Materials:				2												
		Tools: 2x shovel (Family and Dorkas)				2												
	3	Substrate																
		Materials: marram (Joseph), water (Family)																
Tools: 2x shovel (Family and Dorkas), panga (Family)																		
4	Compacting surface																	
	Materials: water (Family)																	
	Tools: wooden compacter or large branch																	
5	Foundation Slab																	
	Materials: sand, ballast, cement (shop), water (Family)																	
	Tools: 2x shovels (Famil and Dorkas)																	
6	Masonry mixing																	
	Materials: sand, cement (shop) and water (Family)																	
	Tools: 2x shovel (Family and Dorkas)																	
7	Masonry brick laying																	
	Materials: string (Josephine), branches(Family)																	
	Tools: 2xshovel (Family and Dorkas), tape measure (John)																	
8	Covering trench																	
	Materials:																	
	Tools: 2xshovel (Family and Dorkas), panga (Family)																	
9	Compacting surface																	
	Materials:																	
	Tools: wooden compacter or large branch																	
	Deadline Foundation																	

Figure 107: Example planning – foundation works

Now repeat this process for all the phases of your project and make sure you have sufficient outflow time (2 weeks). There will be many cases where materials are not available yet, tools can't borrow or people are suddenly not available to help.

DISCUSSING THE PLANNING PHASE BY PHASE WITH THE FAMILY (VIDEO RECORDED)

When your planning is finalized it is time to discuss the planning with

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the family. As it will have severe consequences for the family it is important to go to them first. In this meeting you can combine the product you made in previous chapters: capacity analysis, chosen building method & materials, design and the planning you made so far based on those decisions. Going through the various planning phases explaining what is needed and whom, will allow the family to understand what is to come. As explained before it is vital that they understand how the planning works and what is expected from them. Not only to be presented during building days but also to make their community members aware what is expected from them in the upcoming months. In the next subchapter you will help the family by explaining to the community what is expected from them and how they can keep track of the process.



Figure 108: Discussing the planning with the family

PRESENTING THE PLANNING PHASE BY PHASE WITH THE FAMILY & COMMUNITY (VIDEO RECORDED)

In the presentation to the community you can go through the deliberations you and the family had moving from the desired to the alternatives and in the end the final design. This process might be just as valuable to them as it is to the family. For this reason try to at least

get all the community members together on a Sunday (most likely everyone will be available) and if possible invite anyone who is interested in the project.

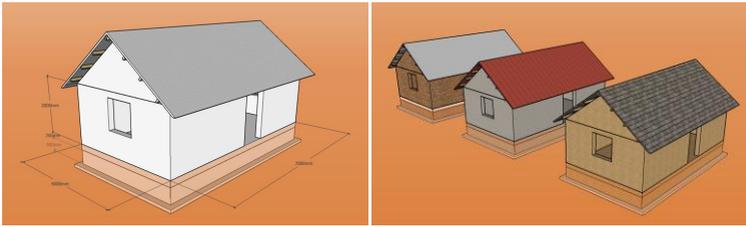


Figure 109: Example of the visual aids

Find a nice shaded place on or near the family compound where you all the visitors can sit comfortably. Any visual aids: model, sketches, printed planning, etc. Are essential for people to understand what you are trying to explain (see *Figure 110*). Make sure that you have someone present that can translate the presentation.



Figure 110: Community meeting

We urge you to use the following steps in your presentation to the community members:

- Step 1: Explaining who you are and what you came to do
- Step 2: Roughly introduce the family and why it is important to help them
- Step 3: Explain how conventional development is being realized right now (concrete, iron sheets, etc.) and why this is not a reachable for

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all families (financial: materials and labour).

Step 4: Explain traditional development why it worked well in the past (everyone was able to build such a house, community help, local materials, sharing building knowledge, climate, etc.) and why it is not suitable anymore.

Step 5: Introduction of an alternative way of developing that you are trying to setup: looking at what resources people have, what skills and trying to realize better houses together based on them.

Step 6: Present the design and largely what it consists of and how it will be built.

Step 7: Go through the capacity list stating which people identified are willing to offer resources, tools and time.

Step 8: Now show the planning and explain what is stated where. If there is anyone that would like to join or redraw from the project they should come at the end of the meeting to address.

Step 9: Question round

Step 10: Close by explaining the importance of vernacular tradition, offering everyone a cheap/free house made out of renewable materials (wood, grass, soil, etc.). That the knowledge was shared amongst each other passed on by every new generation. The new ways of building houses demand paid unnatural materials, that you have to pay for the knowledge and involved labour. Anyone that wants to continue the old model and learn how you can build an alternative cheap house then please join us in our search to help each other. Thank you for your time, we are looking forward to work together with you!

Information point

Make sure you find a spot where you can hang the printed planning both at the family site and also one central in the community. In this way people can check when they are suppose to come and help, hand-out their tools or resources.

2. COMMUNITY LOG BOOK

In a work that depends on the help (rewarded or free) of the other family and community members it is essential to keep track on all borrowed tools and time spend working on the construction (skilled and unskilled labour), stating the reward (given or depth). You can do it via keeping a logbook that will stay in the community after finishing your project. It will be a base for the community members to assure that their tools will come back to them.

DUAL RECEIVED		AS INSTRUCTED		REMARKS AND ENDORSEMENTS
16	510	13	12	
66	52	46	54	
52		52	37	
		58	24	
		35	2	
		395	2	
		729	762	
		9		

I certify that the entries in this log book are true and correct to the best of my knowledge and belief.

I certify that the entries in this log book are true and correct to the best of my knowledge and belief.

Figure 111: Example community log book

It can also be used as a work compensation system – you worked on building my house for 5 days – I will work 5 hours on yours. Having such promise written down makes an obligation but also encourages people to help (with a notion that one has a proof that the time he gave will be compensated).

X. START OF ACTIVITIES!

After weeks of preparing, talking, mapping, drawing, planning and much more, it is finally time for you to start building the house. We know that the preparations took a lot of time and most likely you, your family and the community are eager to see what will be the results of it all. We know that the expectations are high and that you will feel a little anxious. If it helps we build a house near Suam in 3 weeks' time due to the great community involvement. So remember that the key to a successful self-reliant project is the involvement of the family, their friends, family and community members. Their involvement depends on how happy they are, so make sure that you regularly chat with each of them and that you check if their expectations are being met. The result of your project might not be a fully completed house, but a family and community capable of finishing it by themselves and more importantly planning, building and reproducing many more of them!



Figure 112: Church kitchen construction team

Good luck, have too much fun and remember Beata and I will always be there for you (whatever happens)!

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OBSERVER SECTION

I. THE INTRODUCTION

Working as an engineer in a rural developing context is a complex and burdening situation. You are new to the context and will need to adapt in the first weeks to a multitude of local factors, such as: climate, language, customs, infrastructure and many more. Going directly to work as a team in such context might cause misunderstandings with the family and community. As you have a set assignment (designing and building a new house for the family) there is a tremendous amount of pressure to get the project going. Although the support will help you step by step throughout the practical process of the first six to eight weeks, it does not give you enough time to consider and contemplate beyond the daily practical steps. The evenings and Sundays will give you some time to go through what has happened it will only minor inform you on how it affects the family. Little gestures, questions and expressions can be easily missed, however, they are essential especially when it comes to decision-making. For this reason the rural housing support tool will help you to observe your team member in his daily activities. Here you can observe how practical activities (interviews, mapping, measuring, etc.) are executed and what it provokes within the family or community members. Carefully observing how people are behaving, what their body language is and how possible important aspects are being missed.

As professional designers and engineers we are trained to analyse, conceptualize and articulate solutions. Evaluating inhabitant preferences is often a small part of the process (design brief and some progress meetings). Conceptualizing and articulating what we as professionals think what the family members want poses a great risk. We might project what we think is best onto what the family members think or prefer. In a normal commercial scenario this would not be highly problematic as they hired your specific expertise. Moreover, the commercial point of view allows the family member (client) a dominant position in decision-making processes. In the end as a paying customer they decide majorly in what is finally articulated as solutions. Which contrasts heavily in a rural developing and volunteering scenario.

In volunteering scenario such as the Rural Housing Studio on Mt Elgon you are a part of, you are to help a local family without any financial compensation. As you will understand families are greatly humble and thankful that you offer your time and expertise. Especially considering the fact that after all these decades of

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development aid they have never received any form of direct help. Frankly that you pay to help them, as someone coming from the west is most likely very difficult to comprehend. As you will understand the family will highly respect you and the suggestions that you make. You should therefore at all times be very careful in what you say, do and ask. It will influence the desires of the family and the possible suitability of the house tremendously. The presence of two people analysing, measuring, asking questions, etc. would therefore impose a great threat to the comfort and success of the project. It is for this reason that during the analysing, conceptualizing and solution articulation processes of the project (the first six to eight weeks) you work with a daily actor¹¹ /observer¹² role. Every day one team member will only observe the whole day and the other team member will work according to the support tools described in chapters II till X. During the day the observer only has three opportunities to give feedback to the actor: emergency feedback, lunch feedback and roundup feedback.

Emergency feedback, the observer has the ability to correct or advise the actor when he or she thinks the actor is not: working according to support, imposes his ideas/solutions onto the family members or generally poses a threat to a successful outcome.

Lunch feedback, the observer evaluates the morning and advises what could/should be done differently. Remember that being the actor takes a lot of energy and focus, so make sure you formulate your feedback according to the in the next subchapter formulated feedback rules.

Roundup feedback, the observer evaluates the whole day and advises what could/should be done differently. At the end of the day you are both tired so make sure you formulate your feedback according to the in the next subchapter formulated feedback rules. Remember you are not only giving feedback to the actor you are also preparing yourself for the next day. Any mistake or problem detected is a valuable lesson for the team and the future of the Rural Housing Studio (all adjustments are gathered and used to adjust the support according to your experiences).

The observer is able to rely also on this chapter, their education, experience and intuition. However, they have to remain impartial and

¹¹ Actor: is the person who speaks, makes decisions and does physical labour

¹² Observer: is the person who does not get involved in any physical or verbal activity.

analyse behaviour, posture, gestures, and emotions. They have the time and peace of mind to contemplate what other processes besides practical progress of the project is at large. Enabling them to consider alternative directions and solutions. To prevent confronting of difficult situations during feedback rounds we advise you with the following points:

- **Number One Rule**

Try to Make It a Positive Process and Experience.

Before giving feedback make sure you remind yourself why you are doing it. The purpose for giving feedback is to improve the situation or performance. You won't accomplish that by being harsh, critical, or offensive.

That's not to say you must always be positive. There is a role for negativity and even anger if someone isn't paying sufficient attention to what you're saying. However this should be used sparingly. You'll most often get much more from people when your approach is positive and focused on improvement. Use tools like the Feedback Matrix and the Losada Ratio to help you get the balance right. (Although the statistics behind the Losada Ratio are in doubt now, the principle is not.)

- **Be Timely**

The closer to the event you address the issue, the better. Feedback isn't about surprising someone so the sooner you do it, the more the person will be expecting it. Think of it this way: It's much easier to feed back about a single one-hour job that hasn't been done properly than it is to feed back about a whole year of failed one-hour jobs.

- **Make It Regular**

Feedback is a process that requires constant attention. When something needs to be said, say it. People then know where they stand all the time and there are few surprises. Also, problems don't get out of hand. This is not a once-a-year or a once-every-three-month event. While this may be the timing of formal feedback, informal, simple feedback should be given much more often than this – perhaps every week or even every day, depending on the situation.

With frequent informal feedback like this, nothing said during formal feedback sessions should be unexpected, surprising or particularly difficult.

Prepare Your Comments You don't want to read a script but you do need to be clear about you are going to say. This helps you stay on

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track and stick to the issues.

- **Be Specific**

Tell the person exactly what they need to improve on. This ensures that you stick to facts and there is less room for ambiguity. If you tell someone they acted unprofessionally, what does that mean exactly? Were they too loud, too friendly, too casual, too flip or too poorly dressed?

Remember to stick to what you know first-hand: You'll quickly find yourself on shaky ground if you start giving feedback based on other people's views.

Tip:

Try not to exaggerate to make a point. Avoid words like "never", "all," and "always" because the person will get defensive. Always discuss the direct impact of the behaviour and don't get personal or seek to blame.

- **Criticize in Private**

While public recognition is appreciated, public scrutiny is not. Establish a safe place to talk where you won't be interrupted or overheard.

- **Use "I" Statements**

Give the feedback from your perspective. This way you avoid labelling the person.

Say, "I was angry and hurt when you criticized my report in front of my boss" rather than "You were insensitive yesterday."

- **Limit Your Focus**

A feedback session should discuss no more than two issues. Any more than that and you risk the person feeling attacked and demoralized. You should also stick to behaviours the person can actually change or influence.

- **Talk About Positives Too**

A good rule is start off with something positive. This helps put the person at ease. It also lets them "see" what success looks like and this helps them to take the right steps next time.

As long as it's not forced, it can also help to give positive feedback at the end of a feedback session too. Otherwise, people can finish feeling despondent and worthless.

Tip:

Many people can tend to overdo this and they end up sandwiching the

constructive feedback between too many positives. Then the takeaway message becomes, "Gee, I'm doing really well" instead of "I'm good at communicating with customers, but I need to bring my interpersonal skills with my co-workers up to that same level."

- **Provide Specific Suggestions**

Make sure you both know what needs to be done to improve the situation. The main message should be that you care and want to help the person grow and develop. Set goals and make plans to monitor and evaluate progress. Use the SMART acronym and define specific steps and milestones, or the GROW model to motivate people to deliver the change you want.

Tip:

You may not agree on everything so it is a good idea to ask the person to provide their perspective. Use phrases like, "What is your reaction to this?" or "Is this a fair representation of what happened?" Listen actively to what he or she has to say and try to get him or her to offer some suggestions for improvement. This way they have an opportunity to own the solution and are much more likely to follow through with it. To avoid sounding like you're preaching, stay away from words like "good," "bad," "must," "need to," etc.

- **Follow Up**

The whole purpose of feedback is to improve performance. You need to measure whether or not that is happening and then make adjustments as you go. Be sure to document your conversations and discuss what is working and what needs to be modified.

Tip:

It's also important that you actively seek feedback from your boss, colleagues, and customers. See our article on Getting Feedback for more on this.

- **Key Points**

Feedback is a two way street. You need to know how to give it effectively and at the same time model how to receive it constructively.

When you make a conscious choice to give and receive feedback on a regular basis you demonstrate that feedback is a powerful means of personal development. Done properly, feedback need not be agonizing, demoralizing, or daunting and the more practice you get the better you will become at it. It may never be your favourite means of communicating with employees, co-workers, or bosses but it does

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have the potential to make your workplace a much more productive and harmonious place to be.

In the following subchapters we will explain how you can observe your teammate and the family members during the 5-6 months you will spend with them. This observation will need to be executed in two ways: Macro observation (GoPro hero 4) which applies to the whole project and Micro observation which will be different throughout the chapters of the support tool.

II. MACRO OBSERVATION: GOPRO HERO 4

As you are designing and building a dwelling for a rural family it is of vital importance to capture the progress you make over the upcoming months. In the rural housing studio you will use a GoPro Hero 4 to record your project. The camera will be placed on a central position outside the family home. By placing every day on the same location and same settings you will be able to register the overall processes taking place on the compound. Later on we can compare 'time lapses' with the other teams to compare process and results.



AIM

In your project the GoPro (Hero 4) will act as a static 'macro' (long distance) observation point, which will be permanently positioned throughout the project on one spot, mounted on the large tripod (Hama, star 63). From this position the GoPro will be solely used to create a time-lapse of the overall building process. This guide will show you in easy steps how to register and use the different recording methods/items to produce a clear recording for the 5 months showing the designing and constructing of the family

dwelling.



Figure 113: GoPro observation

OBSERVATION PILOT I

In order to prepare for your time in Kenya, pilot(s) are organized in the months previous to your departure. Some of the pilots are individual and some are in groups. This has no influence on the team composition in Kenya. Here for sure you will work in duo's (1 student & 1 architect). With these pilots and support you will know what to do in the field (Kenya) and you will be able to focus on getting all the information which is needed for the outcomes to the project. The main aim of the TimeLapse observation is to compare how you organise and build the new house for the family.

This pilot will help you to practice with the Gopro Hero 4 to make a 'macro' TimeLapse observation by the following steps.

1. Inventory
2. Settings GoPro
3. Recording a static object with making processes
4. Assignment
5. Mandatory settings GoPro in Kenya
6. Mandatory points using GoPro in Kenya
- 7.

In step 1, 2 & 3 the various settings and usage of the GoPro for TimeLapse observation will be explained. Take time to go through the various instruction movies to make a TimeLapse observation. In step 4 you will work in duo's to prevent too much individual work.

STEP 1: INVENTORY

Before starting the research it will be necessary to check if the required equipment is available to be used and properly prepared

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(charged batteries and camera settings). You should check this the night before so everything is set for the next day.

At the end of this chapter you will find:

Checklist, this list will help you prepare for the pilot project for the next day.

Evening Check:

The first two items are to be checked the night before the observation. Which means you will have fully charged GoPro batteries and solar charger. In case the GoPro batteries run out, the solar charger will recharge one battery in about 4 hours.

Morning Check:

On the morning of the observation use the same checklist as shown in Appendix one. Every time you put something in the bag check the item on the list (item 3 till 9). The picture on the right shows the whole equipment necessary for the recordings of the pilot project.



Figure 114: GoPro Checklist

STEP 2: REQUIRED SETTINGS: GOPRO

A GoPro Hero 4 will be used for the production of a time-lapse of the design and construction process of a house in Kenya. The following step will explain the main settings, which need to be taken into account making a time-lapse.

The camera has a very user-friendly manual from the manufacturer, it can be found in the box below the camera. Most of this information will be an interpretation of the user-manual/online tutorials of the manufacturers and personal experience. So for the basic information of the equipment or various conditional difficulties, it is recommend to use the manual.



Figure 115: GoPro manual

This guide developed for the observations will only explain the following required settings:

1. Battery life
2. Field of view/ photo resolutions
3. Frame per seconds
4. Light Exposure

BATTERY LIFE

When you are in the field battery life is one of the most important considerations. Without the battery the camera will obviously stop recording and you will lose important information. In the field you will participate for 4-5 months in a design and building activity. To keep best track of the progress from a static point of view, the Time Lapse function of the GoPro is being used. This maximizes battery length and reduces the amount of footage to a bare minimum. For this reason the whole guide focuses on explaining the Time Lapse function. In a moderate climate like The Netherlands the battery can easily last up to 4 hours in time-lapse mode. Exposed to the burning sun on Mt Elgon this time can be reduced to 2-3 hours of battery life. There are **five** important ways to maximize the battery life:

- Keep wifi off
- Keep large display off
- Use low resolution
- Use the right casing
- Keep camera out of the sun

Keep wifi off: Although the wifi connectivity is really useful to track recordings of the GoPro, it drains the battery very fast. Therefore the wifi should be kept off at all times! In the following link you will find

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an instruction video how to put the wifi on the GoPro off:

https://drive.google.com/open?id=0Byeg_wxklbwtbmZrTDZvLXhmTTg

Keep large display off: The touchscreen of the GoPro is great feature to check the timelapse pictures being made. However, the screen also drains the battery very fast. Therefore the screen should be turned off at all times. In the following link you will find an instruction video how to put the wifi on the GoPro off:

https://drive.google.com/open?id=0Byeg_wxklbwtQXh5eE5TWEIGX0U

Use low resolution & long interval: The GoPro has four different Mega Pixel (MP) settings for the Timelapse function.:

- 12mp wide
- 7mp wide
- 7mp medium
- 5mp medium

The higher the MP you use, the more battery it will take. However, lower the MP will create less detailed pictures. Changing from a wide angle to a medium angle will make the observed field smaller. For this reason we advise to use the 7mp wide setting.

Another important aspect is the interval time of the picture taken. Smaller interval times (0,5 sec-5 sec) means more pictures per minute. Bigger interval times (10 sec-60 sec) means less pictures per minute. The less pictures you take the longer the battery will last. Therefore a longer interval time is advised. In the following video how to change both resolution & interval for the time lapse are shown:

https://drive.google.com/open?id=0Byeg_wxklbwtWHNWUVFLNWxCUEQ

Use the right casing: The GoPro standard comes with a waterproof casing. This protects the GoPro against merely everything. Sadly it does not protect against the sun.



Figure 116: GoPro cover elements

When you use the closed back panel shown in the *Figure 117: GoPro closed backpanel*. It will make the GoPro watertight, however, the GoPro can't ventilate its heat. This will drastically drain the battery and will reduced it to an operating time of 2-3 hours (instead of 4)



Figure 117: GoPro closed backpanel

When you use the open back panel shown in the *Figure 118: Open* it will open the GoPro and enable it to ventilate its heat. This will improve the battery life span to 3,5-4 hours. However, the Gopro is now exposed to rain and dust! Make sure whenever the rain start you change the case or make a small roof over the Gopro.



Figure 118: Open back panel

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Keep camera out of the sun: To further protect the GoPro against overheating and rain it is advised to make an improvised 'hat'. In the *Figure 119* a hat was literally used to protect the GoPro, obviously other more structural protection that is stable enough against prevailing winds, birds and animals is advised. It is up to yourself to make such a 'shelter' on site in Kenya later on.



Figure 119: Alternative sun cover

FIELD OF VIEW

Field of view also known as FoV, determines how much of the area will be captured on the time-lapse pictures. FoV consists of three elements: Mega Pixel, Distance and Angle. This can be altered in the settings of the Time-lapse mode. As explained in the previous section the Hero 4 silver has 4 different settings for photo resolutions, containing:

- 12mp wide
- 7mp wide
- 7mp medium
- 5mp medium

Mega Pixel

However only the wide or medium part will be important to determine the FoV. The difference between MP (mega pixels) will only affect the quality of the taken pictures.. The highest MP on the GoPro Hero 4 is 12 mp wide.

Distance

In the following images an example observation of a lady reading a book is given. In the first image a map of the location is given. The green dot is the target location and the red dots are the various observation distances used in this observation (5/10/15/20 meter).



Figure 120: Location of the example observation

Just like your future observations in Kenya it is important to make a well-balanced decision which distance you will take for the permanent (static) observation with the GoPro.

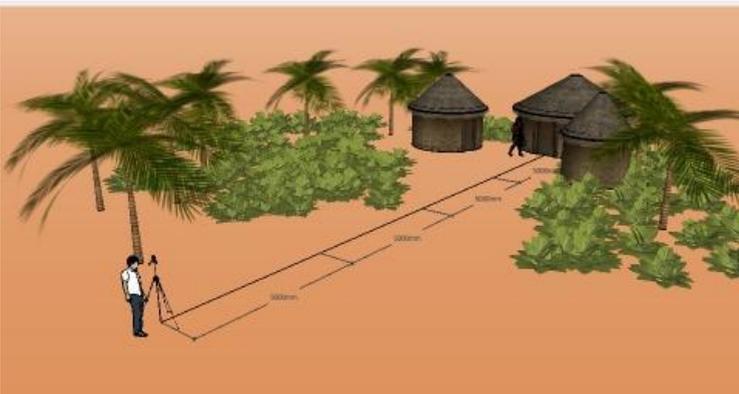


Figure 121: Example observation

Further, you will find an example project with the use of the different settings on various distances, in order to capture the woman reading a book in a small park.

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Figure 122: Distances

We started by measuring and marking the distances to the observation location (in this case the steel railing in the back). I used branches to mark the distances of 5, 10, 15 and 20 meters.



Figure 123: Marking distances

To give you an idea of what the initial distance does to the observed topic an overview is given below. You will notice that however you get to observe the topic (woman reading book) with greater detail, you will lose more of the context. Where in the 20 meter distance you can see most of the shops most, in the 2 meter picture you lost this context. Other aspects: continuation of the trees on both sides of the observed topic, parked cars and house entrances, are also lost. We also call these aspects:

Macro Processes.

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Figure 124: 20 meter



Figure 125: 15 meter



Figure 126: 10 meter

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Figure 127: 5 meter



Figure 128: 2 meter

However, a lot of the context perspective is lost, the observed topic can be described more accurately: What she wears, facial expressions, holding the book with both hands, etc. We also call these aspects: **Micro Processes**. The aim of the right static observation point is to mediate between how much details you need to see of the observed topic and how much of the context is important. Which in this case is the 10 meter picture; here you can see just enough of the context and are also just able to observe the facial expression.

In the following example we compare two observations:

- 7mp medium, 1 second interval 20 meter:
linkhttps://drive.google.com/open?id=0Byeg_wxklbwta3EzYTM5NHVzR3M
- 7mp medium, 1 second interval 5 meters:
linkhttps://drive.google.com/open?id=0Byeg_wxklbwtRWhkRWFXTFdkcFU

In the first movie there is a lot of distance (20 meter) to the topic. Although it has weaknesses (for example: less detail of observed subject), it allows the subject to behave naturally in its environment. In this case the lady with the book can be observed without invading

her privacy and with little distraction.

In the second movie the shortness of distance (5 meter) creates a more intrusive observation. Because you as observed get so close to the subject you are distracting the subject in its natural behaviour. Because of that you are altering the behaviour of the subject and thus influence the observation. In this movie you can also see a man observing the woman from even closer. Although he is able to observe many details (page number, clothing brand, shoe size, etc.) he is clearly distracting the subject in its natural behaviour. Again make sure you keep sufficient distance not to distract the subject, however, close enough to see the needed details. Which in this case: which book she reads, how she reads it, if she engages with the context and how she does that.

In Kenya you will need to observe, how the design and construction is being realized including all the sides processes! For example: you want to observe how the new house is being constructed, however, you would also like to know how a carpenter makes the front door.

ANGLE

The GoPro has two types of angle setting: medium and wide. The medium lens setting has a more zoomed-in/ close up look of the situation, as the wide lens will capture a broader area. Even on 5m distance of the subject it is still possible to capture the whole subject and a lot of the context.



Figure 129: 7 MP, 20 meter Medium

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Figure 130: 12 MP, 20 meter Wide

As the wide lens will be ideal for an overall view of the situation, you might want to include more of the surroundings. The medium lens will be useful for more focused shots of the situations, only downside will be the lower quality of pictures. Although this will help to extend the battery life.

FRAMES PER SECOND

One of the most important settings will be the interval setting this alters the amount of pictures/frames per second taken. The GoPro Hero 4 has several options ranging from a frame per 0.5 second up to a frame per 60 seconds. According to the manufacturer's manual the following advice has been given for the various interval settings:

- 0.5 – 2 seconds: surfing, biking or other sport
- 2 seconds: busy street corner
- 5 – 10 seconds: sunset
- **10 – 60 seconds: lengthy activities such as construction projects (to be used during the field experiment)**

Obviously the shorter the duration between frames the more detailed actions can be captured. In particular with very fast processes (like biking, surfing, etc.), as these actions will be done in less than a couple of seconds. On the contrary slow operations (building a house) will have a better quality of recording when longer durations between frames are being used. In these slower processes actions might even take up to an hour before having any noticeable difference in the process.

Choosing the right setting needs to be determined by what do you require to record during the process.

- If you only need to capture a long transformation process of a static object, **60 seconds** between pictures will be fine.

- If the time-lapse requires to capture the process involved in the transformation **10-30 seconds** will be increase insight substantially.
- If you would like to capture the interaction between the participants during this transformation process of the object, **2-5 seconds** will be necessary.

In this first example we go back observing the woman reading a book. Here we use the 20-meter distance 7mp and a **1 sec** interval, during 34 frames (observed length 34 seconds):

https://drive.google.com/open?id=0Byeg_wxklbwt3EzYTM5NHVzR3M

And compare the same observation using the 20-meter distance 7mp and now a **30 sec** interval, during 2 frames (observed length 34 seconds):

https://drive.google.com/open?id=0Byeg_wxklbwtQkFpOGd6ejdvWEU

A completely different observation is being made of the same process. Cutting out the whole process of walking, making weird movements, people passing by, etc. Before you start the observation, think of the topic you want to observe and how important surrounding subjects and processes are to your observation.



Figure 131: Angle of the observation

A similar situation will occur during your project. Here you should not only focus on what needs to be observed now but more importantly what needs to be observed in the future. In the *Figure 132* a possible future house is placed in the same observation point.

notes:



Figure 132: Wrong observation point

You might have captured the processes before the construction phase and preparation processes (lady carrying things; in the right). However, you will have captured half of the building (on the left). Planning the permanent observation point is essential. In the image below sufficient distance and the right angle are used to observe all processes of the project.



Figure 133: Placing the camera

Another important aspect will be the marking of your observation point. You will need to find the right angle, height and distance, for over 4-5 months in the field. Make sure you use small objects that cannot be (re)moved by children or animals. We suggest to use small stones that you partially bury in the sand.



Figure 134: Marking the camera spot

In this way you will be able to every day find your observation point back. Put the tripod in place and mount the GoPro in the same direction.



Figure 135: Camera in the fixed spot

LIGHT EXPOSURE

The default settings of a gopro camera are quite light sensitive in particular for artificial light sources. This could be changed by enabling the **spot-meter**. Which will help to tune down the light exposure if the camera is taking pictures from an illuminated space while being positioned in a darker space. In the following movie we explain how both the **Spot-meter** as **Protune** (explained below) are put on or off: https://drive.google.com/open?id=0Byeg_wxklbwta1l1Sy1RQjhpV1k

If the recordings still suffer from light exposure, turn on **Protune** in the time-lapse settings, this enables a lot of extra settings to adjust the brightness and quality of your pictures.

notes:

As lowering the ISO limits the defaults limits will be 800, which creates brighter photos in very low light. Besides lowering the exposure it also helps to lower the amount of image noise in the taken pictures. The 800 ISO limit also has an increased image noise, the limit can be lowered up to 100, which will create a darker photo indoor lighting with minimal image noise.

Another setting in Protune called EV compensation (Exposure value compensation) will also help to lower the light exposure. This setting adjusts brightness within the existing ISO limits.

The last setting in the Protune mode which adjust the exposure is white-balance. Even though the default setting will auto-adjust the balance while according to the environment. It might be useful to alternate the brightness by changing it manually.

In the case you start early and finish late there might be a lack of light exposure. If you are not able to adjust the brightness by using one of the Protune settings. We would suggest changing the time-lapse modus to night-lapse modus. This will enable to take much brighter recordings.

1. Recording a static object with making processes
2. Advised settings GoPro in Kenya

STEP 3: RECORDING A STATIC OBJECT WITH MAKING PROCESSES

After having clarified the important settings/modus for using the GoPro camera. It is now up to you to start recording an observation of a developing/making process.

As already has been described in step two, settings as MP and interval will be important to capture a clear time lapse to determine which process of the project you want to highlight.

- Is the interaction between participants important?
- Or even the interaction with the surroundings?
- Are the general construction proceedings important?
- Only of a specific set or even its surroundings?
- Or just the transformation of the static object important?

Before starting the observation it is important to sketch make an observation plan. In the map you sketch the situation, with the following elements:

1. Where the subject is located (lady reading a book)
2. What you want to know of the subject: what she reads, how she

reads and how people react in her surroundings.

- How are you going to observe the subject: I chose 4 different distances to find what the ideal distance is to observe the above elements I want to know. I used the distances 20, 15, 10 and 5 meter.

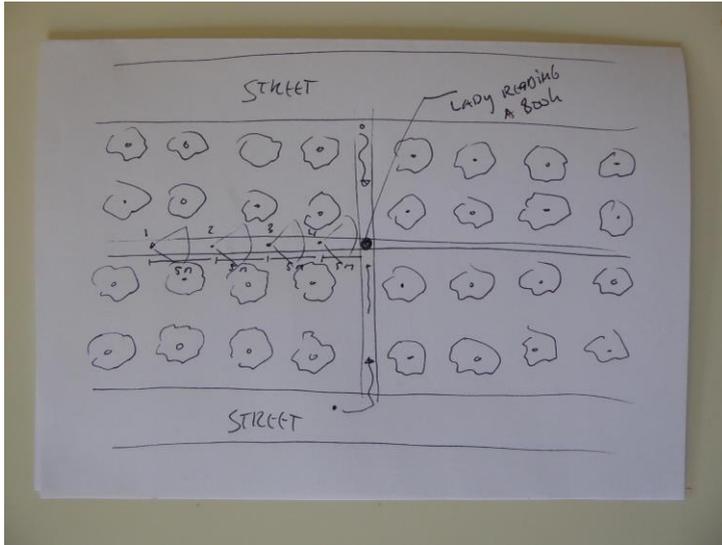


Figure 136: Observation- sketch

During the test recordings it is important to register which elements could/should be observed and adjust the observation point accordingly.

- After 4 test rounds (marked on the map) on the distances 20, 15, 10 and 5 meter (1,5 minute each) I concluded that the 10-meter observation was ideal.
- To observe the lady reading, I directly started to record her, the ideal distance (10 meter) was set. In the end she was reading for 15 minutes and then she left.

CODING

After your observation it is time to retrieve everything from your GoPro. The first step is to transport the pictures to the Seagate drive you have received (2 TB). You will need to make separate folders of every day you are making the observation on Mount Elgon.

The system of coding the files is given below:

notes:

Team number /phase/ actor or observer/ kind of recording or file/ initials of the author/ date/ media number.

Team number: T (number)

T1: Pelle Rademakers, Argjire Krasniqi

T2: Ayoub Salah, Jackson Kariuki

T3: Damian van der Velden, Corne Nuijten

T4: Atdhe Lila, Despoina Kouinoglou

Phase: P (chapter number)

Phase 1: First introduction family

Phase 2: Interview daily routine

Phase 3: Hopes and Dreams

Phase 4: Mapping

Phase 5:

Actor or Observer file:

A- actor

O- observer

Kind of recording/file:

Time-lapse: TL

Video: VI

Photo: PH

Audio: AU

Text: TX

Drawing: DR

Scan: SC

Initials of the author: first letter of first name and surname

Date: European calendar system

Media number: This will be given automatically when renaming a bash of media

An example of the video code: T1.P1.O.VI.PR.10.10.2017.1

An example of the photo code: T1.P1.A.PH.PR.10.10.2017.1

An example of the audio code: T1.P1.A.AU.PR.10.10.2017.1

An example of the text file code: T1.P1.A.TX.PR.10.10.2017.1

An example of the drawing code: T1.P1.A.DR.PR.10.10.2017.1

An example of the scanned file code: T1.P1.A.SC.PR.10.10.2017.1

After having finished all the steps described in this support tool, the files will continue to be collected every Sunday.

Those files should be coded with the following phase numbers

Final Design: (FD)

General drawings and documents: 1

site preparation: 2

foundations: 3

floor: 4

walls: 5

roof: 6

finishes: 7

e.g.

An example of the video code: T1.FD1.A.VI.PR.08.11.2017.1

We advise you to install Gopro quick: [link](#). This GoPro application will help you to transfer pictures easily from the Gopro to your computer via the USB cable.

In *Figure 137* you can an example how your folder structure should look like.

▼ T01.PR.2017.10.18	14 februari 2017 12:59	--	Map
└─ .DS_Store	14 februari 2017 13:07	6 KB	Document
▼ GoPro	Vandaag 10:20	--	Map
T1.PR.TL.P1.2017.10.18.1.JPG	7 februari 2017 11:07	4,5 MB	JPEG
T1.PR.TL.P1.2017.10.18.2.JPG	7 februari 2017 11:07	4,5 MB	JPEG
T1.PR.TL.P1.2017.10.18.3.JPG	7 februari 2017 11:07	4,6 MB	JPEG
T1.PR.TL.P1.2017.10.18.4.JPG	7 februari 2017 11:08	4,4 MB	JPEG
T1.PR.TL.P1.2017.10.18.5.JPG	7 februari 2017 11:08	4,5 MB	JPEG
T1.PR.TL.P1.2017.10.18.6.JPG	7 februari 2017 11:08	4,5 MB	JPEG
T1.PR.TL.P1.2017.10.18.7.JPG	7 februari 2017 11:08	4,5 MB	JPEG
T1.PR.TL.P1.2017.10.18.8.JPG	7 februari 2017 11:08	4,2 MB	JPEG
T1.PR.TL.P1.2017.10.18.9.JPG	7 februari 2017 11:08	4,2 MB	JPEG
T1.PR.TL.P1.2017.10.18.10.JPG	7 februari 2017 11:08	4,2 MB	JPEG
T1.PR.TL.P1.2017.10.18.11.JPG	7 februari 2017 11:09	4,6 MB	JPEG
T1.PR.TL.P1.2017.10.18.12.JPG	7 februari 2017 11:09	4,3 MB	JPEG
T1.PR.TL.P1.2017.10.18.13.JPG	7 februari 2017 11:09	4,4 MB	JPEG
T1.PR.TL.P1.2017.10.18.14.JPG	7 februari 2017 11:09	4,5 MB	JPEG
▶ Lumix	14 februari 2017 12:59	--	Map
▶ T01.PR.2017.10.19	14 februari 2017 12:59	--	Map
▶ T01.PR.2017.10.20	14 februari 2017 12:59	--	Map
▶ T01.PR.2017.10.21	14 februari 2017 12:59	--	Map
▶ T01.PR.2017.10.22	14 februari 2017 12:59	--	Map

Figure 137: Example folder structure

STEP 4: MANDATORY SETTINGS GOPRO IN KENYA

- Keep wifi off
- Keep large display off
- Use resolution: 7mp wide
- Keep Light-Point: on
- Keep Protune: off
- Keep camera out of the sun

notes:

- Use the right casing:
 - Closed back panel during rain
 - Open back panel during sun

STEP 5: MANDATORY POINTS USING THE GOPRO IN KENYA

Based on the previous explained steps you should now be able to make time lapses every day of your project. At the end of every week all the gathered data will be collected on the Sunday at 17:00.

- Make sure you walk through step 1 to 3 upon arrival in Kenya
- Make a time lapse every day of your project
- Check the batteries regularly
- Make sure you go through the checklist every evening and morning.
- Make sure the tripod is standing every day on exactly the same position
- Make sure the camera has the same settings every day
- Make sure the camera has the same orientation every day.
- Make sure all data is coded according to instructions and ready for collection after every week (Sunday 17:00)

Checklist:

	Step 1: Checklist	Date	????? ?
		Day number:	1
Evening (before) Checklist			
1	Gopro batteries (2x) charged		
2	Solar charger: charged		
Morning Checklist			
3	Gopro camera		
4	Gopro batteries (2x)		
4	Solar charger		
5	Dual Charger with cable		
7	SD memory card		
8	Hama star 63 tripod		
9	Gopro in the right cover		

III. MICRO OBSERVATION (OBSERVING THE ACTOR)

In the micro observations you engage in all the activities your teammate is undertaking on site. In this way you can learn in detail what the approach of your teammate is, how the family members react and observe which improvements could be made. As explained before you might find your team member executing the research in such a problematic or damaging way that you need to correct him while observing (called emergency feedback). Be aware that this feedback can obstruct the work flow of your colleague and should at all time be kept to a minimum. Obviously it can also contribute or improve the activities of your teammate, too much however might put you in charge of the activities and not your teammate. Make sure that you have sufficient night rest, food, water and motivation to make an observation. If you are tired, hungry or anything else you can at all times suggest a break to your teammate.

1. OBSERVE THE ACTIVITIES OF YOUR TEAM MEMBER (THE ACTOR)

As previously explained, you are performing the observations to better understand the behaviour of your team member while executing the project. The day before your observation you should inquire with your team member what will be performed during the next day. The section that is used by your team you will also need to read. In this way you know if your team member is operating according to the support. Based on the planned activities you could make suggestions where, when and how you will observe your team member. In this way everyone knows what will happen and will the observation be less intrusive. For example, taking pictures, looking at someone and writing down everything they do can be intrusive. Make sure you properly discuss what you can do and not, your team member could explain by the beginning of each day what you are planning to do and what your roles are. Make sure that they are comfortable to share their preferences and that they are welcome to have a look what you observed during the day. Moreover, that they should try to respect your role as much as possible and keep communication to a minimum.

In the previous chapters you made the floor plans of the various houses and a map of the family compound/community area. You will need to take these maps to register which activities take place during the observation. In the larger map (left) you will be able to orientate where the observations took place in the area (a line if there is movement). Make sure that you clearly state the date and times of the observation, if there are multiple locations please state the times of

notes:

- Solar charger
- Small tripod
- Map of the area (to draw on)
- Map of the compound (to draw on)
- Map of the houses (to draw on)
- Disinfecting gel

OBSERVING TEAM MEMBER (ACTOR)

During this part of the observation you will follow your team member during the entire working day. You will notice that your presence in the daily life of the family members will sometimes be a bit confusing. They might ask you questions during your observation or want your help with an activity. Remind them that during this day you are the observing partner and that you are requested to intervene as little as possible. Wearing an easy recognisable hat, scarf or shirt might help the family to locate the team member that is observing. If you feel the family member is stressed, worried or behaving different from normal (for example: constantly looking at you), please remind them that you are just there to observe the team member. Moreover, that they should act as normal as possible in order for the observation to be as accurate as possible. If you think that the team member is causing the problem you could briefly state that the family members are not at ease. Talking about their worries or address questions will help them tremendously in understanding what is going on. The most important activities need to be written down. These should be registered in your sketchbook and maps/plans and should at the end of the day all gathered in a digital scheme (which will be explained per subchapter). Because there are many different activities in this project, what and how you observe can differ strongly. Therefore per chapter of the support we explain what should be observed and how it should be observed. In the upcoming subchapters we will explain what you will need to register per element of the tool

2. OBSERVING THE INTERVIEWS

The main aim of the interview is to better understand the everyday life of the family members. Your team member will interview the family on very personal and sensitive matters. During the interview your team member is busy making listening what the family member is saying and tries to make a bridge to the next question. You as the observer will look at the general conditions of the family and your team member. The registration tool shown in the image below will help you to keep track on what is going on. The interview will be filmed by your team member so you can use the video to make

screenshots of the actual observations made. In this way you won't disturb the interview by pulling out your phone to make a picture (especially considering the fact that most likely you missed the moment any way). As the interviews are already prepared we advise you to prepare the overview below the day before so you can easily fill in your observations. Also read the interview guide and instructions so you know what to expect.

Below we briefly explain the different observation criteria:

- **Time:** here you will need to write down the starting time of any activity observed
- **Activity:** here any activity the team member is involved in the interview should be written down: setting the interview, introduction, asking questions, etc.
- **Duration:** here roughly keep track of how long the activity takes place
- **Family member's wellbeing: scale from relaxed to anxious:** by the posture (open/closed), facial expression and general behaviour you can tell if someone is relaxed (0) comfortable but on their toes (3) and anxious (5). We don't want you to go in the psychological details why and how you could locate them. This criterion is meant as an indication if the family member is at ease and if your team member is sufficiently making sure the family member is relaxed.
- **Actor's style of work: scale from withdrawn to dominant:** between the interviewer and interviewee there is a thin line between investigating someone (5) and giving someone the opportunity to tell the things you need to know in a natural story telling way (0). If you have an interview with many closed questions most likely the interviewer will be in the lead but the interviewee is comfortable to share their answer (3)
- **Answer formulation: scale from family member formulates ideas to team member formulates the ideas:** a common made mistake is to fill an answer in for the interviewee (5) here the interviewer finishes the questions of the interviewee. If the interviewee has difficulties to formulate an answer the interviewer might help him/her however staying as close as possible to the answer of the interviewee (3) the interviewee can also get the time to formulate the answer by himself (0)
- **Speed speaking (actor's): scale from too slow to too fast:** nerves or time pressure you have different effects on people. Often in interviews it makes the interviewer rush through

notes:

the questions and possibly make the interviewee feel uncomfortable (5). Allowing the interviewee to speak freely without giving an answer to the question made lead to a lengthy and tiring interview (0). A good interview balances constantly between faster and slower questions and answers (3).

- **Support fulfilment level:** here you should state to what extend your team member has been using the support. If he/she does not follow the support at all it should state (0). If the support it used to the letter it should state a (5). Sometimes your team member will combine his own words in stating different questions then stated on the interview guide which would score a (3).
- **Comment:** here any additional important information can be written down. You can think of emotions (cheerful, happy, sad, etc.) or the pace the activity is (fast, slow, etc.), the physicality of the activity (easy, heavy, etc.) or level of the skill involved (novice, average, advanced, expert, etc.)
- **Picture:** To show the activity or explain where and how it takes place you are asked to add any visual aid to proves the observed activities. In a later stage it can also help you to better understand what was necessary to carry out the activity.

SEATING

Make sure you place yourself close to the interview to see both the faces of the interviewer and interviewee. Keep sufficient distances so it is clear you are not a participant to the interview.

Feedback

Please use the earlier mentioned main feedback points:

- Try to Make It a Positive Process and Experience.
- Be Timely
- Be Specific
- Criticize in Private
- Use "I" Statements
- Limit Your Focus
- Talk About Positives Too
- Provide Specific Suggestions

In case you feel the interviewer is making such mistakes that it might cause major issues you can give emergency feedback. If it's not that urgent you can use the lunch break to discuss your findings (positive

notes:

and negative) of the morning and make suggestions. Also at the end of the day you should take the time to give your team member (interviewer) feedback on the positive and negative observations you made during the day. Obviously these should also be stated in the registration tool.

OBSERVATION: Interview family member
WHERE: Inside main house
WHOM: Mother & Argliire
DATE: 04-09-2017

Time	Activity	Duration	Family member's state: from relaxed(0) to anxious(5)	Actor's style of work: from withdrawn(0) to dominant(5)	Speed of speaking: too slow(0) to too fast(5)	Answer formulation: Family member formulates answer(0) to team member formulates the answer(5)	Support level fulfillment: none (0); following all the steps(5)	Comment	Picture
09:00	Seating and preparation	15 min	4	2	2	-	2	The family member seems nervous and anxious	
09:15	Introduction	10 min	5	4	4	-	5	The interviewer is speaking too fast; interviewee is struggling to follow	
09:25	Family member asks question	5 min	5	4	3	4	0	Interviewee is asking questions nervously.	
09:30	Team member answers	5 min	4	3	4	-	0		
09:30	Question 1	5 min	3	3	3	4	4		
09:35	Question 2	5 min	2	2	2	3	5		
09:40	Question 3	5 min	2	1	2	2	5		
09:45	Question 4	15 min	1	2	1	4	5		

notes:

Number	Decisions
1	I think Argjire should take more time to make the family member feel at ease
2	I clearly see that Argjire has a warm character which makes people feel more relaxed.
3	I think Argjire is speaking too fast which creates anxiousness with the family member
4	
5	
6	
7	
8	

Number	Feedback
1	I think Argjire should take more time to make the family member feel at ease
2	I clearly see that Argjire has a warm character which makes people feel more relaxed.
3	I think Argjire is speaking too fast which creates anxiousness with the family member
4	
5	
6	
7	
8	

Figure 139: Example of the Interview observation sheet

WRITING OUT THE OBSERVATION

Make sure that you spend the evening and/or next day at home to give yourself time to write out all the observations. When you pressure yourself too much you will tend to forget things or become less receptive. Take your filled in registration tool sheet, the notes you made during the interview and the video recording of the interview. For this purpose we developed the Observation Registration Tool (which can be found on the GoogleDrive and USB-stick attached to the book). With this tool you are able to combine the gathered observation data from your sheet, notes of your sketchbook and pictures/screenshots you have taken during the observation. In this way you are able to generate a full overview of all the activities your team member was involved in, the comments you written down and the feedback you gave to your team member.

COLLECTING OF DATA

Every Sunday (17:00) the main researcher will collect all the

notes:

gathered data. This does not only include all the outcomes (pictures, sketches, videos, maps, etc.) of the different activities (interview, workshops, mapping), but should include all the data of the observation. As instructed you will need to sort and code the time-lapses. Moreover we will collect the observation sheets every Sunday to keep track of the progress made of the team.

3. OBSERVING THE WORKSHOPS ON THE FAMILIES HOPES AND DREAMS

The main aim of the workshops is to better understand the hopes and dreams the family members have for their future house. Your team member is busy organizing the workshops, helping with drawing or answering questions. You as the observer will look at the general conditions of the family and your team member. The registration tool shown in the image below will help you to keep track on what is going on. Your team member will film the workshop so you can use the video to make screenshots of the actual observations made. In this way you won't disturb the workshop by pulling out your phone to make a picture (especially considering the fact that most likely you missed the moment anyway). As the workshops are already prepared (clear steps to be taken) we advise you to prepare the overview below the day before so you can easily fill in your observations. All the information can be found in the corresponding chapter in the support.

Below we briefly explain the different observation criteria:

- **Time:** here you will need to write down the starting time of any activity observed
- **Activity:** here any activity the team member is involved in the interview should be written down: setting the interview, introduction, asking questions, etc.
- **Duration:** here roughly keep track of how long the activity takes place
- **Family member's wellbeing: scale from relaxed to anxious:** by the posture (open/closed), facial expression and general behaviour you can tell if someone is relaxed (0) comfortable but on their toes (3) and anxious (5). We don't want you to go in the psychological details why and how you could locate them. This criterion is meant as an indication if the family member is at ease and if your team member is sufficiently making sure the family member is relaxed.
- **Actor's style of work: scale from withdrawn to dominant:** between the workshop leader and the participant there is a thin line between instructing (giving

order) someone (5) and letting the family do all the talking/doing (0). If you have an explicitly instructed workshop the workshop leader will be in the lead but the participant is relaxed to share their hopes and dreams (3)

- **Answer formulation: scale from family member formulates ideas to team member formulates the ideas:** a common made mistake is to draw for the participant what you think they want (5) here the workshop leader finishes the sentences of the participant what he or she dreams about. If the interviewee has difficulties to draw their ideas and the workshop leader might help him/her however staying as close as possible to the answer of participant (3) the participant can also get the time to formulate the answer by him-/herself (0)
- **Level of participation (family member) scale from no participation to full participation:** there might be a situation where the family member can't or does not want to draw or make a model; no participation (0). The family member can also be able to make the drawing or model without the team member helping; full participation (5). When the architect is actively helping the family member to make the drawing or model; controlled participation (3).
- **Speed of performing workshop:** please note if the tempo of the workshop is too slow (family members are bored - 0), or too fast (family members are not able to finish their tasks-5), or if the speed is correct - 3.
- **Support fulfilment level:** here you should state to what extent your team member has been using the support. If he/she does not follow the support at all it should state (0). If the support it used to the letter it should state a (5). Sometimes your team member will combine his own words in stating different questions then stated on the interview guide which would score a (3).
- **Comment:** here any additional important information can be written down. You can think of emotions (cheerful, happy, sad, etc.) or the pace the activity is (fast, slow, etc.), the physicality of the activity (easy, heavy, etc.) or level of the skill involved (novice, average, advanced, expert, etc.)
- **Picture:** To show the activity or explain where and how it takes place you are asked to add any visual aid to prove the observed activities. In a later stage it can also help you to better understand what was necessary to carry out the activity.

notes:

SEATING

Make sure you place yourself close to the workshop to see both the faces of the interviewer and interviewee. Keep sufficient distance so it is clear you are not a participant to the workshop.

Feedback

Please use the earlier mentioned main feedback points:

- Try to Make It a Positive Process and Experience.
- Be Timely
- Be Specific
- Criticize in Private
- Use "I" Statements
- Limit Your Focus
- Talk About Positives Too
- Provide Specific Suggestions

In case you feel the workshop leader is making such mistakes that it might cause major issues you can give emergency feedback. If it is not that urgent you can use the lunch break to discuss your findings (positive and negative) of the morning and make suggestions. Also at the end of the day you should take the time to give your team member (interviewer) feedback on the positive and negative observations you made during the day. Obviously these should also be stated in the registration tool.

notes:

OBSERVATION: Hopes & Dreams future house
 WHOM: Father & Pelle
 DATE: 04-09-2017

Time	Activity	Duration	Family member's state: from relaxed(0) to anxious(5)	Actor's style of work: from withdrawing(0) to dominant(5)	Answer formulation: Family member formulates answer(0) to team member formulates the answer(5)	Level of participation (family member): from no participation (0) to full participation (5)	Speed of workshop: too slow(0) to too fast(5)	Support level fulfillment: none (0), following all the steps(5)	Comment	Picture
09:00	Seating and preparation	15 min	1	2	-	-	1	4	The family member seems relaxed and welcoming	
09:15	Step 1: Introduction	5 min	3	4	-	-	2	5	Pelle is using the support to the letter. The participant (father) seems to struggle a little to follow what is requested.	
09:20	Step 2: Drawing	10 min	5	4	4	5	4	0	The workshop is going too fast participant is struggling to keep up. Support should be changed	
09:30	Step 3: feedback	5 min	4	3	-	2	4	0		
09:35	Step 4: Drawing	15 min	3	3	3	4	3	4		
09:50	Step 5: feedback	5 min	2	2	2	2	2	5		
09:55	Step 6: Drawing	15 min	2	1	2	4	3	4		
10:10	Step 7: Summing up	5 min	1	2	3	2	1	5		

notes:

Number	Feedback
1	I think Pelle is very good in making the participant feel at ease
2	Pelle is using the support to read at loud, this is a little impersonal to the participant.
3	The participant is not getting enough time to draw, the support should be altered
4	
5	
6	
7	
8	

Number	Decisions
1	Pelle will try to be more relaxed during the workshop to make the participant feel at ease.
2	Pelle will try to rehearse the support a more before the workshop will start. In this way he can explain more naturally what they are going to do.
3	A review has been written in our books to <u>Michiel</u> and also written down in the digital feedback document, so more time can be given.
4	
5	
6	
7	
8	

Figure 140: Example of the workshop observation sheet

WRITING OUT THE OBSERVATION

Make sure that you spend the evening and/or next day at home to give yourself time to write out all the observations. When you pressure yourself too much you will tend to forget things or become less receptive. Take your filled in registration tool sheet, the notes you made during the interview and the video recording of the interview. For this purpose we developed the Observation Registration Tool (which can be found on the GoogleDrive and USB-stick attached to the book). With this tool you are able to combine the gathered observation data from your sheet, notes of your sketchbook and pictures/screenshots you have taken during the observation. In this way you are able to generate a full overview of all the activities your team member was involved in, the comments you written down and the feedback you gave to your team member.

COLLECTING OF DATA

Every Sunday (17:00) the main researcher will collect all the

gathered data. This does not only include all the outcomes (pictures, sketches, videos, maps, etc.) of the different activities (interview, workshops, mapping), but should include all the data of the observation. As instructed you will need to sort and code the time-lapses. Moreover we will collect the observation sheets every Sunday to keep track of the progress made of the team.

4. OBSERVING THE MAPPING, MEASURING AND DRAWING

The main aim of the mapping measuring and drawing is to better understand how the family lives right now. Your team member will measure and map together with one or multiple family members the house, compound and area. During the activities your team member is busy instructing, asking questions, measuring and drawing. You as the observer will look at the general conditions of the family, community and your team member. The registration tool shown in the image below will help you to keep track on what is going on. This section will not be video recorded by your team member so make sure you have your phone or camera ready to make pictures of the different activities. It might disturb or distract people, but it is vital to proof the process of your team member. As the chapter and according steps are clearly described in the chapter of the support tool you can prepare the registration tool to fill in your observations. Also read the whole chapter so you know what to expect and what needs to be performed by your team member

Below we briefly explain the different observation criteria:

- **Time:** here you will need to write down the starting time of any activity observed
- **Activity:** here any activity the team member is involved in should be written down: the steps should correspond with the chapter of the support.
- **Duration:** here roughly keep track of how long the activity takes place
- **Family member wellbeing scale from relaxed to anxious:** by the posture (open/closed), facial expression and general behaviour you can tell if someone is relaxed (0) comfortable but on their toes (3) and anxious (5). We don't want you to go in the psychological details why and how you could locate them. This criterion is meant as an indication if the family member is at ease and if your team member is sufficiently making sure the family member is relaxed.
- **Actor uses family/community's knowledge scale from none to all:** if the team member is not using any of the

notes:

suggestions of the family or community; none (0). If the team member is using some of the suggestions; some. If the team member only uses the suggestions of the; all (5).

- **Actor's style of work: scale from withdrawn to dominant:** there is a thin line between instructing (giving order to) someone (5) and letting the family do all the talking/doing (0). If you explicitly instructed what is expected and why, participant is relaxed to share his hopes and dreams (3)
- **Level of participation scale from no participation to full participation:** there might be a situation where the family member can't or does not want to take part in activities; no participation (0). The family member can also do all tasks without any help from the actor; full participation (5). When the architect is actively helping the family member to do his tasks: controlled participation (3).
- **Support fulfilment level:** here you should state to what extent the actor (your team member) has been using the support. If he/she does not follow the support at all it should state (0). If the support it used to the letter it should state a (5). Sometimes your team member will combine his own words in stating different questions then stated on the interview guide which would score a (3).
- **Comment:** here any additional important information can be written down. You can think of emotions (cheerful, happy, sad, etc.) or the pace the activity is (fast, slow, etc.), the physicality of the activity (easy, heavy, etc.) or level of the skill involved (novice, average, advanced, expert, etc.)
- **Picture:** To show the activity or explain where and how it takes place you are asked to add any visual aid to proves the observed activities. In a later stage it can also help you to better understand what was necessary to carry out the activity.

SEATING

Make sure you place yourself close to the activity to see what is being performed, how it's being performed and what the facial expressions of the participants are. Keep sufficient distances so it is clear you are not a participant to the activity.

Feedback

Please use the earlier mentioned main feedback points:

- Try to Make It a Positive Process and Experience.

- Be Timely
- Be Specific
- Criticize in Private
- Use "I" Statements
- Limit Your Focus
- Talk About Positives Too
- Provide Specific Suggestions

In case you feel the team member is making such mistakes that it might cause major issues you can give emergency feedback. If it's not that urgent you can use the lunch break to discuss your findings (positive and negative) of the morning and make suggestions. Also at the end of the day you should take the time to give your team member (interviewer) feedback on the positive and negative observations you made during the day. Obviously these should also be stated in the registration tool.

OBSERVATION: Mapping, measuring and drawing
WHERE: Inside main house
WHO: Children & Corné
DATE: 10-09-2017

Time	Activity	Duration	Family member's state: from relaxed(0) to anxious(5)	Actor uses family/community's knowledge scale from none to all	Actor's style of work from withdrawn(0) to dominant(5)	Level of participation (family member): from no participation (0) to full participation (5)	Support level fulfillment: none (0), following all the steps(5)	Comment	Picture
09:00	Preparation	-	-	-	-	-	-		
09:15	Introduction	5 min	0	-	2	-	5	The children are really enthusiastic about today's activity	
09:25	Step 2	55 min	0	5	1	4	0	Corné, is very patient with the children and they really enjoy helping him, in mapping	
09:30	Step 3	30 min	4	0	3	3	4	Corné, stepped into the bedroom of the parents without informing them and it seems to cause some tension. He could also let the children explain more about their house without making his own interpretations.	
09:30	Step 4	10 min	3	2	2	3	4		
09:35	Step 5	15 min	2	3	2	2	5		
09:40	Step 6	35 min	2	1	1	1	5		
09:45	Family Compound	15 min	1	5	2	3	5		

notes:

Number	Feedback
1	I think Corné works well with the children and they really enjoy his company and plans for the day.
2	I clearly see that the parents have some difficulties with him entering the bedroom without asking.
3	I think Corné is not following the support tool enough, therefore we will have to redo the mapping.

Number	Decisions
1	Corné will follow the support more to prevent problems.
2	Corné will ask before entering private rooms.
3	
4	
8	

Figure 141: Example of the mapping observation sheet

WRITING OUT THE OBSERVATION

Make sure that you spend the evening and/or next day at home to give yourself time to write out all the observations. When you pressure yourself too much you will tend to forget things or become less receptive. Take your filled in registration tool sheet, the notes you made during the interview and the video recording of the interview. For this purpose we developed the Observation Registration Tool (which can be found on the GoogleDrive and USB-stick attached to the book). With this tool you are able to combine the gathered observation data from your sheet, notes of your sketchbook and pictures/screenshots you have taken during the observation. In this way you are able to generate a full overview of all the activities your team member was involved in, the comments you written down and the feedback you gave to your team member.

COLLECTING OF DATA

Every Sunday (17:00) the main researcher will collect all the gathered data. This does not only include all the outcomes (pictures, sketches, videos, maps, etc.) of the different activities (interview, workshops, mapping), but should include all the data of the observation. As instructed you will need to sort and code the time-lapses. Moreover we will collect the observation sheets every Sunday

notes:

to keep track of the progress made of the team.

5. OBSERVING THE OBSERVATIONS

The main aim of the observations is to better understand the daily routines of the family and how they live right now. Your team member will observe one or multiple family members in-/outside the house, compound, at work or school and many other of the daily activities. How your team member observes will influence the families behaviour and ultimately change the outcomes of the observation. This does not always have to be a bad thing as it might invoke more detailed activities. Now observing someone that is observing sounds a bit odd and basically that is quite true. The movie that you will both watch in preparation to the observation is no different. The camera and you as viewer are quite the same in the observation you are about to conduct. Obviously there is a physical different between the two of you, but your role is equally important. This third eye in an observation is critical towards the actual observer and its subject. As observer you will look at the general conditions of the family, community and your team member during the observation he/she is making. The registration tool shown in the image below will help you to keep track on what is going on. This section will not be video recorded by your team member so make sure you have your phone or camera ready to make pictures of the different activities. It might disturb or distract people, but it is vital to proof the process of your team member. As the chapter and according steps are clearly described in the chapter of the support tool you can prepare the registration tool to fill in your observations. Also read the whole chapter so you know what to expect and what needs to be performed by your team member

Below we briefly explain the different observation criteria:

- **Time:** here you will need to write down the starting time of any activity observed
- **Activity:** here any activity the team member is involved in should be written down: the steps should correspond with the chapter of the support.
- **Duration:** here roughly keep track of how long the activity takes place
- **Family member's wellbeing scale from relaxed to anxious:** by the posture (open/closed), facial expression and general behaviour you can tell if someone is relaxed (0) comfortable but on their toes (3) and anxious (5). We don't want you to go in the psychological details why and how you

could locate them. This criterion is meant as an indication if the family member is at ease and if your team member is sufficiently making sure the family member is relaxed.

- **Distance between actor and family member: scale from close to far:** between your team member and the family/community member there is a thin line between being too close (0) and too far (5). Too close will make the subject feel uncomfortable and too far your team member might lose many details and expressions. It is important to keep enough distance so the subject is comfortable and close enough not to miss anything (3).
- **Helping the observed: scale from helpful to harmful:** while observing a long lasting activity (like working, fetching water, going to school, etc.) after some time there is not a lot of valuable information that can be observed any more. Helping the subject might invoke them to tell or explain more about the what, how and why they are doing, which creates a lot of new insights. However, your team member might be so involved that he forgets to observe, register and write down things (0). Helping the subject too much might also endanger their income or might make them look worse in the job then your team member, which is harmful to the subject (5). Helping the subject but remaining distant enough to observe is important to collect valuable information and enable the team member to write everything down (3).
- **Questions of the actor: scale from helpful to harmful:** while observing a long lasting activity (like working, fetching water, going to school, etc.) after some time there is not a lot of valuable information that can be observed any more. Asking the subject some questions might invoke them to tell or explain more about the what, how and why they are doing, which creates a lot of new insights (0). Some questions however are suggestive or are distracting the subject (10).
- **Support fulfilment level:** here you should state to what extend your team member has been using the support. If he/she does not follow the support at all it should state (0). If the support it used to the letter it should state a (5). Sometimes your team member will combine his own words in stating different questions then stated on the interview guide which would score a (3).
- **Comment:** here any additional important information can be written down. You can think of emotions (cheerful, happy, sad, etc.) or the pace the activity is (fast, slow, etc.), the physicality of the activity (easy, heavy, etc.) or level of the

notes:

skill involved (novice, average, advanced, expert, etc.)

- **Picture:** To show the activity or explain where and how it takes place you are asked to add any visual aid to proves the observed activities. In a later stage it can also help you to better understand what was necessary to carry out the activity.

SEATING

Make sure you place yourself close to the activity to see what is being performed, how it's being performed and what the facial expressions of the participants are. Keep sufficient distances so it is clear you are not a participant to the activity.

Feedback

Please use the earlier mentioned main feedback points:

- Try to Make It a Positive Process and Experience.
- Be Timely
- Be Specific
- Criticize in Private
- Use "I" Statements
- Limit Your Focus
- Talk About Positives Too
- Provide Specific Suggestions

In case you feel the team member is making such mistakes that it might cause major issues you can give emergency feedback. If its not that urgent you can use the lunch break to discuss your findings (positive and negative) of the morning and make suggestions. Also at the end of the day you should take the time to give your team member (interviewer) feedback on the positive and negative observations you made during the day. Obviously these should also be stated in the registration tool.

notes:

OBSERVATION: Observation
WHERE: In-/outside main house, compound, community, work, school, etc.
WHO: Mother & Jackson
DATE: 14-09-2017

Time	Activity	Duration	Family member's wellbeing scale from relaxed (0) to anxious(5)	Distance between actor and family member: scale from too close (0) to too far (5)	Helping the observed: scale from helpful (0) to harmful(5)	Questions of the actor: scale from helpful (0) to harmful (5)	Support level fulfillment: none (0), following all the steps(5)	Comment	Picture
09:00	Preparation	-	-	-	-	-	-		
09:15	Getting up	20 min	5	3	-	-	5	Jackson is slightly to far away from the subject to see what is actually going on	
09:25	Morning	30 min	4	3	-	1	4	Jackson is asking some helpful questions why the family is folding up the bed, how they prepare the breakfast, etc.	
09:30	To work	20 min	3	1	-	3	4	Jackson is staking good use of the walk to work; chatting with friends and colleagues really helps to better understand the personal relations.	
09:30	At work	240 min	3	3	1	4	4		
09:35	Breaks	15 min	2	4	-	1	3		
09:40	At work	240 min	2	3	1	3	5		
09:45	To home	20 min	1	1	-	2	3		

notes:

Number	Feedback
1	I think Jackson should be slightly closer to his subject to observe
2	Jackson is really good in getting very detailed information about getting up and preparing for work. It does disturb the family a little but gives the team very useful information.
3	

Number	Decisions
1	Jackson will try to stand/sit a little closer to the subject (family member)
2	
3	
4	
8	

Figure 142: Example of the "observation" observation sheet

WRITING OUT THE OBSERVATION

Make sure that you spend the evening and/or next day at home to give yourself time to write out all the observations. When you pressure yourself too much you will tend to forget things or become less receptive. Take your filled in registration tool sheet, the notes you made during the observation and pictures you took. For this purpose we developed the Observation Registration Tool (which can be found on the GoogleDrive and USB-stick attached to the book). With this tool you are able to combine the gathered observation data from your sheet, notes of your sketchbook and pictures/screenshots you have taken during the observation. In this way you are able to generate a full overview of all the activities your team member was involved in, the comments you written down and the feedback you gave to your team member.

COLLECTING OF DATA

Every Sunday (17:00) the main researcher will collect all the gathered data. This does not only include all the outcomes (pictures, sketches, videos, maps, etc.) of the different activities (interview, workshops, mapping), but should include all the data of the observation. As instructed you will need to sort and code the time-lapses. Moreover we will collect the observation sheets every Sunday to keep track of the progress made of the team.

6. OBSERVING THE CONTEXT DEPTH ANALYSIS

The main aim of the context depth analysis is to make a complete inventory of the context the family lives in. Your team member will map and measure neighbouring compounds, resources, etc. with help of the family members. Your role as observer is to make sure your team member is not forgetting about anything, advise him how he could do things more effectively or any other more supporting function. Your role as observer will become a lot more engaged so you will also have to register less. You and your team member have quite a lot of experience by now how to deal with the family member and their community. So we can start emphasizing on different aspects as observer.

The registration tool shown in the image below will help you to keep track on the problems you observe and what comments you made. This section will not be video recorded by your team member so make sure you have your phone or camera ready to make pictures of the different activities. As the chapter and according steps are clearly described in the chapter of the support tool you can prepare the registration tool to fill in your observations. Also read the whole chapter so you know what to expect and what needs to be performed by your team member

Below we briefly explain the different observation criteria:

- **Time:** here you will need to write down the starting time of any activity observed
- **Activity:** here any activity the team member is involved in should be written down: the steps should correspond with the chapter of the support.
- **Duration:** here roughly keep track of how long the activity takes place
- **Who of the family/community members are helping:** write down the names of the family members that are helping.
- **Actor uses family/community's knowledge scale from none to all:** if the team member is not using any of the suggestions of the family or community; none (0). If the team member is using some of the suggestions; some. If the team member only uses the suggestions of the; all (5).
- **Level of participation scale from no participation to full participation:** there might be a situation where the family member can't or does not want to draw or make a model; no participation (0). The family member can also be able to make the drawing or model without the team member

notes:

helping; full participation (5). When the architect is actively helping the family member to make the drawing or model; controlled participation (3).

- **Support fulfilment level:** here you should state to what extent your team member has been using the support. If he/she does not follow the support at all it should state (0). If the support it used to the letter it should state a (5). Sometimes your team member will combine his own words in stating different questions then stated on the interview guide which would score a (3).
- **Comment:** here any additional important information can be written down. You can think of emotions (cheerful, happy, sad, etc.) or the pace the activity is (fast, slow, etc.), the physicality of the activity (easy, heavy, etc.) or level of the skill involved (novice, average, advanced, expert, etc.)
- **Picture:** To show the activity or explain where and how it takes place you are asked to add any visual aid to proves the observed activities. In a later stage it can also help you to better understand what was necessary to carry out the activity.

SEATING

Make sure you place yourself close to the activity to see what is being performed, but far enough that you are considered as observer/adviser and not an active participant to the activity.

Feedback

Please use the earlier mentioned main feedback points:

- Try to Make It a Positive Process and Experience.
- Be Timely
- Be Specific
- Criticize in Private
- Use "I" Statements
- Limit Your Focus
- Talk About Positives Too
- Provide Specific Suggestions

As stated before you will be giving on the job feedback. This means that basically at any time you can advise, ask or suggest a consideration. In this way you are keeping distance from the actual activity but try to help the participants and team member as much as possible in their efforts

OBSERVATION: Context depth analysis
WHERE: In-/outside main house, compound and community
WHO: Children & Damian
DATE: 18-09-2017

Time	Activity	Duration	Who of family members is helping	Who of the community members is helping	Actor uses family/community's knowledge scale from none to all	Level of participation scale from no participation to full participation	Support level fulfillment: none (0) following all the steps(5)	Comment	Picture
09:00	Preparation	-	-	-	-	-	-		
09:15	Compound's structures and orientation	3 hours	Isaac	Topista and Dorcas	5	4	5	<p>Damian is not really using the support tool much, as an effect he loses valuable information. Advise given:</p> <ul style="list-style-type: none"> - children were not holding the tape measure right - distances between houses were not measured perpendicular (therefore not accurate) - if there are any cold winds during the nighttime (Damian forgot to ask) <p>Additional questions asked:</p> <ul style="list-style-type: none"> - if the helping children would be interested to support the family to build their future house. 	
12:15	Break	30 min			-	-			
12:45	Typology, construction methodology and materialization	4 hours	Isaac and Sue	Topista, Dorcas and Nancy	4	5	8	<p>Additional questions asked:</p> <ul style="list-style-type: none"> - if gas can be taken free of charge 	
15:45	Break	15 min			-	-			

notes:

Number	Decisions
1	Damian will check the support more often during the day to reconfirm the direction of the activities.
2	
3	
4	
8	

Number	Decisions
1	Damian will check the support more often during the day to reconfirm the direction of the activities.
2	
3	
4	
8	

Figure 143: Example of the context depth observation sheet

WRITING OUT THE OBSERVATION

Make sure that you spend the evening and/or next day at home to give yourself time to write out all the observations. When you pressure yourself too much you will tend to forget things or become less receptive. Take your filled in registration tool sheet, the notes you made during the observation and pictures you took. For this purpose we developed the Observation Registration Tool (which can be found on the GoogleDrive and USB-stick attached to the book). With this tool you are able to combine the gathered observation data from your sheet, notes of your sketchbook and pictures/screenshots you have taken during the observation. In this way you are able to generate a full overview of all the activities your team member was involved in, the comments you written down and the feedback you gave to your team member.

COLLECTING OF DATA

Every Sunday (17:00) the main researcher will collect all the gathered data. This does not only include all the outcomes (pictures, sketches, videos, maps, etc.) of the different activities (interview, workshops, mapping), but should include all the data of the observation. As instructed you will need to sort and code the time-lapses. Moreover we will collect the observation sheets every Sunday to keep track of the progress made of the team.

7. OBSERVING THE INTERVIEW CAPACITY ANALYSIS & CONCLUSIONS

The main aim of the interviews is to better understand the capacities of the family members and community members. Your team member will interview the family member or community member on very personal and sensitive matters. During the interview your team member is busy making listening what the family member is saying and tries to make a bridge to the next question. You as the observer will look at the general conditions of the family and your team member. The registration tool shown in the image below will help you to keep track on what is going on. The interview will be filmed by your team member so you can use the video to make screenshots of the actual observations made. In this way you won't disturb the interview by pulling out your phone to make a picture (especially considering the fact that most likely you missed the moment anyway). As the interviews are already prepared we advise you to prepare the overview below the day before so you can easily fill in your observations. Also read the interview guide and instructions so you know what to expect.

Below we briefly explain the different observation criteria:

- **Time:** here you will need to write down the starting time of any activity observed
- **Activity:** here any activity the team member is involved in the interview should be written down: setting the interview, introduction, asking questions, etc.
- **Duration:** here roughly keep track of how long the activity takes place
- **Family member's wellbeing scale from relaxed(0) to anxious(5):** by the posture (open/closed), facial expression and general behaviour you can tell if someone is relaxed (0) comfortable but on their toes (3) and anxious (5). We don't want you to go in the psychological details why and how you could locate them. This criterion is meant as an indication if the family member is at ease and if your team member is sufficiently making sure the family member is relaxed.
- **Actor's style of work: scale from withdrawn to dominant:** between the interviewer and interviewee there is a thin line between investigating someone (5) and giving someone the opportunity to tell the things you need to know in a natural story telling way (0). If you have an interview with many closed questions most likely the interviewer will be in the lead but the interviewee is comfortable to share

notes:

- their answer (3)
- **Answer formulation: scale from family member formulates ideas to team member formulates the ideas:** a common made mistake is to fill an answer in for the interviewee (5) here the interviewer finishes the questions of the interviewee. If the interviewee has difficulties to formulate an answer the interviewer might help him/her however staying as close as possible to the answer of the interviewee (3) the interviewee can also get the time to formulate the answer by himself (0)
 - **Speed speaking (actor's): scale from too slow to too fast:** nerves or time pressure you have different effects on people. Often in interviews it makes the interviewer rush through the questions and possibly make the interviewee feel uncomfortable (5). Allowing the interviewee to speak freely without giving an answer to the question made lead to a lengthy and tiring interview (0). A good interview balances constantly between faster and slower questions and answers (3).
 - **Support fulfilment level:** here you should state to what extend your team member has been using the support. If he/she does not follow the support at all it should state (0). If the support it used to the letter it should state a (5). Sometimes your team member will combine his own words in stating different questions then stated on the interview guide which would score a (3).
 - **Comment:** here any additional important information can be written down. You can think of emotions (cheerful, happy, sad, etc.) or the pace the activity is (fast, slow, etc.), the physicality of the activity (easy, heavy, etc.) or level of the skill involved (novice, average, advanced, expert, etc.)
 - **Picture:** To show the activity or explain where and how it takes place you are asked to add any visual aid to proves the observed activities. In a later stage it can also help you to better understand what was necessary to carry out the activity.

SEATING

Make sure you place yourself close to the interview to see both the faces of the interviewer and interviewee. Keep sufficient distances so it is clear you are not a participant to the interview.

Feedback

Please use the earlier mentioned main feedback points:

- Try to Make It a Positive Process and Experience.
- Be Timely
- Be Specific
- Criticize in Private
- Use "I" Statements
- Limit Your Focus
- Talk About Positives Too
- Provide Specific Suggestions

In case you feel the interviewer is making such mistakes that it might cause major issues you can give emergency feedback. If it is not that urgent you can use the lunch break to discuss your findings (positive and negative) of the morning and make suggestions. Also at the end of the day you should take the time to give your team member (interviewer) feedback on the positive and negative observations you made during the day. Obviously these should also be stated in the registration tool.

OBSERVATION: Interview family member
WHERE: Inside main house
WHOM: Mother & Argjire
DATE: 04-09-2017

Time	Activity	Duration	Family member's state: from relaxed(0) to anxious(5)	Actor's style of work: from withdrawn(0) to dominant(5)	Speed of speaking: too slow(0) to too fast(5)	Answer formulations: Family member formulates answer(0) to team member formulates the answer(5)	Support level fulfillment: none (0), following all the steps(5)	Comment	Picture
09:00	Seating and preparation	15 min	4	2	2	-	2	The family member seems nervous and anxious	
09:15	Introduction	10 min	5	4	4	-	5	The interviewer is speaking to fast, interviewee is struggling to follow	
09:25	Family member asks question	5 min	5	4	3	4	0	Interviewee is asking questions nervously.	
09:30	Team member answers	5 min	4	3	4	-	0		
09:30	Question 1	5 min	3	3	3	4	4		
09:35	Question 2	5 min	2	2	2	3	5		
09:40	Question 3	5 min	2	1	2	2	5		
09:45	Question 4	15 min	1	2	1	4	5		

notes:

Number	Feedback
1	I think Argjire should take more time to make the family member feel at ease
2	I clearly see that Argjire has a warm character which makes people feel more relaxed.
3	I think Argjire is speaking too fast which creates anxiousness with the family member
4	
5	
6	
7	
8	

Number	Decisions
1	I think Argjire should take more time to make the family member feel at ease
2	I clearly see that Argjire has a warm character which makes people feel more relaxed.
3	I think Argjire is speaking too fast which creates anxiousness with the family member
4	
5	
6	
7	
8	

Figure 144: Example of the interview on capacity observation sheet

WRITING OUT THE OBSERVATION

Make sure that you spend the evening and/or next day at home to give yourself time to write out all the observations. When you pressure yourself too much you will tend to forget things or become less receptive. Take your filled in registration tool sheet, the notes you made during the interview and the video recording of the interview. For this purpose we developed the Observation Registration Tool (which can be found on the GoogleDrive and USB-stick attached to the book). With this tool you are able to combine the gathered observation data from your sheet, notes of your sketchbook and pictures/screenshots you have taken during the observation. In this way you are able to generate a full overview of all the activities your team member was involved in, the comments you written down and the feedback you gave to your team member.

COLLECTING OF DATA

Every Sunday (17:00) the main researcher will collect all the gathered data. This does not only include all the outcomes (pictures, sketches, videos, maps, etc.) of the different activities (interview, workshops, mapping), but should include all the data of the observation. As instructed you will need to sort and code the time-lapses. Moreover we will collect the observation sheets every Sunday to keep track of the progress made of the team.

8. USER/COMMUNITY CAPACITY & PARTICIPATION PLANNING

The main aim of the capacity & participation planning is to make a complete planning of all the phases needed for the new house. The most important part is the presentation of the planning to the family and their community. Your role as observer is to see if everyone can settle with the planning, if they are included and willing to participate in the project. The registration tool shown in the image below will help you to keep track on the problems you observe and what comments you made. This section will be video recorded by your team member so you can use the recording to make screenshots to show the observed issues. As the chapter and according steps are clearly described in the chapter of the support tool you can prepare the registration tool to fill in your observations. Also read the whole chapter so you know what to expect and what needs to be performed by your team member

Below we briefly explain the different observation criteria:

- **Time:** here you will need to write down the starting time of any activity observed
- **Activity:** here any activity the team member is involved in should be written down: the steps should correspond with the chapter of the support.
- **Duration:** here roughly keep track of how long the activity takes place
- **Team member includes family/community preferences scale from none to all:** if the team member is not using any of the preferences of the family or community; none (0). If the team member is using some of the preferences; some. If the team member uses all the preferences; all (5).
- **Level of participation scale from no participation to full participation:** if no community/family member is present during the presentation of the planning; no participation (0). : if all included community/family members are present during the presentation of the planning; full participation

(5). : if some community/family members are present during the presentation of the planning; some (3).

- **Support fulfilment level:** here you should state to what extent your team member has been using the support. If he/she does not follow the support at all it should state (0). If the support it used to the letter it should state a (5). Sometimes your team member will combine his own words in stating different questions then stated on the interview guide which would score a (3).
- **Comment:** here any additional important information can be written down. You can think of emotions (cheerful, happy, sad, etc.) or the pace the activity is (fast, slow, etc.), the physicality of the activity (easy, heavy, etc.) or level of the skill involved (novice, average, advanced, expert, etc.)
- **Picture:** To show the activity or explain where and how it takes place you are asked to add any visual aid to proves the observed activities. In a later stage it can also help you to better understand what was necessary to carry out the activity.

SEATING

Make sure you place yourself close to the activity to see what is being performed, but far enough that you are considered as observer/adviser and not an active participant to the activity.

Feedback

Please use the earlier mentioned main feedback points:

- Try to Make It a Positive Process and Experience.
- Be Timely
- Be Specific
- Criticize in Private
- Use "I" Statements
- Limit Your Focus
- Talk About Positives Too
- Provide Specific Suggestions

In case you feel the team member is making such mistakes that it might cause major issues you can give emergency feedback. If its not that urgent you can use the lunch break to discuss your findings (positive and negative) of the morning and make suggestions. Also at the end of the day you should take the time to give your team member feedback on the positive and negative observations you made during the day. Obviously these should also be stated in the registration tool.

OBSERVATION: User/community capacity & participation planning
WHERE: In-/outside main house, compound and community
WHO: Community, father & Ayoub
DATE: 18-09-2017

Time	Activity	Duration	Inclusion preferences: From none (0), to all (5)	Level of participation scale From no participation to full participation	Support level fulfillment: none (0), following all the steps(5)	Comment	Picture
09:00	Preparation	-	-	-	-		
09:15	Presenting to family	30 min	2	3	3	Ayoub: I following the support well, all family members are present and they really have the opportunity to add their preferences during the presentation. Sadly at the end of the presentation Ayoub adds that he will not change the planning. The family seems a little disappointed	
09:45	Questions	45 min	2	3	-	The family has many questions about the planning and Ayoub has the patience to let them all address the issues. Sadly again stating he won't be able to change the planning accordingly	
10:30	Presenting to community	1 hour	3	2	2	Due to a good preparation all the community members that are listed in the planning have come to the presentation. The presentation is clear and Ayoub speaks slowly so everyone can follow.	
11:30	questions	30 min	2	3	-	There are some uncertainties with the community about payment. They prefer to receive money then to have food. Ayoub clearly explains that the family does not have the funds to pay and asks for their help. As explained in the presentation all hours that the community puts in will be compensated according to agreements they made with the family.	

notes:

Number	Feedback
1	I think Ayoub really made the family feel comfortable about the future of the new house.
2	I think that during the community presentation it was a little messy because of the many questions that came during the presentation. Ayoub did very well to let everyone speak what was on his or her mind.
3	

Number	Decisions
1	Ayoub decided after the feedback that he needs to change the planning according to the wishes of the family although he just finished the final version.
2	
3	
4	
8	

Figure 145: Example of the capacity and participation planning observation sheet

WRITING OUT THE OBSERVATION

Make sure that you spend the evening and/or next day at home to give yourself time to write out all the observations. When you pressure yourself too much you will tend to forget things or become less receptive. Take your filled in registration tool sheet, the notes you made during the observation and pictures you took. For this purpose we developed the Observation Registration Tool (which can be found on the GoogleDrive and USB-stick attached to the book). With this tool you are able to combine the gathered observation data from your sheet, notes of your sketchbook and pictures/screenshots you have taken during the observation. In this way you are able to generate a full overview of all the activities your team member was involved in, the comments you written down and the feedback you gave to your team member.

COLLECTING OF DATA

Every Sunday (17:00) the main researcher will collect all the gathered data. This does not only include all the outcomes (pictures, sketches, videos, maps, etc.) of the different activities (interview,

notes:

workshops, mapping), but should include all the data of the observation. As instructed you will need to sort and code the time-lapses. Moreover we will collect the observation sheets every Sunday to keep track of the progress made of the team.

9. OBSERVING AND FEEDBACK THROUGHOUT THE REST OF THE PROJECT

Although the support has come to an end and you will soon start to construct the house it does not mean that the role of the observer ends. As from now you will continue to give each other on the job feedback. This means that one team member has to write observations and give feedback for the other team member. On the next day they swap roles and does the other write his or her observations and give feedback. This means that only one person will observe and give feedback per day. In the image below an example of such a feedback sheet, again make sure that at the end of each week the documents are ready to be collect by the main researcher.

notes:

OBSERVATION: Daily observation of team member
WHAT: Excavating foundation trench
WHO: Community, father & Pelle
DATE: 08-10-2017

Time	Activity	Duration	Comment	Feedback	Decision	Picture
09:00	Preparation	-				
09:15	measuring	30 minutes	Pelle wants to hurry to much, father and community member Francis have difficulties to follow. Pelle has a lot of patience to explain how to measure perpendicular.	I think you should slow down a little. We need to catch up time but we should still give enough time for people to understand and learn what we do.	Pelle agrees that he is rushing to much and will adapt to a regular working pace.	
09:45	digging	120 minutes	Pelle wants to do to much by himself, he should remind himself that he is advising and helping, not building the house by himself. Everyone needs to participate in the activities, not looking at him doing the actual work (he could be more assertive).			
11:45	break	15 minutes				
12:00	digging	3 hours				

Figure 146: Example observation sheet of the rest of the project

notes:

APPENDICES

I. INTERVIEW INSTRUCTIONS: DAILY ROUTINE PARENTS

Date
Interviewer:
Interviewee:
Location: Chepchoina area, at the slopes of Mount Elgon in Western Kenya
Catchment area approximately 5 km around the projects.

Head Researcher: Ir.-arch. Michiel Smits PhD Candidate
The department of Architecture, Chair of Methods & Analysis
Faculty of Architecture and the Built Environment, Delft University of Technology

Partner Applicant: Stichting Elimu Mount Elgon
Stichting SOK
Mount Elgon Trust

notes:

1. RESEARCH INFORMATION

Central Research Question:

What are the daily routines of the parent throughout the week?

Objective: Question, assess and evaluate the daily routines as detailed as possible.

Aim: Before we can start designing anything we will first have to take a look at the existing way of living of the family. This exposes when, where and how the parents are in relation to their house and surroundings. From here the intensity of usage and location can be better understood per function (space) of the house. This interview will be used as input in formulating the design brief¹³.

2. INTERVIEW INSTRUCTIONS

INTRODUCTION

This document gives some practical instructions on the interview to be conducted as a part of the "[rural housing project](#)". This instruction is to be used solely by the teams that are offered the support as a part of the "[rural housing project](#)". The aim of the interview is twofold. First of all, they should gain insight in all activities (sleeping, cooking, working, praying, etc.) the parents are involved in throughout the whole of the week. The second, is to understand where these activities take place (house, compound, community, area, etc.).

COMPOSITION OF THE INTERVIEW

The interview start with introduction questions, these are easy question that are meant to make the interviewee relaxed. If you feel there is still tension in the expressions of the interviewee have a little chat about an anecdote. In the second part you will ask detailed questions about every day activities and where they take place. In the third part some closing questions are stated in order to slowly say goodbye to the interviewee (for this interview).

PRACTICALITIES OF THE INTERVIEW

Organizing interviews involves taking a lot of practical decisions. Below, we will deal with some practical elements of interview

¹³ Design brief: Is a written description of what a new project should, what is needed to produce is, how long i twill take, etc. ("design brief Meaning in the Cambridge English Dictionary," n.d.)

research.

GENDER & CULTURE

Make sure that before starting the interview you explain that you would like to conduct the interview with the family member of the same gender. Also explain that this is the most comfortable way of interviewing one another. Some of the topics covered in daily activities will be considered sensitive. State at the begin of the interview that you are from another culture and you might not be aware of certain cultural customs and behaviour. More importantly that you would love to know all there is so any detail would be highly appreciated.

LOCATION

The location is key to a good interview. Personal and private issues are best shared within the confined walls of ones own home. Make sure that before starting the interview you ask the interviewee if it would be allowed to conduct the interview in the house (most compounds have multiple) where they spend most indoor time. When you are conducting the interview while other people are close to the house, ask the interviewee if he/she is comfortable. If this is not the case suggest closing the door or finding a more private spot.

SEATING & CLOTHING



Figure 147: Seating at interviews

Seating arrangements within an interview is very important. Sitting opposite to the one you are interviewing can create negative and positive effects. Putting a table in between the interviewer and interviewee creates both a physical and a mental distance (left image). Sitting in the same direction or under a 90-degree angle, will avoid constant direct eye contact. The interviewee might be more comfortable in this arrangement. However, the arrangement is organized make sure the interviewee is at ease and comfortable. How you dress and behave will also greatly influence this. The more formal you dress, the more formal you will act and the formal answers you

notes:

will receive.

REWARD

As you will spend quite some time (1-1,5 hour) with the family member, you might want to take something small (tea, sugar, snack (mandazi), etc.). As you will notice the family most probably will serve you a tea, as it is customary. Especially in the first visits to the family don't decline as it might be considered rude. On a later moment it would be nice that you took something to share with them in return.

PICTURE RECORDING

An important part of the interviewee is to show/prove where, how and when the interview was taken. Make sure you take pictures of both interviewer (you) & interviewee and a picture of the actual interview take place (setting). The Lumix self-timer function will help you to do so.

Make your recording device has the right date and time stamp to track when the information was taken!

VIDEO/AUDIO RECORDING

One of the most important aims is the later transcription of your interview. During the interview you will need all your attention and focus to ask questions and react on them. Writing should be minimized to making notes in your sketchbook. A lot of writing might make the interviewee nervous and will also decrease your own attention to the answer given or the next question you would like to ask. Therefore not to miss anything of what is being said or told you should make a video recording of your interview. Obviously you want both interviewee and interviewer to be on the frame. However, the more distance you create to have everyone on the frame, the more the audio quality will incline. From testing anything recorded within 3 meters from the source will have an acceptable quality. This is of obvious importance as you will need to know what is being said to transcribe the interview. Make regular check to make sure the recording is running, you have sufficient battery and sufficient memory to record.

Make your recording device has the right date and time stamp to track when the information was taken!

Duration of the interview

The interview should typically take about 1 hour; taking less time will drastically decrease the quality of the outcomes.

BREAKS

Some of the family members will require more time to be interviewed than others. As soon as you start to notice that the interviewee lacks energy, enthusiasm or attention, most probably they have other matters to attend to. Ask them if they need to do something and if you could maybe help them a bit with the activity. Helping the family member is a small reward that can really make the difference in mood and understanding.

ANALYSIS OF INTERVIEW RESULTS: CODING

At the end of every day it is vital that you organise your research data on the external hard drive. In this case, made pictures and video/audio recording. As you know from the Pilot projects it is important to use a specific code for all recorded media inside the destination folder to have a well-organised hard drive. You will use a specific coding system to easily keep track of your data, this will be: Team number/ phase/ kind of recording or file/ initials of the author/ date/ media number.

Team number: T(number)

T1: Pelle Rademakers, Argjire Krasniqi

T2: Ayoub Salah, Jackson Kariuki

T3: Damian van der Velden, Corne Nuijten

T4: Atdhe Lila, Despoina Kouinoglou

Phase: P(chapter number)

Phase 1: First introduction family

Phase 2: Interview daily routine

Phase 3: Hopes and Dreams

Phase 4: Mapping

Phase 5:

Kind of recording/file:

Time-lapse: TL

Video: VI

Photo: PH

Audio: AU

Text: TX

Drawing: DR

Scan: SC

Initials of the author: first letter of first name and surname

Date: European calendar system

Media number: This will be given automatically when renaming a

notes:

bash of media

An example of the video code: T1.P1.VI.PR.10.10.2017.1

An example of the photo code: T1.P1.PH.PR.10.10.2017.1

An example of the audio code: T1.P1.AU.PR.10.10.2017.1

An example of the text file code: T1.P1.TX.PR.10.10.2017.1

An example of the drawing code: T1.P1.DR.PR.10.10.2017.1

An example of the scanned file code: T1.P1.SC.PR.10.10.2017.1

II. INTERVIEW GUIDE: DAILY ROUTINE PARENTS

notes:

Date:

Interviewer:

Interviewee:

Partner Applicant: Stichting Elimu Mount Elgon.

Location: Chepchoina, at the slopes of Mount Elgon in Western Kenya
 Catchment area approximately 5 km around the projects.

Head Researcher: Ir.-arch. Michiel Smits PhD Candidate
 The department of Architecture, Chair of Methods & Analysis
 Faculty of Architecture and the Built Environment, Delft University of Technology

Partner Applicant: Stichting Elimu Mount Elgon
 Stichting SOK
 Mount Elgon Trust

notes:

1. RESEARCH INFORMATION

Central Research Question:

What are the daily routines of the parent throughout the week

Objective: Question, assess and evaluate the daily routines as detailed as possible.

Aim: Before we can start designing anything we will first have to take a look at the existing way of living of the family. This exposes when, where and how the parents are in relation to their house and surroundings. From here the intensity of usage and location can be better understood per function (space) of the house. This interview will be used as input in formulating the design brief¹⁴.

2. INTERVIEW GUIDE

INTRODUCTION:

I am conducting this interview to better understand your daily activities. As you know I am from a completely different country, culture and background. Maybe daily activities however similar are different in the way you perform them. Why, where and how you perform those daily activities, is rooted in what is culturally expectable and what not. For example, I think we can agree that bathing in public without any form of protection is not desired here or where I come from. However, where; inside or outside and how; block of soap and washing basin, is different in our daily routine. Before we can start helping you to design and build an new house, we need to understand how you use the existing house. In a later stage we can then together look at all the daily activities of the family and decide where and how they should take place. The most effective way to understand your daily activities is to go through the week together and repeat questions for every day.

In order to pay attention to what you say and not miss anything I would like to ask you if it is okay to record our interview. In this way I can look and listen back to what we have said and write out all the daily activities. These can then be used later on for the design of the house. Do you have any questions before starting? If you have any during the interview, feel free to ask them! Also if you would like to know more on my own daily routine.

¹⁴ Design brief: Is a written description of what a new project should, what is needed to produce is, how long it will take, etc. ("design brief Meaning in the Cambridge English Dictionary," n.d.)

----- START VIDEO RECORDING -----

3. THE QUESTIONS

General information:

Before we dive into your daily routine I would first like to ask you some questions about the family and you in general.

Which are your full names?

How old are you?

What is your occupation (housewife, teacher, farmer, etc.)

How many children do you have?

What are the names and ages of the children

What is the occupation of children (please specify: education or work)?

Do you own a mean of transport (bicycle, motorbike, donkeys)?

Do you have farmland? (at the house and/or somewhere else?)

Who takes care of what is being grown?

Is everything that is being produced, used by the family? Or do you sell some of your produce?

Questions about Daily routine:

Now I have a better idea on the family composition and main activities, I would like to start with the daily routine. Although, today is not a normal day due to the interview, could we please start with what you would normally do on this day. Please describe with little details as possible. It would very useful if you kind of state around what time and how long the activity take place.

What time do you usually get up in the morning? How (phone, clock)?

What are the steps you take when you wake up? (go through the various options below and organize them step by step)

What is the order (step by step)

Could you explain to me where and

Could you explain to me why?

Waking up others?

Dressing up?

Dressing up others?

Washing?

Praying?

Starting fire?

notes:

Going to the toilet

When do you have breakfast?

Where do you have for breakfast

What do you have for breakfast

Who prepares breakfast

With whom (whole family, part of the family, etc.)?

Why?

What do you do after breakfast?

Cleaning house

Going to work

Repairing house

Etc.

When?

Where?

Are you doing this alone?

When and where do you meet?

Do you have any daily activities in between in the morning?

[Fetching water

Collecting food

Collecting firewood

Buying food/drinks

Meeting with people

Helping people etc.]

Are you doing this alone?

When and where does the activity take place?

Where do you meet?

Where do you usually eat lunch?

At what time?

With whom?

What do you do after lunch?

[Cleaning house

Going back to work

Repairing house, etc.]

When?

Where?

Are you doing this alone?

When and where do you meet?

Do you have any daily activities in between in the afternoon?

[Fetching water
Collecting food
Collecting firewood
Buying food/drinks
Meeting with people
Helping people, etc.]
Are you doing these alone?
When and where does the activity take place?
Where do you meet?

At what time do you usually get home from school/work/etc.?
Do you do anything on the way?
[Getting food
Meeting with friends, etc.]

Where do you usually eat supper?
What?
At what time?
With whom?

What do you do after supper?
[Children to bed, etc.]
When?
Where?
Are you doing this alone?
When and where do you meet?

Do you have any daily activities in between in the evening?
[Fetching water
Collecting food
Collecting firewood
Buying food/drinks
Meeting with people
Helping people, etc.]
Are you doing this alone?
When and where does the activity take place?
Where do you meet?

Can you tell me about your best friend(s).
How often do you see him/her?
Where do you meet?
What do you do when seeing each other?

What hobbies do you have?

notes:

What time do you usually go to bed at night?

What do you do before going to bed?

----- STOP AUDIO RECORDING -----

III. INTERVIEW INSTRUCTIONS: DAILY ROUTINE CHILDREN

notes:

Interview instructions

Date:
Interviewer:
Interviewee:
Location: Chepchoina area, at the slopes of Mount Elgon in Western Kenya
Catchment area approximately 5 km around the projects.
Head Researcher: Ir.-arch. Michiel Smits PhD Candidate

The department of Architecture, Chair of Methods & Analysis
Faculty of Architecture and the Built Environment, Delft University of Technology

Partner Applicant: Stichting Elimu Mount Elgon
Stichting SOK
Mount Elgon Trust

notes:

1. RESEARCH INFORMATION

Central Research Question:

What are the daily routines of the children throughout the week.

Objective: Question, assess and evaluate the daily routines as detailed as possible.

Aim: Before we can start designing anything we will first have to take a look at the existing way of living of the family. This exposes when, where and how the children are in relation to their house and surroundings. From here the intensity of usage and location can be better understood per function (space) of the house. This interview will be used as input in formulating the design brief¹⁵.

2. QUESTIONNAIRE INSTRUCTIONS

INTRODUCTION

This document gives some practical instructions on the interview to be conducted as a part of the [“rural housing project”](#). This instruction is to be used solely by the teams that are offered the support as a part of the [“rural housing project”](#). The aim of the interview is twofold. First of all, they should gain insight in all activities (sleeping, eating, studying, etc.) the children are involved in throughout the whole of the week. The second is to understand where these activities take place (house, compound, community, area, school, playground, church, etc.).

COMPOSITION OF THE INTERVIEW

The interview starts with introduction questions, these are easy questions that are meant to make the interviewee relaxed. If you feel there is still tension in the expressions of the interviewee have a little chat, play a short game or try another activity. In the second part you will ask detailed questions about every day activities and where they take place. In the third part some closing questions are stated in order to slowly say goodbye to the interviewee (for this interview).

¹⁵ Design brief: Is a written description of what a new project should, what is needed to produce is, how long it will take, etc. (“design brief Meaning in the Cambridge English Dictionary,” n.d.)

PRACTICALITIES OF THE INTERVIEW

Organizing interviews involves taking a lot of practical decisions. In essence they are comparable to those needed for the parent interviews. However, children are more vulnerable, have a shorter attention span¹⁶ and need more explanation on asked questions. Below, we will deal with some practical elements of interview research.

GENDER & CULTURE

Make sure that before starting the interview you ask if the child you want to interview does not have any problems with you interviewing him or her. In general try to keep interviews with the same gender, especially children above 13-14 years old might have some hesitation having mixed gender interviews. Leave it up to them to decide which team member they would prefer. Some of the topics covered in daily activities will be considered sensitive. State at the begin of the interview that you are from another culture and you might not be aware of certain cultural customs and behaviour. More importantly that you would love to know all there is so any detail would be highly appreciated. For example; where and how they make their homework, where they store shoes, etc.

COMMUNICATION

Some children might struggle with English as they are too young to understand the language fully. Often there is a sister that loves to help you and the little sister or brother, better understand each other.

LOCATION

The location is key to a good interview. Personal and private issues are best shared within the confined walls of one's own home. Make sure that before starting the interview you ask the interviewee if it would be allowed to conduct the interview in the house (most compounds have multiple) where they spend most indoor time. You will notice that in most cases the children do not sleep in the same house as their parents. To be sure ask them where they normally sleep. When you are conducting the interview while other people are close to the house, ask the interviewee if he/she is comfortable. If this is not the case suggest closing the door or finding a more private spot.

¹⁶ Attention span: The length of time that someone can keep their thoughts and interest fixed on something ("attention span Meaning in the Cambridge English Dictionary," n.d.)

notes:

SEATING & CLOTHING

Seating arrangements within an interview is very important. Sitting opposite to the one you are interviewing can create negative and positive effects. Putting a table in between the interviewer and interviewee creates both a physical and a mental distance (left image). Sitting in the same direction or under a 90-degree angle, will avoid constant direct eye contact. The interviewee might be more comfortable in this arrangement. However, the arrangement is organized make sure the interviewee is at ease and comfortable. How you dress and behave will also greatly influence this. The more formal you dress, the more formal you will act and the formal answers you will receive.



Figure 148: Seating at interviews

With interviewing children there is another issue; length difference. As an adult (older then the child) you have a form of authority. By placing yourself on the same height as the child during the interview you will establish a more equal relation. Another great trick is to do some small (not too distracting) activities during the interview. In this way they are less nervous with your presence and might find it easier to answer your questions.



Figure 149: Seating & positioning with children during interviews.

REWARD

As you will spend quite some time (1-1,5 hour) with the family member, you might want to take something small (tea, sugar, snack (sugar cane, mandazi), etc.). As you will notice the family most probably will serve you a tea, as it is customary. Especially in the first visits to the family don't decline as it might be considered rude. On a later moment it would be nice that you took something to share with them in return.

PICTURE RECORDING

An important part of the interviewee is to show/prove where, how and when the interview was taken. Make sure you take pictures of both interviewer (you) & interviewee and a picture of the actual interview take place (setting). The Lumix self-timer function will help you to do so. If the child gets a bit scared of making pictures, let them take a picture of you.

Make your recording device has the right date and time stamp to track when the information was taken!

VIDEO/AUDIO RECORDING

One of the most important aims is the later transcription of your interview. During the interview you will need all your attention and focus to ask questions and react on them. Writing should be minimized to making notes in your sketchbook. A lot of writing might make the interviewee nervous and will also decrease your own attention to the answer given or the next question you would like to ask. Therefore not to miss anything of what is being said or told, you should make a video recording of your interview. Obviously you want both interviewee and interviewer to be on the frame. However, the more distance you create to have everyone on the frame, the more the audio quality will decline. From testing, anything recorded within 3 meters from the source will have an acceptable quality. This is of obvious importance, as you will need to know what is being said to transcribe the interview. Make regular checks to make sure the recording is running, you have sufficient battery and sufficient memory to record.

Make your recording device has the right date and time stamp to track when the information was taken!

notes:

DURATION OF THE INTERVIEW

The interview should typically take about 1 hour; taking less time will drastically decrease the quality of the outcomes.

BREAKS

Some of the family members will require more time to be interviewed than others, especially children. As soon as you start to notice that the interviewee lacks energy, enthusiasm or attention, most probably they have other matters to or they got bored. Ask them if they need to do something, if they are bored or if you could maybe help them a bit with doing something. Helping or playing with the child is a small reward that can really make the difference in mood and understanding. Taking a Frisbee, ball or anything else is always a good idea.

ANALYSIS OF INTERVIEW RESULTS: CODING

At the end of every day it is vital that you organise your research data on the external hard drive. In this case, made pictures and video/audio recording. As you know from the Pilot projects it is important to use a specific code for all recorded media inside the destination folder to have a well-organised hard drive. You will use a specific coding system to easily keep track of your data, this will be: Team number/ phase/ kind of recording or file/ initials of the author/ date/ media number.

Team number: T(number)

T1: Pelle Rademakers, Argjire Krasniqi

T2: Ayoub Salah, Jackson Kariuki

T3: Damian van der Velden, Corne Nuijten

T4: Atdhe Lila, Despoina Kouinoglou

Phase: P(chapter number)

Phase 1: First introduction family

Phase 2: Interview daily routine

Phase 3: Hopes and Dreams

Phase 4: Mapping

Phase 5:

Kind of recording/file:

Time-lapse: TL

Video: VI

Photo: PH

Audio: AU

Text: TX

Drawing: DR

Scan: SC

Initials of the author: first letter of first name and surname

Date: European calendar system

Media number: This will be given automatically when renaming a
bash of media

An example of the video code: T1.P1.VI.PR.10.10.2017.1

An example of the photo code: T1.P1.PH.PR.10.10.2017.1

An example of the audio code: T1.P1.AU.PR.10.10.2017.1

An example of the text file code: T1.P1.TX.PR.10.10.2017.1

An example of the drawing code: T1.P1.DR.PR.10.10.2017.1

An example of the scanned file code: T1.P1.SC.PR.10.10.2017.1

notes:

IV. INTERVIEW GUIDE: DAILY ROUTINE CHILDREN

Date:

Interviewer:

Interviewee:

Partner Applicant: Stichting Elimu Mount Elgon.

Location: Chepchoina, at the slopes of Mount Elgon in Western Kenya
Catchment area approximately 5 km around the projects.

Head Researcher: Ir.-arch. Michiel Smits PhD Candidate
The department of Architecture, Chair of Methods & Analysis
Faculty of Architecture and the Built Environment, Delft University of Technology

Partner Applicant: Stichting Elimu Mount Elgon
Stichting SOK
Mount Elgon Trust

1. RESEARCH INFORMATION

Central Research Question:

What are the daily routines of the children throughout the week.

Objective: Question, assess and evaluate the daily routines as detailed as possible.

Aim: Before we can start designing anything we will first have to take a look at the existing way of living of the family. This exposes when, where and how the children are in relation to their house and surroundings. From here the intensity of usage and location can be better understood per function (space) of the house. This interview will be used as input in formulating the design brief¹⁷.

2. INTERVIEW GUIDE

INTRODUCTION:

I would like to ask you some questions to better understand what you do every day. As you know I am from a completely different country and family. Although we sleep, eat and go to school there are difference (it is advised to give some examples). Why, where and how you are doing these daily activities, is maybe logic to you, but totally not logic to me. For example, I put my shoes under my bed and you put them next to your door. Both of us have reasons to put our shoes at those places, but they are different for you and for me.



Figure 150: Example of shoes under a bed and next to the door.

Before we can start helping you to design and build a new house, we need to understand how you use the house you live in now. In a later stage we can then together look at all the daily activities of you your brothers, sisters and parents. To understand your daily activities as good as possible we will go through the week together and repeat

¹⁷ Design brief: Is a written description of what a new project should, what is needed to produce is, how long it will take, etc. ("design brief Meaning in the Cambridge English Dictionary," n.d.)

notes:

questions for every day.

In order to pay attention to what you say and not miss anything I would like to film our interview. In this way I can look and listen back to what we have said and write out all the daily activities. These can then be used later on for the design of the house. Do you have any questions before starting? If you have any during the interview, feel free to ask them! Also if you would like to know more on my own daily routine!

----- START VIDEO RECORDING -----

THE QUESTIONS

General information:

Before we dive into your daily routine I would first like to ask you some questions about the family and you in general.

Which are your full names?

How old are you?

What is your occupation (studying or working)?

Which school or what type of work do you do?

How many brothers and sisters do you have?

What are the names and ages of them?

How do you go to school or work?

Do you help your parents growing vegetables?

Do you help your parents with daily chores? (fetching water, firewood, etc.)

Which are they? How often?

Questions about Daily routine:

Now I have a better idea on some of the main activities, I would like to start with the daily routine. Although, today is not a normal day because of the interview, could we please start with what you would normally do on this day. Please describe with little details as possible. It would be very useful if you tell at which time and how long the activity takes place.

What time do you usually get up in the morning? How or who is waking you up (phone, clock)?

What are the steps you take when you wake up?

[go through the various options below and organize them step by step]

Waking up others?

Dressing up?
 Clothing lie where?
 Dressing up others?
 Washing?
 Washing tools are where?
 Praying?
 Starting fire?
 Going to the toilet
 Packing schoolbag, etc.

What is the order (step by step)
 Could you explain to me where and
 Could you explain to me why you do those things?

At what time do you have breakfast?
 Where do you have for breakfast
 What do you have for breakfast
 What others things do you normally have for breakfast?
 Where do you eat your breakfast out of?
 Who prepares breakfast?
 With whom (whole family, part of the family, eytc.)?
 Why?

What do you do after breakfast?
 [Cleaning house
 Going to school/work
 Playing, etc.]
 When?
 Where?
 With whom?
 When and where do you meet?

Do you have any daily activities in between in the morning?
 [Fetching water
 Collecting food
 Collecting firewood
 Buying food/drinks
 Meeting with people
 Playing, etc.]
 Are you doing this alone?
 When and where does the activity take place?
 Where do you meet?

Where do you usually eat lunch?

notes:

At what time?
With whom?
What do you normally have for lunch?
Do you help preparing lunch?

What do you do after lunch?
[Cleaning house
Going back to school/work
Repairing house, etc.]
When?
Where?

Are you doing this alone?
When and where do you meet?

Do you have any daily activities in between in the afternoon?
[Fetching water
Collecting food
Collecting firewood
Buying food/drinks
Meeting with people
Playing, etc.]
Are you doing these alone?
When and where does the activity take place?
Where do you meet?

At what time do you usually get home from school/work/etc.?
Do you do anything on the way?
[Getting food
Meeting with friends, etc.]

Where do you usually eat supper?
What?
At what time?
With whom?

What do you do after supper?
[Homework
Playing
Fetching water
Collecting food
Collecting firewood
Buying food/drinks
Meeting with people

Helping people, etc.]

When?

Where?

When and where do you meet?

What time do you usually go to bed at night?

What do you do before going to bed?

Closing Questions:

[They are meant to create a more relaxed character, see how much you can cover without losing the attention.]

Can you tell me about your best friend(s).

How often do you see him/her?

Where do you meet?

What do you do when seeing each other?

What hobbies do you have?

----- STOP AUDIO RECORDING -----

V. INTERVIEW TRANSCRIBING

This support is a part of the “Guidelines for Interview support” and it intends to help you with transcribing the interviews. . In the project on Mt. Elgon you will need to interview all family members of your project. During these interviews you will make either **an audio or video recording** of each and **every** interview session. You will collect many opinions, observations and problems while spending time with the family; you don’t want to miss any details of the problems addressed during interviews. Going through the recordings and writing down in detail what is being said during the interview is what we call transcribing. Transcripts will enable you to generate in-depth results, which will be used as input for: the design brief, design, decision-making and many more.

The outcomes will not only help you to make decisions based on the gathered information, but more importantly make your transcript fully useable for research and future publications (for both yourself as others). This information is vital to the long-term effectiveness of your design and project proposal for the local family you will be helping.

In the attachment an “expert interview” is send to practice the transcription of an interview. Be aware this is a real-life expert interview, taken by Michiel Smits, the results of the transcriptions will be used for publication. Therefore, take time and care in transcribing the interview. When the draft transcription is finished please contact one of the English teachers to help you check your writing. Be aware that the changes made will affect the outcomes of the transcription and should always remain in line what is being said in the interview!

Not all the points below will need to be used in this expert interview, they are to be used in the interviews you will take in the field in Kenya. Therefore, if you find a point, which is not mentioned in the guide and seems inapplicable; please skip this point.

NOTE: *Begin work on the transcript early. It is an essential and time-consuming task, which must be completed before you can begin working on the project. Waiting too long will make you forget about small details that are not recorded in the video or audio recording.*

1. Transcripts will be word-processed (Microsoft Word or comparable) on A4 size.
2. Use a standard font Times in 12-point size (see sample transcript: page 5).
3. Use as standard language English UK
4. Leave margins of at least one inch on all four sides of the page.
5. Transcripts should be double-spaced (see sample transcript: page 5).
6. All pages will contain the following information at the head of the page in 10 point type:
 - Interviewer's name on the left
 - Interviewees name in the centre followed by the word, "Interview"
 - Page number on extreme right followed by slash and the total number of pages e.g.,

Michiel Smits
Interview

Robert van Kats
1/35

7. The date of each recording session should appear as a title (flush left) for each section of the interview. Sometimes inhabitants will not be available to perform the whole interview at once. If the interview takes more than one session (day), start a fresh page for each new date and supply the new date as a title at the beginning of the transcript on that page. Regardless of the number of days it will take to do the interview, make only one complete transcript per person.
8. The speakers should be identified. Below the date it should read "Persons present and provide a list. Persons other than yourself and the narrator should be identified in parentheses following their name (e.g., spouse, son, family friend, etc.). Indicate what abbreviations will be used to identify the various speakers on the transcript. Use your last name for yourself and the narrator's last name to identify the speaker. Use initials for any other speakers present, e.g., "MD" for

notes:

- Marion Doe (narrator's spouse).
9. Indicate any non-verbal responses in parentheses such as (narrator weeping), (laughter), (narrator very agitated) and so forth, however, do not reproduce irrelevant sound such as "Ahhh, let me see..." Do not, however, correct the narrator's grammar or syntax. Faithfully transcribe slang expressions, exclamations ("Gosh!") and fragmentary sentences.
 10. Do not use quotation marks unless the speaker is quoting someone else or reading from a document.
 11. Explanatory remarks you add for clarity should be in [square brackets], e.g., "That was before the NHS [National Health Service] came in..."
 12. Be sure to proof read your transcript from the tapes once it is completed to ensure accuracy.
 13. If at all possible, give the narrator an opportunity to review the transcript and make corrections.
 14. Create a title page for the transcript using the sample format provided. This page must contain the following information:
 - Your full name
 - The Interviewee or Narrator's full name.
 - The date(s) of the interview (day/month/year)
 - The place(s) where they were conducted
e.g., PLACE: narrator's home, (full address, including telephone number)
 - The name of your college and professor as well as the date you completed the project
 15. Write a brief (1 to 2 page) introduction to the transcript as follows:
 - In one paragraph, tell us who this person is. Name (as a heading), date and place of birth, occupations(s), family (married with two sons—include spouse's name even if deceased), education (e.g., graduated from Grade 12 in 1946)
 - Include as many dates as you can
 - In another paragraph tell us their connection(s) to the project
 - In another paragraph explain why you felt this person was worth interviewing

- Provide a list of the topics of interest touched on by the narrator, for example,
 - Field experience in Africa
 - Attitude: modest, extravert.
 - Design methods
 - Building methods, materials, etc.
 - Noteworthy events such as projects, experiences, etc.
 - Conclude with listing any references made by the narrator to other valuable historical sources including documents, photography, individuals who should be interviewed and so forth. Please note if you accepted any items from the narrator
16. Following the Introduction page(s), provide a "Glossary" which gives the correct spelling of significant names mentioned in the transcript such as people, places, events and so forth. Where appropriate, note a few details regarding a specific item, for example,
- Stelco - steel plant where John worked for 40 years
 - Wycliffe - college where John Doe studied theology from 1910-1912

Be sure to indicate any parts of the interview, which may contain negative comments about other people or organizations. These may require selective closure to prevent the possibility of legal action for libel or defamation.

Sample transcript pages follow.

notes:

(Sample Transcript cover page: you can use this title page)

Inhabitant self-reliance towards their built environment

Interview Transcript

Interviewer: Michiel Smits
Narrator: John Doe
Dates: 12/10/01
13/10/01
20/10/01
Place: Delft University of Technology
Faculty of Architecture
Chair: Methods & Analysis
Julianalaan 134, Delft
Prof.: Prof. dr. ir. T. Avermaete
Date completed: 30 Oct. 2017

(Sample Transcript page)

James Craig John Doe Interview 1/27

12 October 2001

Persons present: James Craig - I
John Doe - S
Marion Doe (spouse) - MD

Craig: John, tell me a little about your personal background, who your parents were, where you were born and raised and so forth.

Doe: My parents both came from Ireland in the 1920's. They came to Canada because there was no more farmland back in Ireland. They arrived in Halifax on a stormy day in 1923. From there they took the train to Toronto where my father's uncle Joe had promised he could find him a job—he, that is, my father was a leather worker, made ladies handbags and such—so that's where they went.

MD: But when they got to Toronto, they found out that Joe didn't even have a job himself (laughter).

Doe: That's right!

Craig: What were your parent's names? [Normally you would not interrupt a narrative but it is important to have this information up front]

Doe: Oh, of course, John and Mary Doe. My father belonged to the Culnurrah clan in county Cork [place correct spelling of "Culnurrah" in glossary with expalnatory note] They were both Roman Catholics. My father considered joining the IRA [Irish Republican Army] at one time.

notes:

VI. INTERVIEW INSTRUCTIONS: FAMILY CAPACITIES

Date:
Interviewer:
Interviewee:

Location: Chepchoina area, at the slopes of Mount Elgon in Western Kenya
Catchment area approximately 5 km around the projects.

Head Researcher: Ir.-arch. Michiel Smits PhD Candidate
The department of Architecture, Chair of Methods & Analysis
Faculty of Architecture and the Built Environment, Delft University of Technology

Partner Applicant: Stichting Elimu Mount Elgon
Stichting SOK
Mount Elgon Trust

1. RESEARCH INFORMATION

Central Research Question:

What are capacities of the family?

Objective:

Question, assess and evaluate the capacities as detailed as possible.

Aim:

To make a design based on the capacities the family current has we will first have to assess all the capacities they currently have. As traditional building practice involved all family members it is vital to evaluate the capacities of all family members. Moreover, will the family after the interview better understand their individual capacities and which capacities they would like to develop in relation the house construction.

2. INTERVIEW INSTRUCTIONS

INTRODUCTION

This document gives some practical instructions on the interview to be conducted as a part of the “rural housing project”. This instruction is to be used solely by the teams that are offered the support as a part of the “rural housing project”. The aim of the interview is twofold. First of all, evaluating the capacities they currently have. The second, to understand which capacities they would like to develop (strengthen). For example, they might not have the knowledge how to make bricks themselves but they would be interested to learn how to make them.

COMPOSITION OF THE INTERVIEW

The interview start with introduction questions, these are easy question that are meant to make the family relaxed. If you feel there is still tension in the expressions of the family members have a little chat about an anecdote. In the second part you will ask detailed questions about their individual capacities and which capacities they would like to develop. In the third we ask you questions about the possible capacities there are within their community.

PRACTICALITIES OF THE INTERVIEW

Organizing interviews involves taking a lot of practical decisions. Below, we will deal with some practical elements of interview research.

GENDER & CULTURE

As you learned by now the norms and values of the family are quite different from your own. Some topics are very delicate just like the relation between husband, wife and their children. As you will be interviewing the family together it will be a tough job not to damage the privacy of the individual family members. The questions you will ask about income, savings, jobs and many others might not be suitable for the ears of the children. Make sure that at all times the family members can state that they would not like to answer the question right now. You could offer to cover certain topics later in a more private setting. However, keep in mind it is important that the family as a whole is involved in this interview. It will help them greatly to starting seeing the valuable individual capacities.

LOCATION

The location is key to a good interview. Personal and private issues are best shared within the confined walls of one's own home. Make sure that before starting the interview you ask the family if it would be allowed to conduct the interview in the house where they spend most indoor time. When you are conducting the interview while other people are close to the house, ask the family if they are comfortable. If this is not the case suggest closing the door or finding a more private spot.



Figure 151: Indoor & Outdoor interview settings

As you noticed in earlier interviews the whole family is involved in all kinds of activities during the day. Asking questions while they peel potatoes or wash some cups will be highly appreciated. In all cases

make sure that there is privacy while answering your questions. Most of the families have multiple structures standing close together; in the centre they often have a common area (living room). This area is often used for shared activities by the family; preparing food, making homework, etc. This space is partially enclosed and often shielded (by the houses) from public roads or areas. Therefore, this area is suitable to conduct interviews outside. Make sure when you participate in household activities which make writing/sketching difficult, that you record (audio/video) the interview (explained in next section).

SEATING & CLOTHING

Seating arrangements within an interview is very important. Sitting opposite to the one you are interviewing can create negative and positive effects. Putting a table in between the interviewer and interviewee creates both a physical and a mental distance (left image). Sitting in the same direction or under a 90-degree angle, will avoid constant direct eye contact. The interviewee might be more comfortable in this arrangement. However, the arrangement is organized make sure the interviewee is at ease and comfortable. How you dress and behave will also greatly influence this. The more formal you dress, the more formal you will act and the formal answers you will receive.



Figure 152: Seating at interviews

REWARD

As you will spend quite some time (1-1,5 hour) with the family, you might want to take something small (tea, sugar, snack (mandazi), etc.). As you will notice the family most probably will serve you a tea, as it is customary. Especially in the first visits to the family don't decline as it might be considered rude. On a later moment it would be nice that you took something to share with them in return.

PICTURE RECORDING

An important part of the interviewee is to show/prove where, how and when the interview was taken. Make sure you take pictures of both interviewer (you) & interviewees and a picture of the actual interview take place (setting). The Lumix self-timer function will help you to do so.

Make your recording device has the right date and time stamp to track when the information was taken!

VIDEO/AUDIO RECORDING

One of the most important aims is the later transcription of your interview. During the interview you will need all your attention and focus to ask questions and react on them. Writing should be minimized to making notes in your sketchbook. A lot of writing might make the interviewee nervous and will also decrease your own attention to the answer given or the next question you would like to ask. Therefore not to miss anything of what is being said or told you should make a video recording of your interview. Obviously you want both interviewee and interviewer to be on the frame. However, the more distance you create to have everyone on the frame, the more the audio quality will incline. From testing anything recorded within 3 meters from the source will have an acceptable quality. This is of obvious importance as you will need to know what is being said to transcribe the interview. Make regular check to make sure the recording is running, you have sufficient battery and sufficient memory to record.

Make your recording device has the right date and time stamp to track when the information was taken!

DURATION OF THE INTERVIEW

The interview should typically take about 1 hour; taking less time will drastically decrease the quality of the outcomes.

BREAKS

As soon as you start to notice that the family members lack energy, enthusiasm or attention, most probably they have other matters to attend to. Ask them if they need to do something and if you could maybe help them a bit with the activity. Helping the family members is a small reward that can really make the difference in mood and understanding.

ANALYSIS OF INTERVIEW RESULTS: CODING

At the end of every day it is vital that you organise your research data on the external hard drive. In this case, made pictures and video/audio recording. As you know from the Pilot projects it is important to use a specific code for all recorded media inside the destination folder to have a well-organised hard drive. You will use a specific coding system to easily keep track of your data, this will be: Team number/ phase/ kind of recording or file/ initials of the author/ date/ media number.

Team number: T(number)

T1: Pelle Rademakers, Argjire Krasniqi

T2: Ayoub Salah, Jackson Kariuki

T3: Damian van der Velden, Corne Nuijten

T4: Atdhe Lila, Despoina Kouinoglou

Phase: P(chapter number)

Phase 1: First introduction family

Phase 2: Interview daily routine

Phase 3: Hopes and Dreams

Phase 4: Mapping

Phase 5:

Kind of recording/file:

Time-lapse: TL

Video: VI

Photo: PH

Audio: AU

Text: TX

Drawing: DR

Scan: SC

Initials of the author: first letter of first name and surname

Date: European calendar system

Media number: This will be given automatically when renaming a bash of media

An example of the video code: T1.P1.VI.PR.10.10.2017.1

An example of the photo code: T1.P1.PH.PR.10.10.2017.1

An example of the audio code: T1.P1.AU.PR.10.10.2017.1

An example of the text file code: T1.P1.TX.PR.10.10.2017.1

An example of the drawing code: T1.P1.DR.PR.10.10.2017.1

An example of the scanned file code: T1.P1.SC.PR.10.10.2017.1

notes:

VII. INTERVIEW GUIDE: FAMILY CAPACITIES

Date:

Interviewer:

Interviewee:

Location: Chepchoina area, at the slopes of Mount Elgon in Western Kenya
Catchment area approximately 5 km around the projects.

Head Researcher: Ir.-arch. Michiel Smits PhD Candidate
The department of Architecture, Chair of Methods & Analysis
Faculty of Architecture and the Built Environment, Delft University of Technology

Partner Applicant: Stichting Elimu Mount Elgon
Stichting SOK
Mount Elgon Trust

1. RESEARCH INFORMATION

Central Research Question:

What are capacities of the family?

Objective:

Question, assess and evaluate the capacities as detailed as possible.

Aim: To make a design based on the capacities the family current has we will first have to assess all the capacities they currently have. As traditional building practice involved all family members it is vital to evaluate the capacities of all family members. Moreover, will the family after the interview better understand their individual capacities and which capacities they would like to develop in relation the house construction.

2. INTERVIEW GUIDE

INTRODUCTION:

I am conducting this interview to better understand the capacities you as a family have. This is everything you have, own or know. We divide capacities into four categories:

- *Resources (wood, grass, soil, etc)*
- *Tools (hammer, saw, machette, needle, brush, etc.)*
- *Skills/knowledge (weaving, digging, thatching, cooking, washing, etc.)*
- *Income/labour (farmer, carpenter, cook, etc.)*

*We as engineers to look into in detail into those capacities, because they enable you as a family to build/maintain your house. The most important is **to understand the difference between the house you have and which house you desire**. This will help all of us understand which capacities you currently have and which ones are missing or lacking. These are connected to the house you desire: size, material and building method. Some of the desired capacities we can help you to bridge, in case of others we will need to look at alternatives.*

As you well know, in rural environment community's capacities also play an important role. Family relations, friends and neighbours are essential in most parts of realizing a house. For this purpose the interview also tries to identify which capacities there are in the community and who might be willing to share them. Helping each other and sharing building knowledge was an everyday practice. In return often for some food, beverage and a nice chat, neighbours would help each other in building, farming and many other activities. Therefore the

notes:

reward was not directly financial but there was a common understanding of helping, which was based on local materials, skills and tools. Continuing this model of helping and sharing is vital in finding solutions for you as a family but just as important also to the community you live in.

In order to pay attention to what you say and not miss anything I would like to ask you all if it is okay to record our interview. In this way I can look and listen back to what we have said and write out all the daily activities. These can then be used later on for the design of the house. Do you have any questions before starting? If any of you have any questions during the interview, feel free to ask them! If you don't understand the questions I can always help by giving an example.

----- START VIDEO RECORDING -----

3. THE QUESTIONS

GENERAL INFORMATION:

Before we dive into the families' capacities I would like to ask you some general questions:

What is your favourite shared activity

What is your favourite individual activity

Why?

Which activity makes you proud?

Which activity concerning building would you like to learn?

Questions about the family capacities:

RESOURCES OF THE FAMILY

Financial and assets:

Do you have an income?

How much is your shared income?

Is it stable income, or does it fluctuate (seasonally) or is it occasional?

If there are fluctuations how often and how much difference do they make?

Do you have a farmland (shamba)?

Do you own this land?

Does it generate income? If yes, how much?

Do you own the house you live in?

If yes:

how is it financed /organized?

If no:

how is it financed /organized?

Do you own the plot?

Is there money available for the construction of a house?

How much?

When is it available?

Do you own a mean of transport?

If yes:

What type (bike, motorbike, donkey)?

If no:

Do you have access to the means of transport?

Where, how much does it cost to use?

Do you own objects that can be reused in the new house (e.g. window, door, etc.)?

If yes:

What do you have, please list and give the amounts and state (e.g. 2 windows, one with broken glass, etc.)?

MATERIALS:

Is [type here in the material from your list e.g. timber] yours?

How much of do you have?

How much of can you have/get?(if suitable)

From whom?

.....

[Continue with this questions about all materials you have listed]

[If family owns a farmland]

Does your farmland (shamba) generate building materials (e.g. thatch, twigs, timber)?

If yes:

Which materials?

How much?

When?

Control question:

What materials did you use to build the house? (please list material of: foundations, walls, roof)

Were those materials yours or did you buy them?

[Ask about all materials that were mentioned as owned, that you have not asked yet]

notes:

If bought:

Did you have to pay for the materials or are there other ways of collecting/ acquire these materials

Did you bring materials yourself or did you hire somebody to do that for you?

How did you transport it?

How far was it?

COMMUNITY MATERIALS

Were those materials coming from the community members?

If yes:

Which ones?

From who?

If not:

Who did you buy it from?

How far was it?

[List the names and addresses]

Do you know about any other building materials that are available in the community?

If yes:

Which ones?

From who?

How far is it?

Do you have to pay for them?

If yes:

Please specify

[List as many materials as possible]

TOOLS:

Is [type in the name of the tool from your list] yours?

How many of it do you have

Can you use it?

If not:

Can any other family member use it? Who?

Go through all the tools you have listed

Do you have any other tools, which we haven't mentioned yet?

If yes:

Which?

How many?

Can you use them?

If not:

Can any other family member use them?

COMMUNITY TOOLS

I saw in the community, do you know who does it belong to?

Do you know if you can borrow it?

What are the conditions for borrowing? (Can you borrow it for free or do you need to compensate it?)

If compensate:

How? (for how much money, or for any other reward)

What happens if it breaks?

Can you borrow the tool alone or only with the owner using it?

Go through all the tools you have seen in the community.

Are there any other tools in the community that you know of?

Ask questions 7-9 per tool

SKILLS, KNOWLEDGE, LABOUR

During the observation I have seen you doing:....., at what level can you do that?

(1 – expert- you are fluent in this skill, 2- proficient – you are comfortable using this skill in routine way, 3- familiar - you have basic knowledge of this skill, but plenty of room to learn more, 4- beginner – you are just starting to explore this skill, 5 – unskilled labour)

[Go through all the skills you have listed]

Can you tell me what else connected to building a house can you do or were trained in (including traditional building skills)?

[List the skills and note the level]

Control question:

Did you build your house yourselves?

If yes:

Which tasks did you do? (list every task per family member, assign skill level 1, 2, 3, 4, 5 according to the instruction)

Were there any other relatives that helped you? (if yes, ask what did they do + skill level)

Were the community members able to help you with it? (did they have the necessary skills?)

Did the community members help you with it?

If yes:

What tasks did they do (list all people and tasks and levels)

Did you pay them or reward them in any way(money, meal, help in

notes:

return, etc.)?

If no:

Did you help somebody in the community build their house?

If yes:

Which tasks did you do? (list every task per family member, assign skill level 1, 2, 3, 4, 5 according to the instruction)

What other skills do you have (not strictly related to construction (e.g. bargaining, cooking, weaving, etc.)?)

What is your skill level(1,2,3,4,5)?

[List all the skills]

When can you work on building the house (during the week, during the day)?

For how long [let them explain]?

List per family member

[In case there are teenagers in the family] When are the school holidays?

Do you have relatives who could come and help?

If yes:

When/for how long?

COMMUNITY SKILLS AND KNOWLEDGE

Do you know about any skills in the community related to the construction of a house (e.g. specialist in thatching etc.)?

Who can do that?

Are they your friends/can you ask for their help?

Under what conditions?

[List all the skills of the community members that family is aware of – later on you will ask those people about their availability (labour)]

-----STOP AUDIO RECORDING-----

VIII. INTERVIEW INSTRUCTIONS: COMMUNITY CAPACITIES

Date:

Interviewer:

Interviewee:

Location: Chepchoina area, at the slopes of Mount Elgon in Western Kenya
 Catchment area approximately 5 km around the projects.

Head Researcher: Ir.-arch. Michiel Smits PhD Candidate
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1. RESEARCH INFORMATION

Central Research Question:

What are capacities of community members of the family?

Objective: Question, assess and evaluate the capacities as detailed as possible of neighbours, friends, family or any other community member.

Aim: As community involved in realizing dwelling is vital to the self-reliance of the family, we will need to assess the capacities of the community members. In the previous interview with the family, multiple community members were identified that possibly possess capacities that could be useful to the family. This interview second interview wave targets these identified people and will evaluate the capacities they have, the amount/frequency and the possible requested reward.

2. INTERVIEW INSTRUCTIONS

INTRODUCTION

This document gives some practical instructions on the interview to be conducted as a part of the “rural housing project”. This instruction is to be used solely by the teams that are offered the support as a part of the “rural housing project”. The aim of the interview is twofold. First of all, evaluating the capacities of the targeted community member. Second, to evaluate the possible reward for the offered capacity. This can be for borrowing tools, helping during the construction process or trading resources. You will conduct these interviews together with at least one of the parents of the family. They know exactly who needs to be interviewed and they can participate in setting the appropriate reward for receiving the capacities.

PREPARING THE INDIVIDUAL INTERVIEWS

From the previous interview with the family multiple community members were identified. In the interview guide most of the general questions are written out. However, the family most likely addressed what each community member could share, borrow or trade. Make sure that for every of the identified community member you prepare a separate guide. Starting with the capacities stated by the family and then elaborating if the community member has anything else he or she could offer.

COMPOSITION OF THE INTERVIEW

The interview starts with “introduction questions”, these are easy question that are meant to make the interviewee relaxed. If you feel there is still tension in the expressions of the interviewee have a little chat about an anecdote. In the second part you will ask detailed questions about their individual capacities. In the third section you will ask the possible requested reward for receiving or borrowing the capacity. The size and structure of this interview allows more flexibility and is always open for changes.

PRACTICALITIES OF THE INTERVIEW

Organizing interviews involves taking a lot of practical decisions. Below, we will deal with some practical elements of interview research.

DECISION-MAKING

Ownership, trading, borrowing, making deals or anything else conditional to receiving the capacity from the community member is very delicate. Make sure you ask the family who could like to be involved in making these arrangements. When visiting the community member with the parent make sure that the person you are talking to is allowed or can make decisions about borrowing or trading. Make sure that the deals made are not final and that they are always open to discussion.

LOCATION

Again the location is key to a good interview. Personal and private issues are best shared within the confined walls of one’s own home. However, due to the nature of this small interview it can also be a more casual chat at the house. Make sure that before starting the interview you ask the community member if it would be allowed to conduct the interview. When you are conducting the interview while other people are close to the house, ask the community member if they are comfortable. If this is not the case suggest a more private spot.



Figure 153: Indoor & Outdoor interview settings

As you noticed in earlier interviews the whole family is involved in all kinds of activities during the day. Asking questions while they peel potatoes or wash some cups will be highly appreciated. In all cases make sure that there is privacy while answering your questions. Most of the families have multiple houses standing close together; in the centre they often have a common area (living room). This area is often used for shared activities by the family; preparing food, making homework, etc. This space is partially enclosed and often shielded (by the houses) from public roads or areas. Therefore, this area is suitable to conduct interviews outside. Make sure when you participate in household activities which make writing/sketching difficult, that you record (audio/video) the interview (explained in next section).

SEATING & CLOTHING

Seating arrangements within an interview is very important. Sitting opposite to the one you are interviewing can create negative and positive effects. Putting a table in between the interviewer and interviewee creates both a physical and a mental distance (left image). Sitting in the same direction or under a 90-degree angle, will avoid constant direct eye contact. The interviewee might be more comfortable in this arrangement. However, the arrangement is organized make sure the interviewee is at ease and comfortable. How you dress and behave will also greatly influence this. The more formal you dress, the more formal you will act and the formal answers you will receive.



Figure 154: Seating at interviews

Make your recording device has the right date and time stamp to track when the information was taken!

VIDEO/AUDIO RECORDING

One of the most important aims is the later **transcription** of your interview. During the interview you will need all your attention and focus to ask questions and react on them. Writing should be minimized to making notes in your sketchbook. A lot of writing might make the interviewee nervous and will also decrease your own attention to the answer given or the next question you would like to ask. Therefore not to miss anything of what is being said or told you should make an audio recording of your interview. This is considered less intrusive and it is only necessary to make sure you didn't miss anything.

Make your recording device has the right date and time stamp to track when the information was taken!

DURATION OF THE INTERVIEW

The interview should typically take about 0,5-1 hour.

ANALYSIS OF INTERVIEW RESULTS: CODING

At the end of every day it is vital that you organise your research data on the external hard drive. In this case, made pictures and video/audio recording. As you know from the Pilot projects it is important to use a specific code for all recorded media inside the destination folder to have a well-organised hard drive. You will use a specific coding system to easily keep track of your data, this will be:

notes:

Team number/ phase/ kind of recording or file/ initials of the author/ date/ media number.

Team number: T(number)

T1: Pelle Rademakers, Argjire Krasniqi

T2: Ayoub Salah, Jackson Kariuki

T3: Damian van der Velden, Corne Nuijten

T4: Atdhe Lila, Despoina Kouinoglou

Phase: P(chapter number)

Phase 1: First introduction family

Phase 2: Interview daily routine

Phase 3: Hopes and Dreams

Phase 4: Mapping

Phase 5:

Kind of recording/file:

Time-lapse: TL

Video: VI

Photo: PH

Audio: AU

Text: TX

Drawing: DR

Scan: SC

Initials of the author: first letter of first name and surname

Date: European calendar system

Media number: This will be given automatically when renaming a bash of media

An example of the video code: T1.P1.VI.PR.10.10.2017.1

An example of the photo code: T1.P1.PH.PR.10.10.2017.1

An example of the audio code: T1.P1.AU.PR.10.10.2017.1

An example of the text file code: T1.P1.TX.PR.10.10.2017.1

An example of the drawing code: T1.P1.DR.PR.10.10.2017.1

An example of the scanned file code: T1.P1.SC.PR.10.10.2017.1

IX. INTERVIEW GUIDE: COMMUNITY CAPACITIES

Date:

Interviewer:

Interviewee:

Location: Chepchoina area, at the slopes of Mount Elgon in Western Kenya
Catchment area approximately 5 km around the projects.

Head Researcher: Ir.-arch. Michiel Smits PhD Candidate
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2. INTERVIEW GUIDE

INTRODUCTION:

[Introduce yourself; ask if you can talk to the person/family; Explain that you are a part of a research]

In a previously held interview with family..... We evaluated which capacities they currently have and which ones are missing or lacking. We believe that the community has most of these capacities. In rural communities not only the individual capacities are important, the community plays a vital role. Here family relations, friends and neighbours are essential in most parts of realizing a house. For this purpose the interview tries to identify which capacities there are in the community and who might be willing to share them. Helping each other and sharing building knowledge was an everyday practice. In return often for some food, beverage and a nice chat, neighbours would help each other in building, farming and many other activities. Therefore the reward was not directly financial but there was a common understanding of helping, which was based on local materials, skills and tools. Continuing this model of helping and sharing is vital in finding solutions for you as a family but just as important also to the community you live in. Therefore, we are conducting this interview to better understand the capacities you have and which you might want to share with family..... We can divide capacities into four categories:

- Resources (wood, grass, soil, etc)
- Tools (hammer, saw, machete, needle, brush, etc.)
- Skills/knowledge (weaving, digging, thatching, cooking, washing, etc.)
- Labour (farmer, carpenter, cook, etc.)

In order to pay attention to what you say and not miss anything I would like to ask you all if it is okay to make an audio recording our interview. In this way I can look and listen back to what we have said. Do you have any questions before starting? If any of you have any questions during the interview, feel free to ask them! If you don't understand the questions we can always help by giving an example.

----- START VIDEO RECORDING -----

3. THE QUESTIONS

GENERAL INFORMATION:

Before we dive into the capacities I would like to ask you some general questions:

Questions about the capacities:

RESOURCES/MATERIALS

Family [name] told me you can have..... [resource/material], is this true?

How much of[resource/material] do you have?

Could you supply the family [name] with it?

If yes:

On what conditions, please specify the compensation (if not free)?

When?

[List (confirm) all the resources/materials]

TOOLS

Family [name] told me you can have..... [tool], is this true?

How many of[tool] do you have?

Could you lend the [tool] to them?

If yes:

On what conditions, please specify the compensation (if not free)?

Do you need to be the one to use it, or can you let other people use it?

When could you lend it?

notes:

What would you expect if it breaks?

[List (confirm) all the tools]

SKILLS AND LABOUR

Family [name] told me you can do..... [skill],
is this true?

At what level can you[skill]?

(1 - expert- you are fluent in this skill, 2- proficient - you are comfortable using this skill in routine way, 3- familiar - you have basic knowledge of this skill, but plenty of room to learn more, 4- beginner - you are just starting to explore this skill, 5 - unskilled labour)

1. Do you have necessary tools to do it?

- If not:

- What do you need?

List (confirm) all the skills

Would you be willing to help the family [name] with building their house?

If yes:

When could you work on building the house (during the week, during the day)?

For how long [let them explain]?

Would you work for help in return [explain the idea on the work logbook]?

If not, specify the conditions under which you would work(payment)?

-----STOP AUDIO RECORDING-----

LITERATURE

- Allee, V. V. (2000). Knowledge Networks and Communities of Practice. *OD Practitioner Online*, 32, 1–15.
- Archetype Meaning in the Cambridge English Dictionary. (n.d.). Retrieved March 17, 2017, from <http://dictionary.cambridge.org/dictionary/english/archetype>
- Ashby, M. F. (2013). *Materials and the Environment: Eco-informed Material Choice*. Butterworth-Heinemann. Retrieved from https://books.google.nl/books?id=8dfPnX_5M7QC
- attention span Meaning in the Cambridge English Dictionary. (n.d.). Retrieved March 22, 2017, from <http://dictionary.cambridge.org/dictionary/english/attention-span>
- Chambers, R. (1995). Poverty and livelihoods : whose reality counts? *Environment and Urbanization*, 7(1), 173–204. <http://doi.org/10.1177/095624789500700106>
- Clark, D. a. (2005). The Capability Approach: Its Development, Critiques and Recent Advances. *Economics Series Working Papers*, 18. <http://doi.org/10.1007/s10550-005-0106-2>
- Cobb, Clifford, W. (2000). *MEASUREMENT TOOLS AND THE QUALITY OF LIFE*. Retrieved from http://rprogress.org/publications/2000/measure_qol.pdf
- Cobb, P., & Bowers, J. (1999). Cognitive and Situated Learning Perspectives in Theory and Practice. *Educational Researcher*, 28(2), 4–15. <http://doi.org/10.3102/0013189X028002004>
- Cole, R. J., Leaman, A., & Seaden, G. (2000). Reviews Time and responsibility: extending the concept of the present Raymond J. Cole pages 291 - 295 Usability in buildings: the Cinderella subject Adrian Leaman pages 296 - 300 Review of "Society, the Endless Frontier" George Seaden pages 301-303. *Building Research & Information*, 28(4), 291–303. <http://doi.org/10.1080/09613210050073742>
- Collins, H. M. (1993). The Structure of Knowledge. *Social Research*, 60(1), 95–116. <http://doi.org/10.1163/1568537042484878>
- Cromley, E. (2008). Cultural embeddedness in vernacular architecture. *Building Research & Information*, 36(3), 301–304. <http://doi.org/10.1080/09613210801902995>
- design brief Meaning in the Cambridge English Dictionary. (n.d.). Retrieved March 22, 2017, from <http://dictionary.cambridge.org/dictionary/english/design-brief?q=Design+brief>
- Ewing, B., Goldfinger, S., Oursler, A., Reed, A., Moore, D., & Wackernagel, M. (2009). *GLOBAL FOOTPRINT NETWORK, RESEARCH AND STANDARDS DEPARTMENT*. Oakland: Global Footprint Network, Oakland, California, United States of America. Retrieved from http://www.footprintnetwork.org/content/images/uploads/Ecological_Footprint Atlas_2009.pdf
- Fonchingong, C. C., & Fonjong, L. N. (2003). THE CONCEPT OF SELF-RELIANCE IN COMMUNITY DEVELOPMENT INITIATIVES IN THE CAMEROON GRASSFIELDS. *Nordic Journal of African Studies*, 12(2), 196–219. Retrieved from <http://www.njas.helsinki.fi/pdf-files/vol12num2/charles.pdf>
- Frost, A. (2013). The different tyoes of knowledge. Retrieved November 20, 2014, from <http://www.knowledge-management-tools.net/different-types-of-knowledge.html#ixzz3tg0FGVP4>
- Grudens-Schuck, N., Allen, W., Hargrove, T. M., & Kilvington, M. (2003). Renovating dependency and self-reliance for participatory sustainable development. *Agriculture and Human Values*, 20(1), 53–64. <http://doi.org/10.1023/A:1022412623083>
- Hamer, B., & Bergmark, J. (2003). *Kitchen Stories (2003)*. Retrieved from

- http://www.imdb.com/title/tt0323872/?ref=mv_sr_1
- Hartwick, J., & Barki, H. (1994). Explaining the Role of User Participation in Information System Use. *Management Science*, 40(4), 440-465. <http://doi.org/10.1287/mnsc.40.4.440>
- Hennink, M., Hutter, I., & Bailey, A. (2010). *Qualitative Research Methods*. SAGE Publications. Retrieved from <https://books.google.nl/books?id=rmJdyLc8YW4C>
- Hettne, B. (1983). The Development of Development Theory. *Acta Sociologica*, 264(3). Retrieved from <http://www.jstor.org/stable/4194484>
- Hipwell, W. T. L. (1997). INDUSTRIA, THE FOURTH WORLD, AND THE QUESTION OF TERRITORY. *Middle States Geographer*, 30, 1-10.
- Idoma, K., & Muhammad, I. (2013). Self-Reliance: Key to Sustainable Rural Development in Nigeria. *ARPN Journal of Science and Technology*, 3(6), 585-592. Retrieved from http://www.ejournalofscience.org/archive/vol3no6/vol3no6_3.pdf
- James, P., Nadarajah, Y., Haive, K., & Stead, V. (2012). *Sustainable communities, sustainable development: Other paths for Papua New Guinea. Sustainable Communities, Sustainable Development: Other Paths for Papua New Guinea*. Retrieved from <http://www.scopus.com/inward/record.url?eid=2-s2.0-84906159718&partnerID=tZ0tx3y1>
- Knol, F. (2005). *Wijkkwaliteiten: De kwaliteit van de fysieke woonomgeving 1994-2002*.
- Lee, Y. (2008). Design participation tactics: the challenges and new roles for designers in the co-design process. *CoDesign*, 4(1), 31-50. <http://doi.org/10.1080/15710880701875613>
- Leimeister, J. M. (2010). Collective Intelligence. *Business & Information Systems Engineering*, 2(4), 245-248. <http://doi.org/10.1007/s12599-010-0114-8>
- Lélé, S. (1991). Sustainable development: A critical review. *World Development*, 19(6), 607-621. Retrieved from [http://linkinghub.elsevier.com/retrieve/pii/0305750X9190197P%5Cnpaper_s2://publication/doi/10.1016/0305-750X\(91\)90197-P](http://linkinghub.elsevier.com/retrieve/pii/0305750X9190197P%5Cnpaper_s2://publication/doi/10.1016/0305-750X(91)90197-P)
- Lengen, J. van. (2008). *The barefoot architect: a handbook for green building*. Shelter Publications.
- Li, W., & NG, E. (2014). Built Environment Sustainability Assessment of Poor Rural Areas of Southwest China. In *30th International PLEA Conference* (p. 8). Ahmedabad. Retrieved from http://www.plea2014.in/wp-content/uploads/2014/12/Paper_3D_2427_PR.pdf
- Lucas-Carrasco, R. (2012). The WHO quality of life (WHOQOL) questionnaire: Spanish development and validation studies. *Quality of Life Research*, 21(1), 161-165. <http://doi.org/10.1007/s11136-011-9926-3>
- Matunhu, J. (2011). A critique of modernization and dependency theories in Africa: Critical assessment. *African Journal of History and Culture*, 3(5), 65-72. Retrieved from <http://www.academicjournals.org/AJHC>
- Nationonline. (1998). First, Second, and Third World - Nations Online Project. Retrieved February 27, 2017, from http://www.nationonline.org/oneworld/third_world_countries.htm
- Nel, E., & Binns, T. (2000). Rural self-reliance strategies in South Africa: community initiatives and external support in the former black homelands. *Journal of Rural Studies*, 16(3), 367-377. [http://doi.org/10.1016/S0743-0167\(00\)00003-6](http://doi.org/10.1016/S0743-0167(00)00003-6)
- Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, 5(1), 14-37. <http://doi.org/10.1287/orsc.5.1.14>
- Oliver, P. (2007). *Built to Meet Needs: Cultural Issues in Vernacular Architecture*. Taylor & Francis. Retrieved from <https://books.google.nl/books?id=z8QsBgAAQBAJ>
- Polanyi, M. (2012). *Personal Knowledge*. Taylor & Francis. Retrieved from <https://books.google.nl/books?id=QPPIBQAAQBAJ>
- Rapoport, A. (2008). Some Further Thoughts on Culture and Environment. *Archnet-*

- IJAR*, 2(1), 16–39.
- Resilience Meaning in the Cambridge English Dictionary. (n.d.). Retrieved March 17, 2017, from <http://dictionary.cambridge.org/dictionary/english/resilience>
- Robeyns, I. (2011a). The Capability Approach. In *Stanford Encyclopedia of Philosophy* (pp. 1–24). <http://doi.org/10.1111/1467-9973.00225>
- Robeyns, I. (2011b). *The Capability Approach*. *The Stanford Encyclopedia of Philosophy*. <http://doi.org/10.1017/CBO9780511492587>
- Sen, A. (1993). Capability and Well-being. In M. Nussbaum, A. Sen, & W. I. for D. E. Research (Eds.), *The Quality of Life* (pp. 30–53). Clarendon Press. Retrieved from <https://books.google.nl/books?id=mOHnCwAAQBAJ>
- Simonelli, G., Leanza, Y., Boilard, A., Hyland, M., Augustinavicius, J. L., Cardinali, D. P., ... Vigo, D. E. (2013). Sleep and quality of life in urban poverty: the effect of a slum housing upgrading program. *Sleep*, 36(11), 1669–76. <http://doi.org/10.5665/sleep.3124>
- Skevington, S. M., Lotfy, M., & O'connell, K. a. (2004). The World Health Organization's WHOQOL-BREF quality of life assessment: Psychometric properties and results of the international field trial A Report from the WHOQOL Group. *Quality of Life Research*, 13(2), 299–310. <http://doi.org/10.1023/B:QURE.0000018486.91360.00>
- Smits, M. (2014). *An architect's investigation into the self-reliance of a Sub-Saharan African community*. Retrieved from <https://www.researchgate.net/publication/286457181>
- Smits, M. (2017). *Field Research I Mt. Elgon*.
- UNDP. (1990). *Human Development Report 1990 | Human Development Reports*. Retrieved from <http://hdr.undp.org/en/reports/global/hdr1990>
- UNHCR. (2016). UNHCR - Handbook for Self-reliance: Foreword, Acknowledgements, Table of Contents, Introduction. Retrieved from <http://www.unhcr.org/44bf3d212.html>
- Vernacular Meaning in the Cambridge English Dictionary. (n.d.). Retrieved March 17, 2017, from <http://dictionary.cambridge.org/dictionary/english/vernacular>
- What is valorisation? | Netherlands Proteomics Centre (NPC). (n.d.). Retrieved August 7, 2017, from <http://www.netherlandsproteomicscentre.nl/npc/valorisation/what-is-valorisation.html>
- Willer, H. (2002). Review: Economic Development and Cultural Change. *Economic Development and Cultural Change*, 50(2), 449–452. Retrieved from <http://www.jstor.org/stable/10.1086/322887>
- World Health Organization. (1997). *WHOQOL Measuring Quality of Life*. Retrieved from http://www.who.int/mental_health/media/68.pdf

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