Negotiating New ICTs in the Education Sector in Afghanistan - Participation, Adoption and Appropriation

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DECLARATION

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Contents

Acronyms and Glossary

ACRONYMS

ANT	Actor-Network Theory
BNA	Basic Needs Approach
C4D	Communication for Development / Development Communication. To differentiate from the tradition of modernization theory and associate with more inclusive, participatory approaches the field is today also often called Communication for Social Change
CS	Computer Science
CIO	Chief Information Officer
DSC	Development Support Communication
FAO	Food and Agriculture Organisation of the United Nations
GIRoA	Government of the Islamic Republic of Afghanistan
GOA	Government of Afghanistan
HDI	Human Development Index
ICT	Information and Communication Technologies
ICT4D	Information and Communication Technologies for Development
IDE	integrated development environment
IS	Information Systems
ISI	Inter-Services Intelligence (Pakistan's intelligence service)

ISP	Internet Service Provider
ITU	International Telecommunication Union
MCIT	Ministry of Communication an Information Technology
MDC	More Developed Countries
MDGs	Millennium Development Goals
M&E	Monitoring and Evaluation
MoE	Ministry of Education
MoHE	Ministry of Higher Education
NGO	Non-Governmental Organisation
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
OPEC	Organisation of the Petroleum Exporting Countries
PDPA	People's Democratic Party of Afghanistan
PPP	Private-public-partnership
SCOT	The Social Construction of Technology
SLAP	School Laptop Project
SME	Small and medium enterprises
STS	Science and Technology Studies
SST	Social Shaping of Technology
UDon	U.S. donor organisation
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations International Children's Emergency Fund
UNICTTF	United Nations Information and Communication Technologies Task Force
VSAT	Very Small Aperture Terminal

WITFOR World Information Technology Forum

WSIS World Summit on the Information Society

GLOSSARY

Actant Akrich & Latour (1992) define "an actor is an actant endowed with a character"

Concour The Afghan university entrance exam

Hezb-e Islami Islamist organisation and political party founded by Gulbuddin Hekmatyar

Hijab A veil that covers the head and chest, worn by Muslim women

Jamiat-e Islami Islamist political party founded by Burhanadin Rabbani

Jihad "A struggle against enemies of Islam" (Morgan: 2010:87)

Loya Jirga Grand assembly of community leaders from across the country

Madrasa Arabic for educational institution, often referring to religious schools

Mujahideen Holy warriors

Mullah Islamic religious teacher or leader

Rote learning A learning technique based on repetition

Shari'a Islamic religious law

Shura Consultative council in Islamic societies

Ulema Muslim legal scholars

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ABSTRACT

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The importance of a participatory component has become broadly accepted in today's international development programs. Accordingly, most organisations dealing with technology-use strategies in the education sector in Afghanistan highlight concepts like 'empowerment', 'Afghan ownership' and 'partnership' in their project descriptions. Yet the definition of participation ranges from the idea that all stakeholders should actively take part to a more narrow concept of extracting local knowledge to design programs externally. This limited participation is in the case of ICTs often further reinforced by technology being seen as a black box[1] (a stable 'input-output device') with a predefined optimal application that needs to be taught by the technology experienced West to those in need of development. This is often even motivated by particular ideas about how the technology should support certain educational practice and organisational structures.

In my PhD thesis I explore the evolution and consequences of ICT project design and implementation from the perspectives of different actors involved in, or affected by, the intervention. The empirical aspects are centred on three examples all located in the Afghanistan setting: a school-laptop project, a university network infrastructure project and the broader question concerning what role ICT capacity building plays. As a consultant in the field I was able to follow the projects' development over the course of several of years and gained profound insight. The research is informed by a broad-based review of the research literature in fields of communication and development, Science and Technology Studies and related areas. Approaches from each field contributed substantially but also each showed their individual limitations with regard to this study. The 'Technology-in-Use' perspective by Carroll (2004) is suggested as a suitable starting point for an interdisciplinary approach.

keywords: ICT4D, Development Communication, Participation, Technology Appropriation

1 Other than in science studies, the term "black box" is mostly used with a positive connotation by computer scientists, meaning a system needs little or no maintenance

CHAPTER 1

Introduction

1.1 (Re-?)Constructing Afghanistan

In Afghanistan, it seems easy to justify why technology projects fail – who can be blamed? Electricity is unreliable, internet access not everywhere easily available, expensive and often slow and local staff mostly inexperienced with new technologies. Afghanistan's physical communication infrastructure – be it roads, electricity, postal service or phone lines – was in 2001, after 30 years of war and conflict, next to non-existent. Since the civil war in the early 1990s most universities had been unable to offer regular service and non of them had any computer lab.
But infrastructure development, increasing internet access and ICT capacity building efforts of the past years slowly start to reveal that there is more to making a technology 'work' than just uninterrupted service. When I first came to Herat in 2005, as a lecturer for computer science, the university, like most higher education institutions, was in a state of reorganisation. A campus was in the planning, the faculties were distributed all over the town, with a different donor supporting each. Most of the students had just returned from neighbouring Iran or Pakistan, others had lived in Afghanistan for the past two decades: under the communists, the warlords, the Taliban and most recently a democratically elected government. It was difficult to fit the hardware and concepts we had brought with us into this setting, and most of the time we only succeeded with the help of our students.

The first time I really started thinking about technology and context, however, was not about information technology, but when the topic of cars came up. Most of our students loved shiny fast sports cars, pictures posing in front of a Porsche or a Ferrari in a shopping mall in Delhi or Dubai where popular screen savers (this was before Facebook) – but these cars belonged somewhere else and were not seen as something

desirable for Afghanistan. The roads are too bumpy to drive really fast and there is hardly any car on the road whose doors are not full of scratches and dents. A good car needs durable shock absorbers and it's more the inside that shines: carpets, pillows, curtains and, for those who can afford it, a small screen on top of the dashboard to entertain the driver with music videos during heavy traffic.
I started to recognize such differing preferences, adaptations and workarounds with regard to ICT as well. There were these imported systems and settings that we were struggling to keep running; and there were local internet cafés whose owners probably did not have a professional technical education and also did not have the same resources and equipment. Yet they, too, managed to keep their systems running and earn a living somehow.

Rebuilding Afghanistan's physical infrastructure became one of the top-priorities of the international community, and the Ministry of Communication's ambitious plans regarding the role of digital technologies found general approval. With the rise of the Internet in the mid 1990s, especially since the Millennium Development Goals (MDGs) in 2000 and the World Summit on the Information Society (WSIS) in 2003, Information and Communication Technologies (ICT) have received increasing attention in development initiatives. The demand by the international-development community for novel solutions to persistent socioeconomic challenges, the expansion of the ICT industry into emerging markets as well as corporate philanthropy of big IT companies have resulted in a wave of digital initiatives. With so many different stakeholders involved, expenditure on ICTs in development is hard to estimate, and said to be ranging from hundreds of millions to tens of billions of U.S. dollars per year (Toyama: 2010).

Surprisingly, when regarding these numbers, there is little beyond anecdotal evidence as to what role ICT plays, and has played, in achieving the MDGs such as poverty reduction, primary education, or gender equality, and despite being seen by the Organisation for Economic Cooperation and Development (OECD) as a crucial factor in achieving them (Gevaert (2011), OECD (2005)). Due to the large sums (still) being spent here by the aid industry, many technology projects in developing countries have become pilot laboratories ranging from bottom-up community-based mobile-empowerment programs[1] to top-down market-led private-public-partnership (PPP) approaches[2].
Considering this attention towards ICT as one central aspect to development interven-

1 A good example of what some also call "pilotitis" is given in this article: Hagen (2013)
2 Increased attention by PPPs in recent years was given to tech incubators, like the one in Herat, Afghanistan, funded by Google, IBM and the DoD (fastcompany.com: 2011)

tions – in particular since Smart-phones and Social Media have reached all corners of the globe – it is also astonishing that few programs actually focus on ICT as a means in itself (*"how does a mobile-phone work and what does it depend on?"*), instead of utilising ICT as a tool to serve a specific developmental goal (*"how can a mobile-phone be used to distribute information to remote areas"*).

In Afghanistan, in the last 10 years, various international stakeholders started to build what began as "ICT islands" in the education sector: VSAT internet connections, PC labs for schools or IT centres for universities to name just a few. Partnering these ICT initiatives in most cases are representatives of three groups: funding agencies, practitioners and various local interest groups – which of course are not mutually exclusive – uniting different age, gender, social and cultural backgrounds. In this study I will examine the complex interplay between these groups that are involved in ICT projects in the education sector in Afghanistan. As in most "development cooperation" or "global aid architecture"[1] programs, donors, implementing organisations, contractors and local partners and interest groups come from very different backgrounds but depend on each others' cooperation and support to implement a project.

I also want to pay particular attention to the local situation in Afghanistan with its conflicting interests on the ground – which is certainly unique in its specifics, if not regarding the phenomenon in general – and their effect on cooperation and decision making regarding the education sector and new digital technologies. Different political and ethnic groups within the country have been in conflict for the past 30 years, with sometimes more, sometimes less interference from the outside, raising the questions of how these past front-lines are dealt with in Afghanistan today, and how they influence power-relations in the education sector? I want to observe how different goals and perceptions on the one hand, and the level of involvement of these different actors on the other, influence the project framework, the choice of technologies, their use concepts and content. I want to look at the different intentions within each of these groups, how they interact with each other and negotiate their strategies and how decisions are formed, despite often conflicting preferences.

1 The notion of "development" and its implications for the so-called "developing world" has increasingly been contested in recent years by "post-development" scholars (for an overview see Ziai (2007)) and will also be discussed briefly in chapter 2.1. In the following I will use the terms *development, developing countries* and *developed countries* as well as *the West* and *Western countries* as part of a language that was, and is, predominantly used both in the field and most of my literature.

1.2 Deconstructing ICT projects in Afghanistan

The key research issue is to gain a better understanding as to why some ICT projects in developing countries are seen as successful, while others – in fact most – do not accomplish their intended goals, being shut down shortly after the project was handed over to the local partners or get absorbed or transformed to serve an entirely different purpose. A prominent example from previous international ICT initiatives are telecentres, intended to enhance the empowerment of the poor and marginalized through education and information supply and which often shut down for economic reasons after the funding ended or were only sustainable in urban areas, serving those who can afford the charge (Proenza: 2001). This raises questions regarding how decisions about ICT initiatives are formed in an early stage, how cooperation among the involved actors is organised, how these decisions are modified during the implementation process and how these ICTs, intended or unintended, are adopted, rejected and interpreted by the users?

Context, participation and a concentration on the actor comprise core tenets in the cross-disciplinary sets of literature that inform my research: Communication for Development (C4D), Science and Technology Studies (STS) as well as Information and Communication Technologies for Development (ICT4D). C4D has a long tradition in addressing programs that use communication for the purposes of social change, the goals themselves vary with the underlying approach taken to development (Wilkins: 2008). From the dominant paradigm's top-down, one-way and linear-growth perspective during the 1950s and 60s, C4D research moved towards a stronger consideration of the social and economic structures with an emphasis on dialogical communication, participation and empowerment.
Though New ICTs have in recent years increasingly complemented or replaced older media and communication technologies such as television, radio and newspapers and also gained more significance in C4D initiatives (Wilkins: 2008), digital technologies like mobile phones or laptops are barely addressed beyond their being a tool for communication.

The field of Information and Communication Technologies for Development (ICT4D) emerged during the mid 1990s, when the Internet and new digital technologies became diffused and supplied a new means for development linked with many hopes and visions (Kozma: 2005). Solutions are often seen within hardware-innovations and local participation is seen as desirable but difficult (Heeks: 2009). Similarly the focus on technology projects in Afghanistan is mostly on making a technology work *despite* the unstable environment. Considerations on content and use of a technology and local participation,

first of all depend on establishing a 'stable technology'.

Questioning the common sense views positioning technology as a determinant of practice, the field of Science and Technology Studies (STS) has led to the development of perspectives in which technology is treated as the consequence of practice (Oliver: 2011). In their perspective on the Social Construction Of Technology (SCOT), Pinch and Bijker (1987) argued that the success of a technology depends on the impact and scope of the group that take it up and promote it. Technological objects such as New ICTs are often perceived by users as 'black boxes' (a stable 'input-output device') with ordinary users paying little attention to the objects' inner workings (Proulx: 2008). STS aims to deconstruct the black-boxing process and look at the social context influencing its creation, acceptance, adaptation or rejection.

Another perspective on the relationship between technology and humans that developed within STS and influenced my research approach is Actor-Network Theory (ANT). A distinctive feature of ANT is the idea that apart from humans, actor-networks include diverse non-human actants[1] such as materials, equipment, configurations and institutions. Indeed ANT theorists argue that all such actors cannot only be seen to shape and influence but also help stabilise the network. Considering the generally 'unstable' environment in Afghanistan, ANT offers an interesting approach to identify which elements help stabilise a technology actor-network and which elements fail or might be missing.

As this brief introduction has demonstrated, the relationship between technology and humans has been studied from various perspectives, from the above mentioned early technological determinism at one extreme, where ICTs are seen as having the potential to directly affect peoples' behaviour, through relativist positions of mutual influence, to social constructivist views like SCOT or ANT at the other extreme (though Latour (2005) refers to ANT as "anti-social constructivism").

In analysing why so few projects in developing countries that involve New ICTs are deemed successful and where the reasons for these "failures" lie, an STS perspective on these networks of human and non-human actors is justified in my view. It can help disclose the relations between decision makers, users, administrators, guidelines, technologies, infrastructure and others, that shape and influence these ICT projects and

1 Akrich & Latour (1992) define "an actor is an actant endowed with a character"

it can help to gain a better understanding of the context and participation of its actors.

This research project seeks to interrogate how, despite statements on 'participation' and 'contextualization', the dominant paradigm and the diffusion model are still inherent in many ICT related projects which often rather follow 'best practice' than pursuing genuine partnerships (McLaughlin: 2005). Technologies are still often treated in a deterministic manner, as a tool that corresponds to its predefined function and that, if introduced properly, will lead to predefined goals. There is no clear conceptual approach to what participation is, who is supposed to participate and how successful participation is measured (Tufte & Mefalopulos (2009), Sparks (2007), Heeks (1999)). The same applies to context and the question where it starts and where it ends with regard to a global actor-network that ICT and international development form. This thesis explores these concepts within the setting of concrete ICT projects in the Afghan education sector.

ICT island and networks

The research was conducted around a university connectivity project, building up campus networks at universities all over the country; a school-laptop project that provided educational technology to schools in several provinces; and ICT capacity building efforts that were a central aspect or byproduct of many ICT projects. The projects and interview partners chosen for this research were by no means ignorant or unaware of concepts like context or participation. And despite knowing that I was critically looking at stakeholder interaction, most admitted openly unresolved issues and project dilemmas and demonstrated an interest in addressing these.

The technology company implementing the laptop project made considerable efforts to get me also to those schools where problems had already been reported – despite the 'bad news' that was to be expected – and readily included me in the preparations for some of their future projects. The project coordinator of the university connectivity project was exceptionally committed to visiting all universities and meeting all local partners in person, which was far beyond his obligations. And most ministry, university and school employees I interviewed took their involvement very seriously, had suggestions to improve cooperation and worked hard for what they saw as urgently needed changes. So, despite none of the projects describing itself as explicitly "participatory" or community-based, the commitment to context and participation was certainly above average. Early ICT4D projects often made it easy to criticise the obvious: a lack of cultural and language localization, a lack of institutional support, problems with power supply, and

costs for hard- and software that no local NGO could afford to maintain. The more challenging questions arise when these 'more context-aware' approaches to ICT projects in international development are no closer to achieving the intended goals.

1.3 Research Questions

1. How are decisions about ICT initiatives formed in the early stages?
   1.1. Who and also what has agency in the designing and planning of projects around New ICTs in the Afghan education sector?

      a) What intentions can be attributed to the different actors towards using New ICTs?
      b) What underlying concepts of "development" and "technology" influence perceptions of New ICTs?
      c) Where do their perceptions and expectations derive from?

   1.2. How is cooperation among the involved actors organised?
   1.3. What strategies are suggested and what reasons are given for previous 'failures'?
   1.4. How are "participation" and "context" construed and taken into consideration?

2. What technologies are prioritised?
   2.1. Who influences the decisions about technologies?
   2.2. What reasons are given for using certain technologies?
   2.3. What limitations do those technologies contain for the Afghan context and (how) are they adapted?
   2.4. How and by whom are New ICTs shaped in the different stages of their implementation process and how do they in turn reflect the environment they are used in?

3. How are earlier concepts about New ICTs modified during the implementation process?
   3.1. Why are the changes made?
   3.2. Who decides these changes?
   3.3 What factors or experiences led to such changes?

4. How are these New ICTs, intended or unintended, adopted, rejected and interpreted by their users?

4.1. How do the users adapt the technology to their lives, and are practices adapted to the technology in return?
4.2. How flexible is the technology to adaptations and different configurations?
4.3. Are adaptations and reconfigurations of the technology supported and encouraged?

1.4 Outline

In the following chapter I will introduce two of the central concepts of this study: *development* and *technology*. In chapter 2.1 I will follow the path of how the idea of a developed world versus a developing world derived from the assumption that economic growth equals development, attributing to Europe and North America a modernity which was yet to be achieved by the rest of the world. During the 1970s, the failure of the top-down approach and increasingly critical reflections on colonialism and exploitation, indicated the need for alternative development approaches. As they play a central role in my research, I then look at different concepts of participation and their recent critique by post-development scholars in more detail. Today there is no universally accepted concept of 'development' and the diversity of approaches resulting from this discordance can also be found in the current study.

Chapter 3 looks within the framework of development at how media and technology have been utilised in the service of development from the 1930s until today. The early communication scholars followed the dominant paradigm of development, believing in a linear stages model, leading from a traditional society towards modernization and that behavioural change could be triggered by exposure to new ideas and information. Here, mass media took an important role to inform and persuade potential adopters about innovations. In the 1970s a growing critique, led by Latin American scholars, marked a turn in development communication. The dominant paradigm's hierarchical, bureaucratic, and sender-oriented communication model was increasingly replaced by a more horizontal, participative and receiver oriented approach.

Another radical critique of how the West continued to dominate non-Western cultures was postcolonial theory, attempting to break up the relation of Third and First World in binary opposition. It received surprisingly little attention by C4D scholars at the time, though both fields deal with similar questions about agency and context, regarding developing countries. Chapter 3.1.4 looks at the empowerment concept, initially proposed as a radical form of participation, aiming to hand back decisions to development beneficiaries. But like 'participation' it remained widely a rhetorical concept. As in

development practice in general, development communication today has no singular definition or approach. A call for participation remains strong, but its limitations within the broader development industry structure and policies persist. With New ICTs taking the place of mass media, there even seems to be a revival of the dominant paradigm and the renewed promise of modernization through the power of the internet, as early research in the field of ICT4D shows. Chapter 3.2 introduces the field of ICT4D and how the diffusion of the internet and digital communication technologies brought new approaches to international development. Not unlike mass media during the dominant paradigm, the sheer availability of digital technologies and access to internet seemed to promise education and economic growth, with little attention to the broader context. This changed with what is called "ICT4D 2.0" to more context aware approaches. As in other areas of international development, however, academia and practice did not always follow the same path and many ICT projects in the aid sector continue to be accused of a technology-deterministic perspective.

In the fourth chapter I take a closer look at different perceptions of technology, starting with technological determinism. I look at where this deterministic view shows in technology projects and how technology continues to be seen as a driver for development. The limits of this deterministic view and the impact of the social on the technical are described in chapter 4.2. Science and Technology Studies look at how scientific 'facts' and technological artefacts are constructed and how a number of social, historical, cultural and other factors influence these developments. This approach draws attention to the mostly unknown work of researchers and developers, by "opening the black box". The context inscribed into these devices and how that influences usage in a context other than the one anticipated by the designers, is something that is also relevant for the present study. On the other hand STS looks at the user and consumer side of technology, how it is open to different interpretations during its development, introduction and use, which actors are involved, and how it reaches some degree of stability.

The literature review is concluded by the research agenda, summarising how the different concepts and models are combined and applied for the present research. It is followed by Chapter 5, summarising key developments in Afghan history of the past 100 years and offering a closer view on the history and state of communication infrastructures and the role of education in Afghan society in the past century.

In Chapter 6 I give an overview over the mainly qualitative research methods used for the study, with a focus on reflexivity and how the fact that I simultaneously worked and researched in the field represented advantages as well as risks. The chapter also

introduces the setting and my access to the field and how the approach to this thesis developed during the early stages of the research. It finally leads to the research findings, by first briefly discussing the broader context of ICT in international development, followed by brief personal impressions of expatriate life in Afghanistan.

Chapters 7 to 9 concentrate on the description of the research findings. In Chapter 7 I describe a school laptop project, initiated by a local IT company and implemented in cooperation with the Ministry of Education, the laptop producer and a United States-funded contractor. In phase one of the project the parents, teachers and pupils at the schools, as the research reveals, are only included at later stages of the project and not involved in planning and configurations. When the project was renewed at a different school (phase two) there was a stronger involvement, though the project's general framework was also mostly set.

Chapter 8 looks at a university infrastructure project, initiated and funded by a military alliance and implemented in cooperation with the Computer Directorate of the Ministry of Higher Education. The project mostly struggles with finding adequate staff for the provincial universities to administrate the new campus networks that are installed with funds by the project donor. Interviews with employees of the ministry and lecturers at one of the universities demonstrate a number of challenges the new infrastructure poses to the universities, regarding its maintenance, use and future funding.

The last empirical Chapter 9 explores the main types of capacity building within or linked to ICT projects in Afghanistan: basic computer literacy, institutional ICT capacity building and professional ICT trainings. It points out which goals are linked with these different types and how these trainings enable the use of and interaction with digital technologies. Finally it looks at conflicts linked with capacities and local power structures and their effects on cooperation in ICT projects in the education sector.

I provide the analysis of my research findings in chapters 10 and 11, in the context of the the theoretical framework, the methodology and the Afghan history. The first of the two looks at the power relations among the involved actors and how the rhetoric of the technological sublime intensifies Western domination in project design and ruling. It demonstrates how not the technology but the users get adapted within most ICT4D projects and are expected to continue to "function correctly" to maintain projects locally. Finally, I suggest derived from the literature, certain types of actors that play a crucial role within ICT4D projects and how a stronger involvement of these actors can strengthen local empowerment and ownership. Chapter 11 takes a closer look at

different types of participation within ICT4D project and at what participation means for different actors. It shows how different types of participation depend on the project design and goals, but are also influenced by the broader development sector architecture. It concludes with a scenario that extends the stages and levels of participation, but also the range of involved actors.

In the final Chapter 12 I look back at five years of research and writing, reflect on my findings and suggest how a stronger exchange between scholars and practitioners as well as extended research in related disciplines could contribute to explore additional aspects of technology and international development.

CHAPTER 2

Approaching *development* and *technology*

The initial debate as to whether ICTs are relevant for developing countries has already been clearly resolved in favour of "yes". The challenge now is to find how ICTs can be beneficial (Walsham & Sahay (2006), Sein & Harindranath (2004)). For many researchers in the area of ICT and human development, the main motivation is the belief that ICTs potentially have the capacity to contribute towards the improvement of many different aspects of life, from alleviating poverty to strengthening the democratic polity (Avgerou: 2009). But technical projects do not exist separately from the general problems within a country as well as the aid sector and are thus deeply intertwined with issues of power, politics, donor dependencies, institutional arrangements, and inequities of all sorts (Walsham & Sahay (2006), Sparks (2007)). The diffusion of information and communication technologies is seen as inevitable, and to be more than ever holding the potential to create new opportunities for development (UNESCO: 2005). This makes the planning, justification, implementation and evaluation of ICT within the contested discourse of development a pressing concern for millions of people (Thompson: 2004).

Perceptions of the increasing importance of New ICTs as components or even drivers of development led to discourses surrounding digital technologies becoming part of the developmental discourse itself. The topic area of New ICTs and development has now become a regular feature in global policy meetings, with events such as the WSIS (World Summit for Information Society), the IGF (Internet Governance Forum) and the WITFOR (World Information Technology Forum) attracting large audiences and attention. With ICT becoming a priority in development, not only good scholarship is needed, but scholarship that offers relevant and useful implications for policy makers (Bada & Madon: 2006).
Having studied various case studies concerning ICT and development, the next phase of my research involved a review of literature on three specific areas that combined to

contextualise my core research interest. As indicated in the introduction, I have built my thesis on three domains of existing research: Communication for Development (C4D), Information and Communication Technologies for Development (ICT4D), as well as Science and Technology Studies (STS). For a better understanding of the influences that surrounded their formation, and the evolution of "development", within which my research is placed, I start with a short introduction to the most dominant development discourses from the 1950s until today.

2.1 Concepts of 'technology' and 'development'

> *"After fifty years of development, including a number of years of critical development scholarship, we still have no better grasp of how to theorise or understand the reality of Asia, Africa, or Latin America in a way that leads to significant or lasting improvement."*
>
> (Escobar: 2000:165)

Which aspects of life are and which ones are not seen as an important part of global development goals is not a settled debate in the development community, and the area of new media and communication-technologies for social development has to deal with this same uncertainty. The term "development" suggests that there was a specific direction, towards which the poorer countries should aim to move. Furthermore by defining "Millenium Development Goals" the United Nations (UN) even seemed to give a clear end point of what needs to be achieved (UNDP: 2000). On the other hand, the UN simultaneously pushes for universal education, improvements in child and maternal health, and a number of other goals which also shows its increasing multi-dimensionality (Toyama & Burrell: 2009). Ideas and theories about development have changed over time and strongly influenced development goals and practices.

In the 1950s the field of development communication emerged as a foreign aid strategy by western institutions. One of the main tools to support development practices was seen in mass communication. Today, ICTs also play a growing role in the economy, education and interaction of people from poorer countries. Due to rapidly reducing costs per function, New ICTs are seen to offer new opportunities for development (UNESCO: 2005:18), and, especially in recent years, the increasingly intertwined relationship between ICT and developmental discourse is frequently highlighted (Thompson: 2004).

2.2 Development theories - by whom and how is development defined?

The reconstruction of the post-World War II world and decolonization of most of Asia and Africa was an international project centred around the assumption that 'development' meant widespread adoption of the Western experience as a role model.

The Bretton Woods Conference in 1944 led to the creation of three key international institutions aimed at stable economic growth within a capitalist system; the International Monetary Fund (IMF) to regulate the global monetary exchange, the World Bank, to provide credit and the General Agreement on Tariffs and Trade (GATT) to regulate trade (Willis: 2005:36). The USA, where these institutions were headquartered and which were by far their largest paymaster, took a leading role in promoting development from the beginning.

In the following decades, various competing movements and theories were proposed and tested in development practice, all promising to improve the socio-economic situation of developing countries. Although these theories and paradigms of development are by no means linearly displacing one another, Pieterse sees the long-term trends in development theory parallel general shifts in social science (Pieterse: 2001:11). In a similar manner Escobar perceives: "the three major paradigms for thinking about development, corresponding with three general social science paradigms" (Escobar: 2000:166): market-based liberal theories, production-based Marxist theories and language and meaning-based post-structuralist theories. These parallels will become evident through some of the major development theories.

2.2.1 Modernization Theories

Modernization and *development* as concepts and a new vocabulary, quickly replaced the discredited former concepts of colonialism, westernisation or Christianisation. Rostow (1960) proposed to move colonization and modernization even closer by suggesting that the establishment of colonies was "initially not to execute a major objective of national policy, nor even to exclude a rival economic power, but to fill a vacuum: that is to organise a traditional society incapable of self-organisation (or unwilling to organise itself) for modern export activity including production for export"(Rostow: 1960:109). Or as Kothari defines it: "where colonialism left off, development took over" (Kothari: 1988:143).

After the end of the Second World War, the independence of a growing number of colonies coincided with President Truman's ambition to capitalise growing world markets and promote democracy to counter the communist threat. This accompanied

the USA's role as a major, if not dominant, international economic and political force ((Melkote & Steeves: 2001:51), (Willis: 2005:37), (Sparks: 2007:9)). Modernization was seen as promoting and supporting capitalist economic development in developing countries and the new programmes of international aid from North to South were part of the policy responses of modernization theory (Willis: 2005:45). The belief that social and economic progress can be universally replicated mainly by the sharing of technical know-how from developed to developing countries had been encouraged by the success of the Marshall Plan in rebuilding Europe. 'Modernization' became the operational artefact of the concept of 'development', based on liberal political theory (Melkote: 2003:130).

The main idea behind the concept of development had been the assumption that growth, more precisely economic growth, is the main indicator of development (Alhassan: 2004:36) and its progress could be measured in 'objective', quantitative indicators such as the Gross National Product, Gross Domestic Product and per capita incomes. The concept of 'modernization' emerged from economic theory (see Rostow (1960)) as well as from social evolutionary theory (see chapter 3.1.1) and was characterised by various bipolar attributions like traditional vs modern societies, local vs global, religious vs secular and so on. The roots of poverty were seen in traditional ways of living, rather than in economic deficits, inspired by certain models or assumptions about the experiences of North America and Western Europe since the late 19th century. This view of development equates the definition of a modern nation with Western industrialised nations in all areas of society, including political and economic behaviour and institutions, attitudes towards technology and science and cultural mores (Melkote: 2003:131).

Economic development was not seen as compatible with the maintenance of 'traditional' ways of life that were presumed to prevail in developing countries. A break with the latter in the form of a revolution in the totality of social, cultural and religious institutions and habits, and, thus, in their psychological attitude, was seen a prerequisite to economic progress (Sadie: 1960:302). Probably the best example of what has been termed 'modernization theory' was Walter Rostow's take-off or stages of growth model (Chitnis: 2005:37). Rostow mentions in his book that "it is possible to identify all societies in their economic dimensions as lying within one of five categories" (Rostow: 1960:4). And though he did not talk about 'development' explicitly and concentrated mainly on economic factors, he made a distinction between "more developed" and "less developed". He defined a linear path to development going from "traditional society", the "precondition for taking off", the "take off", the "drive to maturity" and finally to the "Age of High Mass Consumption", with tradition seen as an obstacle to "take-off". He goes on to say that a predominantly agricultural society (one with 75% or more

of its working force in agriculture), must shift to one where industry, communication, trade and services predominate (Rostow: 1960:18f).

For most governments of developing countries as well as multilateral agencies such as the World Bank and International Monetary Fund, 'development' was to be achieved through variations on Keynesian approaches, based on national government intervention and foreign assistance on an international scale. It was generally assumed that increased production and consumption of goods and services constituted the essence of development and that fair distribution of income and opportunities would 'trickle-down' necessarily in due time (Beltrán: 1976:19). But despite systematic efforts, large areas of the world did not appear to be reaching the take-off phase, the result of adopting development models copied from a foreign model was that only the income concentration of the elites was growing while the poorest became even poorer (Diaz-Bordenave: 1994:40).

2.2.2 Dependency Theories

After the obvious failure of the modernization concept, Marxist and other leftist scholars started in the 1970s to emphasise the history-specific setting of present-day modernization, arguing that the situation in the new developing states was shaped by imperialism, colonialism, exploitation and dependency rather than any presumed 'tradition'. Marxian and other Leftist understandings of power were an essential element of the dependency theories, as were the relations of domination and subjection between nations, addressed by classic theories of imperialism: as the colonies became independent the inequalities did not disappear (Islam: 2009).
Marx's theory of development, on the other hand, also included similarities to Rostow's model of linear stages, as he writes in his introduction "the country that is more developed industrially only shows, to the less developed, the image of its own future" (Marx: 1909:xvii). The core meaning of development in dependency theory likewise was economic growth (Pieterse: 2001:6), the end point however differed significantly in social and political terms from that in modernization theories.

Dependency theories criticised modernization theorists for creating external structures that both made and make it difficult for developing countries to grow, emphasising also that only the elites in the developing nations had benefited from modernization measures.

> "Underdevelopment is not due to the survival of archaic institutions and the existence of capital shortage ... [but] generated by the very same historical process which also [generates] economic development: the development of capitalism itself"

(Frank 1969:9, in (Kapoor: 2002))

The economic and cultural expansionism and imperialism of modernization was criticised and instead they argued for political and economic restructuring to produce a more even distribution of rewards in society. Kothari (1984) claimed that a connection had to be made to the availability of resources to which the poor had always had access and of which they were now continually being deprived in the conflict over access to and control over natural resources (p. 18). Consequently it was not the culture of the underdeveloped that had to be blamed for economic failure in dependency theories, instead the responsibility rested with the More Developed Countries (MDC). The dependency approach formed part of a general structuralist reorientation in social sciences. Development and underdevelopment were understood in the context of the world system (Servaes: 1996:31). The biggest failure of development thinking was to see problems and their solutions in unidimensional terms.
The criticism put forth by the dependency theorists did not, however, result in specific solutions or recommendations to be adopted by development practitioners, the crux being that power is not easily redistributed. It did lead though to new ideas and the reconsideration of the existing definition of development.

2.2.3 Alternative development

The top-down approaches had shown little improvement for the poorest and during the 1970s the so called grassroots development gained increasing attention. The concept of 'basic needs' was promoted by certain Non Governmental Organisations (NGOs) and community organisations and taken up by multilateral organisations such as the World Bank with the focus on developing policies to be directed at the poorest people in society. Robert McNamara, President of the World Bank during the 1970s, is a key figure associated with this approach. McNamara suggested that development programs should, at the least, provide access to food, health, education, and safety and should be directly focused at the poorest, rather than at macro-level policies which were aimed to help the poor indirectly (World Bank: 2003). This approach, known as the Basic Needs Approach (BNA) marked a major progression in how development became envisioned as a basic human right, and not merely economic progress. BNA called for a greater focus on small-scale activities and poorer sectors of society combined with continued investment in large-scale infrastructure. Its small-scale agricultural production and informal sector activities were criticised, however, by many as a barrier to achieving the rapid economic growth of the developed countries (Willis: 2005:95) and was soon discarded by the major development organisations.

Another move away from the top-down, neo-liberal, market-led approaches was represented mainly by the growing number of NGOs. Most of them work with populations at the grassroot level to provide appropriate services effectively, through the direct involvement of local people who are in many cases able to react much quicker to local demands than large multilateral organisations. Since the 1990s a growing share of Official Development Assistance (ODA) – between 2% - 10% depending on the origin country – went directly to NGOs rather than to the governments of developing countries (Willis: 2005:99). Important aspects of NGO work have been the concepts of 'empowerment' and 'participation', referring to setting up conditions for, and the provisions of, facilities to support a strong involvement of local people in development activities.

With this human centred approach, also referred to as human development came the understanding of development as capacitating, following Amartya Sen's work on capacities and entitlement, concentrating on the potential of development to promote enabling (Pieterse: 2001:6). Sen's Capabilities Approach became highly influential for policy debate in human development and the creation of the Human Development Index (HDI), now used by the UN as an indicator to measure development. These different, but closely connected concepts, most of which emerged from the debates sparked by dependency theory, offered for the first time new possibilities for the practical implementation of development that does not ignore the local culture and devalue local knowledge in developing countries. But even at grassroot level, it is criticised by some on the grounds that the underlying concepts of 'development' and 'progress' are still primarily based on the perception of developed countries as role models.

2.2.4 Participatory development

During the 1990s concepts of *empowerment* and *participation* had become undisputed parts of NGO work and development aid in general. Setting up conditions for the strong involvement of local people in development activities and the provisions of facilities to support this involvement, was no longer seen as a radical call for social transformation, but indeed seemed to harmonise with official development policy.

Today the call for a greater public involvement in decision making and project implementation seems to have lost most of its attraction and often seems to be little more than a standard phrase. 'Participation' has its place in every project proposal and project design across all sectors, regions and activities, from the World Banks Structural Adjustment Programs to micro-development initiatives (World Bank (1998b), Crocker (2007)). Participatory methods, training procedures, frameworks and guidelines

fill bookshelves and websites, leaving the impression that participation is just another 'social-skill' for aid workers that can be taught and learned. The concept of participation has been expanded to a rather amorphous interpretation, the lack of a clear definition of what participation means led to its increasing use as a buzzword, "reduced to a series of methodological packages and techniques" (Leal: 2007).

Collaboration and knowledge sharing between local and international partners is increasingly common practice in development projects and often one criteria in donor policies[1] but design and control of development agendas usually remain with the external development agencies (Melkote: 2003:139).

Figure 2.1: Ladder of Participation (Arnstein: 1969).

With a more human centered approach to development in the 1990s also came the understanding of development as capacitating. Uphoff (1985) describes in *Putting People First* that the design and implementation of projects should follow their needs and capabilities. People are no longer 'target groups' but become 'intended beneficiaries' that need to be involved (p. 469). According to Uphoff four different ways of participation can be observed in most development projects claiming to be participatory in nature:

- Participation in decision-making: activities are initiated, discussed, conceptualised and planned with the 'intended beneficiaries' involved
- Participation in implementation: people are actively encouraged and resources are mobilised to take part in the implementation

1 One example is the commitment between the International Community and the Afghan Government to channel at least 50% of development aid money though the Afghan Goverment's core budget instead of spending it directly (Kabul Conference: 2010).

- Participation in evaluation: people are invited and encouraged to critique success or failure
- Participation in benefit sharing: the 'intended beneficiaries' appreciate the outcomes and enjoy the results.

Some development initiatives provide people with opportunities to access all these four ways of participation. Many do not, and restrict participation to one or two ways.

In trying to define the meanings and practices of 'participation' several scholars have over the years, made the effort to create typologies of participation, from Arnstein's (1969) ladder of participation and Jules Pretty's (1995) typology of participation to Sarah White's (1996) typology by interests. Andrea Cornwall gives a comprehensive overview of several of these typologies that define participation from different perspectives. Probably the best known is Arnstein's ladder (see figure 2.1), looking at participation from the perspective of those at the receiving end, while Jules Pretty addresses more those applying participatory approaches and what motivates them. Pretty's types range from manipulative and passive participation, to interactive participation and, finally, self-mobilisation. Both Arnstein and Pretty go from control by authorities to control by the people or citizens (Cornwall: 2008).

While these typologies give a good impression of what participation can be or how it might be utilised, when set in context, participation cannot be categorised into 'strong' or 'weak' so easily. Developing projects engage, in most cases, a variety of different actors or groups of actors who bring contrasting perceptions of participation into the process. Different types of participation may thus be possible or useful – for different actors – and necessary at different stages during the process. What the aforementioned typologies do not categorise so clearly is the crucial question: who participates? (Cornwall: 2008). Who counts as a community representative, or, in an even broader sense, as 'local'? Social, ethnic or gender categories may be labels allocated by the aid industry, but are not necessarily seen as primary distinguishing features by people themselves. Much depends on the participants and their agenda, whose voices are heard and considered and even what reason might exist for deliberate non-participation.

A third aspect Cornwall looks at, next to how participation is applied and who participates, is the question concerning what people participate in and who participates at which stage of the project. Many projects combine different participatory approaches in terms of who participates as well as the relevant types and activities. Some aspects may be decided and implemented entirely by local stakeholders, while others leave little space

for involvement. Cornwall gives several examples throughout her paper showing how participation is always about strategic choices, how forms of autonomous participation are as much part of 'development' as 'invited participation'. She suggests 'clarity through specificity', participation made more transparent by a clearer distinction between different forms of participation, at different stages. What are people enjoined to participate in, what reasons are given for participation and who is involved as much as who is absent?

A general critique of the very idea of "development" – including alternative approaches like participatory development – evolved during the 1990s among scholars like Arturo Escobar, Uma Kothari and Wolfgang Sachs. 'Underdevelopment' was seen as something invented by the West to impose interventions and a critical reconsideration of the very idea of development came to be known as *Post-Development*.

2.2.5 Post-modern critique of development

The field of development and its tendencies towards defining 'others', identifying their 'problems' and legitimising 'professional' intervention in their daily lives (Thompson: 2004) has increasingly become the subject of critical analysis during the 1990s. For some critics, the representational knowledge of professionals is, or can be, opposed to the situated, local knowledge in grassroots initiatives; however, it is mostly developmental professional conceptual foundations that in most cases legitimate discourses and shape interventions (Sachs: 1992:4 f.).

As for grassroots development, the small-scale locally situated approach has also been important for 'post-development' theorists like Arturo Escobar. Local views and actions should be the focus rather than those acting on a 'global scale' imposed by organisations from the Global North defining what is meant by poverty, capacity, ability or human resources. International development had become an industry in itself, with its own mechanisms and rules, with an extended administrative machinery reproducing its own legitimacy and deciding on how the 'West' was to 'develop' the 'Third World'. Changes, these critiques said, only happened on a local level with slightly adapted methods of approach and interaction, but few changes regarding power mechanisms in decision making regarding international intervention. Escobar (1992) describes this line of thought as an interest not in "Development alternatives but in alternatives to Development" (p. 417).

One inquiry regarding the present power relations in the global development aid architecture asks whether, and if so how, genuine participation is possible. Cooke and Kothari (2001) pose the question "Participation: the new tyranny?", by investigating

the often ritualistic and manipulative nature of participatory processes. They argue that the contributions to constant revisions regarding methodologies have served to legitimize present participatory development rather than addressing some of the fundamental problems within the current development discourse (p. 7). Nonetheless the book does not claim to be anti-participatory. It is the over-simplification of participatory development that is criticised, the deliberate ignorance towards the agency of development organisations (Mosse: 2001). Instead of facilitating the concepts of empowerment and participation as mere methodological tools that make up part of any given project package, questions of power and power-relations between the involved actors need stronger critical consideration together with "a genuine and rigorous reflexivity" (ibid. p. 14f).

Critics of post-development accuse its proponents of romanticism and overlooking positive aspects of modernity, development, science and technology (Corbridge, 1998 in (Ziai: 2007:7)). Others admit that post-development raises important issues, but remains too vague and offers no real alternatives. No clear or widely agreed notion of development exists today despite the long debate. Even multinational organisations like the UN or the World Bank do not follow stringent concepts of development anymore. Aid (spending) depends much more on the context, ranging from grassroot level activist initiatives to top-down multi-donor energy projects.

2.2.6 Neoliberalism

While the grassroots approach gained importance on a smaller-scale level, on the large-scale the Keynesian perspective was increasingly questioned from the 1970s, in part due to the slowing rates of growth and the debt crises of the 1980s. Since the 1960s many developing countries had taken high loans, during the 1970s increasingly from private banks from OPEC states with low interest rates, to invest in infrastructure and development programs. When commodity prices fell in the late 1970s, many of the developing countries who depended on the export of agricultural products or minerals, were unable to cover their debt repayments or even cover the interest rate (Willis: 2005:50). Additionally, interest rates went up and industrialised countries increased import tariffs to stabilise their own economies, resulting in a growing number of governments of developing countries not being able to meet their repayments. It was now argued, that too much state involvement can lead to inefficiency and therefore reducing state-interventions and letting market set prices and wages would recover economic growth. Toye (1993) criticises the development policy approaches which gave rise to the over-extension of the public sector, the over-emphasis of economic policies on investment and the widespread use of economic controls such as subsidies or tariffs. Such interference

brought, in his view, more negative than positive effects for local economic development (p.47).

In the 1983 World Development Report, the World Bank warned about the drift towards state protectionism

> "The ministerial meeting of GATT held in November 1982 set the stage for liberalisation. Greater participation by developing countries in GATT would help strengthen its role as the most appropriate forum for continued negotiations to reduce trade barriers."
>
> (World Bank: 1983:3)

and pointed out, that the most rapid growth rates were found in countries where the state was least involved in "distorting the market prices" (World Bank: 1983:81). The effects of social or political situations on economic growth were not discussed in the report, the focus was on government involvement in economy.

In the following years there was a shift in development assistance from financing investments to promoting policy reforms aiming for greater market liberalisation, with the World Bank playing a key role. One of the most well known examples of neo-liberal development theory in practice has been structural adjustment programs (SAP). This meant certain policies had to be adopted by national governments in return for continuing financial support, which included giving the market greater power by deregulation, liberalisation and privatisation.

In the majority of cases though, SAPs led to falling wages, increased unemployment and higher costs of living. This may have happened just as well without SAPs, but "it is agreed that although SAPs may not have caused poverty in a direct sense, they certainly did not lead to poverty reduction" (McIlwaine: 1998:99). As with the modernization theories, there were plenty of critical positions, but no coherent ideological response to the neoliberal turn (Pieterse: 2001:4), but, as mentioned above, from the 1990s there was also greater attention being paid to the poorest in World Bank and IMF policies.

Conclusion

In summary one can say that 'development' remains an ongoing debate in the global development community as a whole, with no agreement on a single objective or approach. The tensions between top-down versus bottom-up, between providing welfare and

promoting agency, and between paternalism and partnership (Toyama & Burrell: 2009) might not simply resolve into 'right' or 'wrong'. According to Pieterse, development thinking should stop "seeking general theories and explanations but [should be] focusing instead on the diversity of development circumstances" (Pieterse: 2001:50). This study aims to examine what individual development goals are; what theoretical approaches to or models of 'development' are expressed by the actors and how their goals are addressed in practice and, finally, to evaluate the different perspectives and mutual shaping of the stated goals amongst the relevant actors.

CHAPTER 3

Social Change by Communication and Technology

The idea that communication and technology can be driving forces in inducing economic development and social change, originates in the role assigned to media for propaganda purposes during the First World War (Lasswell: 1971). From the 1930s onwards there was a growing awareness of the effects that mass media have on influencing people's attitudes and behaviour. For many of the modernization theorists, mass communication media were seen as powerful instruments to manipulate people's opinions and attitudes, and, as a result, their behaviour, over a relative short period of time (Melkote: 2003:131).

3.1 Communication for Development

Development communication or Communication for Development (C4D) typically addresses programs that communicate for the purposes of social change, help to mobilize support, create awareness, foster norms, encourage behavioural change, influence policy-makers, or even shift frames of social issues. The goals themselves vary with the underlying approach taken to development (Wilkins: 2008). It was, thus, as a field never primarily concerned with theory, rather with policy, and more importantly, application (McAnany: 2010).

3.1.1 The Dominant Paradigm

As in other areas of development, modernization theories provided the epistemological foundation of the initial theories in Communication for Development (Melkote: 2003:131) whilst the latter also drew on propaganda research conducted in the United States between the two world wars. It was believed that the

> "task of the mass media of information and the 'new media' of education is to speed and ease the long, slow, social transformation required for economic

> development and [...] to speed the task of mobilizing human resources behind national effort,"
>
> (Schramm: 1964:27)

rejecting the notion that the population of a developing country might think independently, identify a problem and implement a solution for it (Sparks: 2007:29). One of the first and most influential development communication researchers was Daniel Lerner, who had undertaken a large-scale study in the Middle-East – around the same time as Rostow's stages of growth model gained popularity – and whose main interest lay in understanding the connection between mass media and development.

Lerner compared the situation in the Middle East in the 1950s with the struggles in Western societies taking place over the course of centuries replacing step by step medieval lifestyles by modernity and reshaping millions of individual lives (Lerner: 1958:43). He believed the "rationalist and positivist spirit" of modernization would unavoidably prevail. In his view, modernization implied no ethnocentrism, rather it exhibited certain components and sequences whose relevance was global: urbanization tends to raise literacy, rising literacy tends to increase media exposure and increasing media exposure promotes wider economic participation (per capita income) and political participation (voting) (Lerner: 1958:46).

This passage shows clearly why Lerner set high expectations on the potential power of mass media to support the modernization process. Modernization, as he suggests, is the necessary and only reasonable condition for any country and will sooner or later infect its population. And what could be more effective in spreading the seed of modernization than mass media? As Lerner describes it, people show, if not under strong social, societal or religious pressure, an almost natural interest to modernize. In this model it seems to be the older generations, bound to traditional structures and, most of all religion, that try to prevent a society from becoming modern.

Before traditional societies could modernize, people must first develop a high sense of empathy, which Lerner defined as the capacity to see oneself in the other fellow's situation (Lerner: 1958:50). This empathy, however, is not interpreted as an impulse for creative solutions by the individual to accomplish newly raised desires. On the contrary, Lerner worries about the complications that an "own way", as he observed it in the Middle East, can bring. Lerner's concept of empathy as the foundation to modernize assumes that people in the traditional society will be willing to become good imitators of the modernized society and, thus, the work of development would just

be a matter of marketing, to make modernity attractive to people. Lerner suggests that "modernization follows an autonomous historical logic - that each phase tends to generate the next phase by some mechanism which operates independent of cultural or doctrinal variations." (Lerner: 1958:61). He further believes that modernization of the Third World depended on changing the character of people living there on an individual level (Melkote: 2003:131) and that individuals can be best reached by mass media. Thus no modern society could function effectively without a developed system of mass media (Lerner: 1958:55).

A few years later, Daniel Lerner puts the role of mass communication media into even stronger focus, describing the situation in Iran. With 90% illiteracy at that time there was a parallel overproduction of intellectuals generating media that did not have an audience. Media systems and social systems have to go together (Lerner: 2009), otherwise he sees the danger of rising frustration instead of rising expectations. While he recognizes that family and community, even if seen as instruments of conservatism and retardation can be important instruments of balance as well, schools and media are for him necessary instruments of change, needed to promote "psychic mobility" (p. 52) and political stability. Lerner proposes that we should consider information as a commodity, produced, distributed and consumed like all other commodities. Accordingly, the capacity to produce and capacity to consume must be considered. Mass media are therefore at the same time index and agents of modernization (Lerner: 2009).

Wilbur Schramm, another pioneer in development communication, like Lerner believes that for "national economic development [...] to occur, there must be a social transformation" (Schramm: 1964:9). Moreover he regards the people from underdeveloped countries as "being invited into modern life" (Schramm: 1964:18) depending on their will to change if they are going to take part or if they will just watch from the sidelines. Schramm, in accordance with Lerner, sees modernization, and with it economic development, as depending most of all on people's values and their willingness to accept change.
Schramm identifies three major functions which mass media have for modernization: to create a climate conducive to change, similar to Lerner's precondition of empathy, to serve as a multiplier of information by reaching large numbers of people through different channels, and to create a sense of "nation-ness" by delivering the same messages to all sections of the population (Schramm: 1964).

Unlike Lerner a few years earlier, however, Schramm addresses the issue of cultural linkage; innovations should be considered in terms of life, values and beliefs and not only in terms of productivity. For the proposed change it is important to consider "what

would such a change mean to the people who are being asked to change?" (Schramm: 1964:118). He therefore warns that mass media risk being ineffective if used without adequate knowledge of local culture and that mass media should be as local as possible. Schramm uses less the notion of "modernization" and more the idea of "necessary changes", while in fact both seem to imply the same things. Like Lerner, Schramm had a big influence on the field of communication as it went international, to Third World countries in Asia, Middle East and Latin America (Singhal: 1987:19).

Around the same time as Schramm and Lerner, Everett Rogers introduced his diffusion of innovation approach, originally a framework in which to evaluate the impact of development programs (Rogers: 1995:xvi). He defined four main elements in the diffusion of innovation: it is seen as the process by which an *innovation* is *communicated through certain channels*, over a *time*, among members of a *social system* (Rogers: 1995:5). Rogers questions the assumption that advantageous innovations will sell themselves thanks to their obvious benefits and diffuse rapidly, but saw mass media channels as the most rapid and efficient means to inform an audience of potential adopters about the existence of an innovation.
The early diffusion research, usually on technological innovations, fitted well with the dominant paradigm's focus on technology and its top-down communication to the public (Rogers: 1976a). Rogers argued that communication by itself can generate development regardless of economic and political conditions. His emphasis lay on particular communication effects: the ability of media messages and opinion leaders to create knowledge of new practices and ideas and to persuade others to adopt the introduced innovations.

In his first publications about the diffusion of innovation model he presented the centralized top-down model of information dissemination to foster innovation adoption, as he saw "modernization [...] essentially (as) a communication process" (Rogers: 1969:42f). Rogers later, however, dissociated himself from this inherent "pro-change" bias of diffusion research, which follows the assumption that innovations are generally "good", and took a more critical perspective, as will be explained below.

The dominant paradigm ruled through the late 1960s intellectual definitions of development and guided national development programs (Rogers: 1976a). Communication played, as shown, a vital role under the dominant paradigm, through its perceived potential to transmit and spread mediated experience through mass communication (Alhassan: 2004:40). In reality though, knowing about modernity and its benefits did not seem to be enough to modernize or make people behave as 'moderns', and so the first and most crushing criticism of the dominant paradigm was that it simply

did not work (Sparks: 2007:39f). Social change was seen as the sum of individual change, but the fact that issues of social structure might profoundly limit the possibilities of individual change was not acknowledged. The existing concept of modernity might have worked in the developed countries, but it proved to certainly not be universal.

By the early 1970s, Latin American development communication scholars such as Juan Diaz Bordenave and Luis Ramiro Beltran, strongly influenced by the work of Paolo Freire, began criticizing the former hierarchical, bureaucratic, and sender-oriented communication model and they proposed to replace it by a more horizontal, participative and receiver oriented approach (Servaes: 1999:83). A growing critique of the ignorance regarding the influence of society on individuals began to emerge.

> "The most serious theoretical problem results from the assumption that communication plays an independent role in affecting social changes and behaviour without an adequate test of such assumption in developing countries, or elsewhere, for that matter"
>
> (Felstenhausen, 1971 in (Beltrán: 1976:17))

By the mid 1970s it had become mostly accepted that the mass media only had limited potential to promote change in society and that communication cannot change an unfair social and economic structure on its own (Beltrán, 1989 in (Sparks: 2007:43)). The successor to the dominant paradigm, like the successor to modernization theory, is not a clear one, several approaches were developed simultaneously with mutual influence.

3.1.2 Participatory Communication

> *"The role and effects of communication is dictated by the larger structure...The manner and rate with which new technology is adopted cannot be interpreted independently from the social and economic system where that technology is introduced"*
>
> (Felstenhausen, 1971 in (Beltrán: 1976:20))

At the same time as the emergence of dependency theories in development scholarship and the popularization of new social movements like the movement for women's rights, ecological movements or the movement for peace, there were growing objections among communication scholars towards the dominant paradigm and modernization theories. Beltrán (1976) and Diaz-Bordenave (1976), two Latin American scholars with a big influence on the participatory paradigm, argued that theories like the diffusion

of innovation and the modernization approach uncritically attributed the problems of underdevelopment to internal social and structural problems.

In the 1970s, Paulo Freire made an important contribution to the understanding of education by linking the process of knowing with the process of learning through an on-going cycle of action and reflection leading to the development of a critical awareness about the world in which people live (de Koning: 1995:24). Freire criticized that many programs focused on symptoms rather than causes which undermines participation and dialogue with their 'assistentialism' (Freire: 1973:15).

In his influential book "The Passing of the Traditional Society", Lerner (1958) describes underdevelopment as a result of traditional practices and local resistance to change, by failing to accept and follow the West as an example. The dependency scholars instead argued that in most developing countries, mass media reached mainly the elites, and the adoption of new technology was affordable only to rich farmers. Proponents of dependency theory pointed out that many of the programs using mass communication to foster development implemented under the impact of modernization theory were widening income and information gaps in the developing nations. The dominant paradigm had implied that poverty was equivalent to underdevelopment and the simple and obvious way for less developed countries to develop would be for them to become more like the developed countries (Rogers: 1976b:125). But mere transfer of resources and technology did not necessarily bring one any closer to the realization of a desired state (Kothari: 1984:22). "The illusion that a farmer is an individual who has access to information and makes his own decisions is gone" (Diaz Bordenave in (Beltrán: 1976:21)).

Esman (1974) suggests that improved performance is more a question of institutional change than a question of improved communication because power structures of society define who is an "innovator" and who remains a "laggard" (Esman in (Beltrán: 1976:20f)). Thus, from the 1970s onward, in the field of development communication it was widely acknowledged that mere exposure to media messages is not enough to trigger change, but that certain social and cultural correlations are essential; that media and communication are necessary and useful but not exclusively and not if used out of context. The centre of the attention must be the people that are engaged and affected by social change interventions; communication was to be seen as a dialogue rather than linear, unidirectional educational tool and the development communicator as facilitator rather than as an outside expert. Diaz-Bordenave (1994) calls the need to think, express, belong to a group, be recognized as a unique person, be appreciated and respected and have a say in crucial decisions affecting one's life are as essential human needs as eating,

drinking and sleeping. The assumption that participation is a basic human right and has to be seen as an end in itself, not for its results, found growing support in the field of development communication (Melkote: 2003:139).

These early criticisms resulted in a number of research projects and literature exploring participatory communication approaches to development and some scholars, like Schramm and Rogers accepted the criticism. They adapted their models of communication and distanced themselves from economically centred definitions of development (Schramm: 1964:10). Schramm (1976) remarks that the "old paradigm" lacked specificity and overgeneralized, and suggests communication scholars could contribute in an important way to the understanding of cultural codes by studying popular culture (Schramm: 1976). Rogers distills the four main concepts of the dominant paradigm as economic growth, capital-intensive technology, centralized planning and the cause of underdevelopment as lying within the developing nation (Rogers: 1976b). This led, with respect to the diffusion of innovation, to a pro-innovation, pro-top-down and pro-persuasion attitude, not considering reasons for non-adoption. Rogers modified his diffusion theory during the 1970s and pursued a more culturally sensitive approach. He proposed that diffusion research needs to integrate traditional and modern media as well as community-based change agents and local opinion leaders (Rogers: 1976c). Most early diffusion of innovation studies had been based on a linear message receiver model of communication, later definitions are more accurately described by a process of convergence, where participants create and share information to reach mutual understanding (Rogers: 1995:5f).

There is no clear definition of the participatory paradigm of development communication, but there could be said to exist a consensus about a few significant differences from the dominant paradigm: the shift from a one-way, government to people centred approach, to a participative, knowledge sharing practice; away from being primarily mass media centred to a stronger consideration of "little media"; and instead of trying to create a "climate for development" through mass media, to focus on development programs on the weaker sections of a national population (Rogers: 1989). For some, participation was seen as a necessary tool, but just as means towards an end defined by the institution itself, others saw the process of participation as an end in itself (Servaes: 1999:15). But the view on development in general broadened and the definition included not merely economic growth on a national level, but also growth with equity, provision of basic needs, meaningful employment, and rich and varied interpersonal relationships (Melkote: 2003:137f).

Concepts and justifications for participatory communication vary greatly, especially as the dominant paradigm still had a big influence on what was understood as development goals. The idea of collaboration and knowledge sharing between locals and experts and local context and cultural proximity gained popularity in many development projects, but the focused outcome in most cases was not true empowerment, but rather the attainment of some pre-defined indicators of development inherited from the dominant paradigm. Participation in self-help activities was encouraged, but the design and control of messages and development agendas usually remained with the experts and basic solutions to the local problems were in most cases selected by the external development agencies (Melkote (2002:139), Sachs (1992)).

The dominant paradigm has not yet passed, as Rogers noted some 22 years ago, but is certainly less dominant and emphases have gone towards achieving equality in the distribution of development benefits and people participating (Rogers: 1989). Mody (2000:194) argues that it was crucial to identify the domestic and external conditions in a societies' power structures, as well as political and economic conditions in their media systems. In her view, however, most participatory approaches were old wine in new bottles, participation may be necessary but it is not sufficient to achieve fundamental changes.

Huesca (2002:151ff) also sees a dilemma in participatory communication, as he asks "participation: technical means or utopian end?". He argues that these two extreme views of interpreting 'participation' can undermine the usefulness of the theory. Using 'participation' as basically synonymous with 'persuasion' misinterprets and distorts the theory and makes participation appear as compatible with social marketing, capitalist expansion, and global trade. Using participation as an end in itself, on the other hand, is said to be "a somewhat romantic belief that peasants, Indians, and other marginalized persons possess local wisdom and a virtuous cultural ethos, and that participatory processes are inherently humanizing, liberating, and catalyzing" (Huesca: 2002:153).

The ongoing influence of the dominant paradigm and modernization theories on a large-scale challenged true participation and social and political action by the people at all levels and thus also prevented the desired awakening and mobilization at grassroot level and the challenging of authority of hegemonic structures (Kothari: 1984:14). Melkote and Steeves address power inequities as the central problem in development (2001:36f), however, Huesca and Dervin (1994) warn that power needs to be continuously renegotiated as today's formula for liberation can become tomorrow's distorting ideology (White: 2004:15).

In the late 1970s the dependency school gradually lost its favoured position (since the

'radical' late 1960s) among social science scholars as postcolonial theory, growing out of literary studies, emerged and brought a new perspective relative to dependency theory, similar to what dependency theory had done in relation to modernization 15 to 20 years earlier (Kapoor: 2002). Both cover some similar territory and share important common concerns, and in the following section the origin and progression of postcolonialism will be discussed.

3.1.3 Orientalism and Post-Colonialism

One of the first and most influential early statements of radical anti-colonial thought and critical reflections on the after-effects of colonization came in 1959 from Franz Fanon (Fanon: 1959). He analyses how intellectuals from colonized countries - by him called "native intellectuals" - assimilated the culture of the occupying power. They were mostly studying at European Universities, shaping their intellectual work using the techniques and language of the metropolis and worked closely with the colonial power. Colonial intellectuals thereby often played a vital role in structuring and shaping the influence of colonial rule (Pieterse & Parekh: 1995). At a certain point however, Fanon describes, the "native" is disturbed, and decides to remember what s/he is. But as s/he has only exterior relations and is not part of his/her people s/he can only reinterpret memories or old legends in the "light of a borrowed aestheticism and a conception of the world that was discovered under other skies" (Fanon: 1959). Finally, in what Fanon calls the fighting phase, many of the native intellectuals will feel the need to speak to their nation. In consequence Fanon sees the risk of stereotyped reproduction, to create an authentic work, however, he/she must realize that the truths of a nation are in the first place in its realities, described as the fight which the people wage against the forces of occupation. Artists who decide to illustrate what they think is the truth of the nation might, paradoxically, show the past and turn away from actual events. In his own extremity of colonial alienation, as Bhabha describes, Fanon "speaks most effectively from uncertain interstices of historical change" as one of the first to articulate the unresolved contradiction between culture and class and the struggle of psychic representation and social reality (Bhabha: 1994:57).

Unlike the intellectual, the mass of people maintain intact traditions completely different from those of the colonial situation but they morph into a formalism which becomes more and more stereotyped, a defence mechanism led by the simple instinct for preservation. The colonial situation brings about a nearly all-embracing halt to the national culture of the colonized country. Nonetheless, Fanon suggests that the continued cohesion of the people constitutes an invitation to the intellectual to go

further than producing literature that is bitter, hopeless and violent, which he sees as reassurance of the occupying power. To create a literature instead that addresses its own people, necessitates a new literary style for a new public. An ironic reaction to these developments as described by Fanon, comes from the colonialist specialists, who do not recognize these new forms but try to help protect the traditions and become the defenders of the imagined "native style". For Fanon, culture is mainly the expression of nation, a sum of its preferences, taboos and patterns, of internal and external tensions. Consequently, in the colonial situation, culture in this sense falls away and dies, and in order to give life to national culture, the re-establishment of the nation is for him the first necessity. The most urgent thing for the intellectual to do, Fanon states, is to help build up his nation (Fanon: 1959:274).

Fanon's analysis of historically-bound cultural systems stands as an important influence later on postcolonial theorists such as Edward Said. Said's work on Orientalism shaped not only postcolonial theory but English history, anthropology and other scientific disciplines as well. Said's work builds on an analysis of Western novels, travel and anthropological writing, opera and media to link Western imperialism with Western culture (Kapoor: 2002). For Said the Orient was "almost a European invention, and had been since antiquity a place of romance, exotic beings, haunting memories and landscapes, remarkable experiences." (Said: 1995:1). While distinguishing between British and French imperial Orientalism, as well as between colonial and postcolonial Western Orientalism, he argues that there is a general continuity in the way West and East are depicted. Said does not state that the Orient was essentially an idea, as he emphasises that the phenomenon of Orientalism deals not with Orient but more with its *idea about* Orient. Ideas, cultures and histories, as he shows, cannot be understood or studied without considering their configuration of power, as it was shown by the dominant powerful West, speaking for the Orient. Importantly it did not matter to Said whether the stereotype was positive or negative, since either is equally essentializing and originates out of a desire for domination. Thus, Orientalism is not merely a structure of lies or myths, but a sign of European-Atlantic power over the Orient, a created body of theory and practice declaring Orientalism as a system of knowledge about Orient and continuously reproducing itself (Said: 1995:5f). As can still be observed today across disciplines, Said warned that even scholars that were thought to be sensitive towards non-Western cultures, still reproduced that kind of hegemony within their research. Disguised by the "rhetoric of neutrality" they are unable to escape "from a political position, which always places them at a superior level in relation to the East" (Nieto-Galan: 2011). To disclose this invention of Orientalism, Said suggests that society and literary culture can only be understood and studied together, which initiated debates across the human-

ities and social sciences. To Said all texts "must be 'worlded' – located in the world and exposed for the geographical imaginations from which they arise" (Morin: 2004:338) .

Said uses the notion of imaginative geographies to refer to the invention and construction of geographical space beyond a physical territory, dividing and structuring the world according to an imperial imagination or ideology, with the ultimate objective to control people and place. To overcome these imagined geographies, 'knowledge' must be self-critical, open itself up disciplinarily and enter into dialogue with the people and places it represents. His emphasis on the relationship between culture and imperialism and the theorizing of the complex cultural, ideological and intellectual processes involved in domination and control that accompany the political, economic and territorial processes, laid the foundation for the field of postcolonial studies (Morin: 2004).

Critics of Said's work accused him of being over-simplifying, in some points confusing, that his works contain considerable technical flaws (MacKenzie: 1993) and that he should stick to literary criticism (Ali: 2003). However, others claim that much of the criticism on Said's work should be treated as extensions of his thinking rather than attacks on it. Some of the accusations, like his failure to consider resistance and opposition to Orientalist stereotypes, by which he unintentionally reinforced an (Orientalist) image of an Eastern subject as passive, inarticulate and lacking self-determination, Said himself attempted to correct in his later works (Morin: 2004).

The purpose of postcolonial writing, following Said, has been to interrogate European discourses and discursive strategies and to investigate the means by which Europe imposed and maintained its codes in the colonial domination of so much of the rest of the world. The rereading and rewriting of the European historical and fictional record are seen as vital and inescapable tasks (Tiffin: 1995). Postcolonial studies are not limited to theorizing only the conditions, but also try to understand why they are what they are and how they can be undone and redone. It is in fact easy to condemn and attack foreign rulers or capital in retrospect, but much more difficult to identify what values, institutions and identities are foreign and evolved as part of colonial legacy or which might be intertwined with their 'native' analogues.

In accordance with Franz Fanon, who emphasised that the solution cannot be to simply try to preserve, Pieterse argues that "it requires not the restoration of a historically continuous and allegedly pure precolonial heritage, but an imaginative creation of a new form of consciousness and way of life" (Pieterse & Parekh: 1995:3). The postcolonial perspective differs from the traditions of the sociology of underdevelopment or the 'dependency' theory in its focus on culture and its attempts to revise nationalist

or 'nativist' pedagogies that set up the relation of Third and First World in binary opposition (Kapoor: 2002). It refuses to provide a holistic social explanation and instead forces recognition of more complex cultural and political boundaries.
Political decolonization has been largely completed; in an economic sense decolonization is addressed in various forms under what is widely called development. The process of intellectual decolonization has also been under way and here, too, a critical perspective has become more and more common. Cultural decolonization, or the retracing of the culture of colonialism in the Western world, has with the emergence of postcolonial studies started to be recognized as a concern (Pieterse & Parekh: 1995).

Regarding their approach and terminology, postcolonialist scholars have been criticized for invoking the prefix 'post' the illusion of a 'colonial past, liberal present' and disguising the ongoing asymmetries of global power, hence a better term would be neocolonialism. Another source of criticism is the mode of questioning, which has been informed by methodologies derived primarily from literary criticism, often concentrating on the role of literature and language. These methodologies are meaningful in the context of general linguistics and the cultural turn in social science, but on the other hand, this focus veers in the opposite direction to earlier monocentric emphasis on political economy: either material conditions are seen as all-determining or discourse is treated as the all embracing universe of reality (Pieterse & Parekh: 1995). Politics tend to be merely brought in as a background variable or is discussed in a generalized way, as though interactions between coloniser and colonised are barely affected by their different socio-economic status. Here a reconsideration of dependency theorists' analysis of politics, and a concentration on the socio-economic inequality could help reveal postcolonialists' weaknesses and bring dependency and postcolonialism into conversation. "In the end", Pieterse and Parekh observe, "the problematic of decolonization of imagination merges with wider questions: the scrutiny of Western ideologies that have become part of the 'operating system' of global politics, in particular liberalism and liberal democracy" (1995:15). In this perspective, not only the 'post' in postcolonialism but maybe also the 'colonialism' might need to be reconsidered, as this "operating system of global politics" is no longer represented predominantly by the former colonial powers.

Despite the shift away from modernization theory and a critical perspective on Western dominance, in the Communication for Development field, there is surprisingly little literature on the influence of postcolonial theory on both research and practice in the field. Some say postcolonial scholarship had very limited influence within the communication discipline as a whole (see Shome & Hegde (2002), Parameswaran (2002)) or at least criticize the "lack of overt intersection" between the two (Alhassan: 2007:110)

emphasizing the need to "uncover the unacknowledged linkages" (ibid.). Participatory and empowerment (see 3.1.4 below) approaches imply questions about context, voice and agency that were also central to postcolonial scholarship, while at the same time development communication literature remains overshadowed by the accusation of having been "an effective handmaiden of this dubious re-invention of international diplomacy called international development" (Alhassan: 2009:120).

3.1.4 Empowerment

One 'radical' form of the participatory paradigm, is the concept of empowerment – though the exponential increase of its use as part of development aid vocabulary made its radical touch vanish. The empowerment paradigm comes from the field of community organisation, education and community psychology and Speer and Hughey describe it as the "manifestation of social power at individual, organisational and community levels of analysis" (1995:730). Santo Rozario (1997), on the other hand, divides empowerment into two primary models; one "is based on empowering the individual, not on encouraging collective social action by the oppressed", the other one, consistent with Paolo Freire's approach, deals with "conscientization and radical social action" (Rozario, in (Melkote & Steeves: 2001:37)). Empowerment models give control in the process to local individuals, organisations or groups involved, while models informed by the dominant paradigm give it to the experts. Handing the decisions back to the development beneficiaries is described as one of most significant moves towards empowerment (White: 2004). Melkote and Steeves (2001) suggest a transition from development communication to Development Support Communication (DSC), with communication seen as more holistic and as a support for people's self-determination. They argue that any development specialist on the ground should see his/her role in promoting local people and invest his/her own power ensure to their empowerment.

After initial resistance, DSC gained acceptance among multilateral agencies, applied for example in the Food and Agriculture Organisation's CATs (Community Audio Towers) in the late 1980s, or UNICEF's ComPAS (Community Public Address System) in the late 1990s. The DSC approach, however, has never really taken root among experts, which Melkote and Steeves explain by the fact that at that level of decision making "few understand its implications because few have been directly involved in projects" (2001:350). Similar to the discussion around 'real' participation in participatory communication, empowerment was said to be frequently misunderstood and misused. The dilemma as for many C4D paradigms is giving advice on guidance how to effect development goals through communication in a way that others can implement on a

wider scale (McAnany: 2010).

3.1.5 Multiplicity or the 'Alternative Paradigm'

> *"The central idea is, that there is no universal development model, that development is an integral, multi-dimensional, and dialectic process that can differ from society to society"*
>
> (Servaes, 1989 in (Sparks: 2007:57))

Today, in the field of development communication there are different paradigms applied on different levels. While new paradigms have been introduced, older approaches to development are still practised widely, resulting in an overlap of different approaches. Every region or nation has unique circumstances with development programs needing to be altered accordingly (Chitnis: 2005:46).
As in the 'post-development' discussion, some critics of a development industry that appears to channel resources with worsening rather than improving consequences, position development as a particular discourse. The term 'development' itself, they claim, communicates problematic assumptions about the nature of the problems addressed, appropriate solutions, and communities at risk (Wilkins: 2008). There is, however, some consent among most contemporary development projects as some scholars have observed. Regardless of theoretical orientation, the importance of a participatory component seems to have become broadly accepted, even if as Huesca (2002) observes, "this notion is honored more on paper than in practice" [140] and very few cases are classified to meet the standards of genuine participation (Tufte & Mefalopulos: 2009:17).

Quarry and Ramirez (2009) attempt with their book *Communication for Another Development* to reach a wider public than those who already work in the development establishment. They offer exemplifying descriptions of both positive and negative experiences they came across during their more than 40 years as practitioners and call for a participatory shift. However, they also admit that their notion of C4D as a participatory process of 'searching' (as opposed to 'planning') and 'listening' (as opposed to 'telling') is difficult to carry out in the institutional aid environment (McAnany: 2010). The UN, as with other development agencies, "has a tendency to behave as though its primary purpose is, for example, to create reports, arrange staff movements and keep itself funded" Harr (2009). They extend the notion of context to the general circumstances surrounding a project during its implementation. This includes the circumstances of people who would benefit from the project but also, which is rarely addressed as an aspect of context, the often debilitating bureaucratic context of the

aid institutions themselves, like the need to spend a certain budget quickly and to produce results within an often short funding cycle (McAnany: 2010). They also stress the importance of project 'champions' (Quarry & Ramirez: 2009:62). A 'champion' is defined as a local person who is well acquainted with the local context, who promotes the project idea and stays in place for a long time. How to find and identify these committed local leaders, however, and include them into large donor agencies' projects remains to be solved individually.

Conclusion

Schramm's work still offers some insightful ideas concerning the successes, failures, and exuberant hopes for technology and its potential to impact global development. Nearly 50 years later, we can say that those hopes have not been fulfilled. But surprisingly little has changed about these hopes of the role ICTs can play in development (ICT4D-Jester: 2010). Scholarship in the C4D area has certainly grown beyond its administrative and development assistance origins to recognize the contributions of social theory, political- economic inquiry, and cultural studies (Wilkins & Mody: 2001). Yet within development practice the promises of modernization theory and the diffusion model seem to still hide under a thin layer of 'participation' and postcolonial reflections. New ICT has brought back hopes of leapfrogging 'stages', if the population of developing countries can simply be provided access and taught how to use it 'properly'.

McAnany (2010) suggests a detachment between theory and practice may have developed, as much of the modernization/diffusion paradigm continues in projects on the ground, promoted by the development establishment even in the new millennium; while most academic writing in the field of C4D keeps a critical perspective towards the early paradigms. "Theory in C4D may identify problems, but confronting and changing the structures remain problems of another magnitude" (McAnany: 2010:5).
Similarly Wilkins and Mody (2001) highlight the constraints linked to the access to, and the production of, knowledge about and for development. They question the applicability of theories, norms and definitions of problems and solutions from dominant development donors and researchers "which are at odds with the distinct experiences of the majority of the world's people who live outside of the industrialized, Northern, Western contexts." (Wilkins & Mody: 2001:389). "Is the field of C4D dying?" McAnany (2010) asks but then goes on to give reasons for the decline in publications and decreasing number of C4D courses: many areas originally addressed by C4D research have been renamed or moved to other departments. But its relevance might be rediscovered with the exponential growth of New ICTs and the increasing interest in them by a variety of

institutions – from local to transnational levels, representing commercial, governmental, and civil society interest. The experience of more than 50 years of Communication for Development research holds a big potential in an interdisciplinary exchange.

I want to reveal these different expectations and mindsets amongst the groups involved in the negotiation processes around New ICTs in Afghanistan and analyse how they shape perceptions of development and, thereby, positions on ICT use. At the same time I am interested in how the awareness of the importance of 'participation' – that I am convinced is strongly present in today's debates concerning development aid – is defined and put into practice. And whether the common talk about sustainability includes some of the above mentioned ideas of 'empowerment' or 'champions' for a long-term local leadership.

3.2 Information and Communication Technologies for Development

> *"Telecommunication services and infrastructure are there for you and to bring comfort into your life. It is the responsibility of every citizen of Afghanistan to support their development and at the same time protect them"*[1].

ICT4D stands for the application of information and communication technologies for international development and was established as an independent academic field – or rather 'label' as ICT4D scholars still come from a wide range of disciplines – during the early 1990s. The application of communication technologies in development projects has a much longer tradition as already shown in the previous section. New ICTs and (economic) development were first addressed in neighbouring disciplines, such as communication studies (see for example Castells (1989)) or economics (see for example Freeman & Soete (1994)). ICT4D as a distinct area of practice and research evolved around the same time as discussions began about the 'digital divide' - a term used to refer to the growing differences within societies, as well as globally, regarding access to computers and the internet (see for example Hoffman & Novak (1998), Norris (2001)). ICT4D, though usually defined as a multidisciplinary field of both theory and practice, differs to previous approaches in its focus on the access to, and use of, technological devices, including the physical infrastructure, in a low resource setting (SPIDER: 2013).

1 Taken from 'Five-Year-Plan' for IT development from the Afghan Ministry of Communication (MoC: 2005).

3.2.1 The birth of ICT4D

Technology popularly was, and often still is, conceptualized to be a set of tools, machines, materials and processes that help to solve human problems. What qualifies as a problem in a given time and in a given place, however, depends on what is considered progress (Prakash: 2007). During the 1990s, the Internet and digital technologies became diffused in an environment characterized by the rhetoric of the technological sublime and irrational exuberance surrounding New ICTs in the 'West' as well as in development policy discussions. The new digital technologies started to be seen as bringing rapid and fundamental changes on a social, economic and cultural level (Preston: 2001), with some observers even claiming New ICTs could provide the means for Third World nations to leapfrog the industrial era (Rogers: 1989). Or, as Heeks (2008) put it: "the digital technologies of the 1990s, then, supplied a new tool in search of a purpose" (p. 27).
New ICTs received a prominent role within development initiatives to tackle development targets such as education and economic growth. These included the "United Nations Information and Communication Technologies Task Force" (UN ICT TF), founded in 2001 and whose work was leading up to the World Summit on the Information Society (WSIS) in Geneva in December 2003 (see also World Bank (1998a), UNDP (2000), WSIS (2003b)). The wider role and growing implementation of New ICTs also gained increasing attention from different academic fields, notably Information Systems (IS), Development Studies (DS) and Computer Science (CS) (Heeks: 2010). The Information Systems perspective in particular offered models for understanding the human, political and contextual factors and approaches that needed to be addressed during project design and implementation (Orlikowski & Iacono: 2001:133) and it is therefore not surprising that most ICT4D literature came from the IS related fields.

In terms of development projects and applied research, telecentres in rural areas were the first prominent examples under the ICT4D label (see Wellenius (2003), UNESCO (2006)). But after a brief time of celebrating the concept, reality proved that even if the installed systems worked technically, the centres often failed to achieve the intended outcomes (Ratan & Bailur: 2007). PCs and Internet connections in village telecenters – installed to bring education and informational empowerment – are predominantly used by young men playing games, watching movies, or consuming adult content (Toyama: 2010), the same prevalent user behaviour as in developed nations.

Another problem that few studies addressed was the question how small scale ICT projects can increase their complexity of services and can be sustained over longer periods with appropriate resources, including money and people (Walsham & Sahay:

2006). It is one thing to set up a telecenter but another one to create a self-sustaining long-term facility. Those taking over the telecenter as a running business made only a few dozen dollars per month, while the costs of hardware, electricity, connectivity, and maintenance quickly went into hundreds (Toyama: 2010).

The perspective of ICT innovations as the diffusion from advanced economies, adapted to the conditions of developing countries (Rogers: 1995) involved the problematic assumption that the material/cognitive entities that comprise ICTs and associated practices are adequately independent from the social circumstances and it was questioned whether they can be transferable, more or less intact, into any other society (Avgerou: 2009). Technology is largely developed and produced to amplify shareholder interest in profit, which means that on a global scale hardware tends to be designed for people working in air-conditioned offices with cheap and stable AC power and a broadband Internet connection. Software tends to be developed for the audiences with the greatest disposable income and in languages understood by the world's largest, wealthiest populations (Toyama: 2010).

The increasing number of public-private partnerships in developing countries including those by technology companies like Cisco, Microsoft, HP and others, continues to promote the idea that ICT per se will lead to development. In a similar manner, statements by the United Nations on ICT4D often treat technology as empowering in itself (McLaughlin: 2005). Some critics argue that with initiatives delivered by private-public partnerships resources would preferably be used for projects the private sector can see potential profit in, leaving areas with few investment prospects out of the picture (Leye: 2007). But the numbers speak for themselves regarding the growing influence of these partnerships: whereas Microsoft, since the launch of its Unlimited Potential program in 2003 with its goal 'to increase computer literacy among all members of the population' (Microsoft: 2003), has spent a total of US $152 million in grants, UNESCO's International Programme for the Development of Communication (IPDC) has, since 1981, only been able to spend a mere US $90 million (Leye: 2007).

3.2.2 "ICT4D 2.0"

More recently, what I call here ICT4D 2.0 innovations (Heeks: 2009), are more likely to occur on a smaller scale, either in adapting or applying existing technologies. The focus of ICT4D initiatives today lies in constructing reliable new techno-organisational structures within a given local context, which increasingly means to work with mobile phones in their function as 'small computers'. Though radio remains the first or only

choice for accessing and spreading information in rural communities, mobile phones are becoming similarly ubiquitous in many developing regions (SPIDER: 2013) and mobile Internet has developed into an affordable alternative to fixed lines in many developing regions. One tension though remains: wishing to standardize ICT systems for efficiency and comparability in different settings and the difficulty in imposing identical standards on the different local contexts. As Unwin (2008) criticizes, "all too often ICT4D initiatives have been supply led, with insufficient attention being paid to the real needs"

Heeks introduced a typology which identifies three different approaches to ICT4D design: the **pro-poor** – designed externally for the poor and marginalized, probably still the most common approach. **Para-poor** – designed in close cooperation with poor communities and described to be the most challenging. And the **per-poor** - with seeing potential in Web 2.0 technologies and Open Source Software and the poor themselves being the innovators (Heeks: 2008). Most so called ICT4D initiatives start with the first, some move to the second if they survive the pilot phase and sufficient attention leads to further funding and time to rework the initial design and ideally would end in the last, though "the poor" might at that stage already have generated an income through their skills and devices, helping them move up from the very bottom of the famous pyramid.

Like other participatory approaches described in chapter 3.1.2, the **para-poor-effort** comes with a set of related questions regarding "participation". Who participates matters, beyond a technology-literate elite minority? How they participate and also for what reasons? ICT4D participation, if not to happen on a mere technical level, needs to bridge multiple divides between designers and users: techie versus nontechie; rich versus poor; often a Western versus non-Western mindset; urban versus rural; men versus women; young versus old (Heeks: 2008). Participation requires careful preparation on various levels that are often neglected with a technological focus in mind.

Only addressed in a few studies but of great interest for me is the question of complementary thrusts in the use and promotion of New ICTs in development projects: one is based on the above mentioned attempts to provide access to ICTs for poor and marginalized groups and therefore increase the 'access for all'. One example is the rural telecentres that keep depending, as shown by Toyama (2010) and Ratan and Bailur (2007) on external sponsorship. These projects that I thematically link in the following as *ICT for the poor* tend to compensate a pressing need, a "lack of access to" – teachers, information, health service, and so on – which is to be (temporarily) substituted with a technology.

A second ICT4D approach is the *development of technical and institutional infrastructure* (Westrup *et al.*: 2002:11) aimed at governmental institutions and universities but also to provide the necessary resources, like electricity and internet access, needed by the private sector. These infrastructure projects carry high initial costs and depend highly on external expertise, but at the same time can be seen as the foundation for long-term cost-reduction and sustainability, as they promise to replace generators and slow and expensive satellite internet access. These projects address lasting issues and future benefits but are considerably more expensive and much more likely to serve the already privileged urban elite.

Thirdly there are *ICT capacity building* projects, offering training to a selected target group. These trainings target two major categories: how to understand and use technological devices and systems (more technology centred) and how to use certain applications running on those devices for professional or personal purposes (more tools centred). The latter one tends to benefit exclusively those using the devices, most famously office software and basic research training at public institutions but also basic technology usage as in telecentres or for mobile-phone based health information services. It focuses on understanding a pre-defined function and using it to one's benefit. More technology centred training aims to built the capability to understand a technological system like a computer network, be able to configure it according to particular needs and trouble shoot a variety of problems disturbing the network. This more sophisticated training requires technically trained personnel, is usually time consuming to establish and difficult to maintain, as the most qualified participants will also most likely receive better paid job offers once they graduate from such training. In a country like Afghanistan, where technical expertise on this level is still rare, this training is the prerequisite to keep complex systems – such as infrastructure – running, managed by local staff and thus provide a higher potential for an independent long-term operation. But the participants of such training are selected among computer-savvy candidates that have already gained some experience in working with computer systems.

In looking at ICT projects in (urban) higher education, as well as rural elementary education-technology projects, my own primary research will try to give an impression of both and how the issues of the 'problem of sustainability' and 'risk of supporting the already privileged' are discussed among the stakeholders. And in particular concerning the former example, I agree with Ratan and Bailur that "ICTD projects often champion 'welfare-based' initiatives to the extent of undermining the agency of the local population"(2007:7). This, I suggest, originates from two main assumptions: firstly, that

technology needs to be built and configured by experts and secondly, that – once in place – technology entails rule-following behaviour (Wynne: 1988). Additionally, I see surprisingly little attention drawn to the question whether part of the lack of sustainability of many of these 'welfare-based' initiatives is the lack of adequate technological training and experience on the ground and how this might influence local agency. I have, therefore, chosen examples for my case study from three areas mentioned above:

- ICT for the poor
- ICT infrastructure development
- ICT capacity building

Another area that has recently become increasingly associated with ICT4D is what some assign to "eGovernance", "citizen participation" or the broader term "ICT and Democracy". Democracy is, however, a sensitive topic in Afghanistan as it is often regarded as "Western-imported and -imposed" (Mohib: 2011) and there is little trust in Afghanistan's current democratic government among the population, according to a 2010 survey (Tariq *et al.*: 2010). Additionally, closely related crucial questions regarding internet freedom, (foreign) internet traffic control and censorship (see de Bastion *et al.* (2014)) could due to the study's limited scope not be fully explored. It was therefore chosen not to be included as a dominant theme. The focus on technology and participation, however, includes some elements that are also relevant in the literature on participation, democracy and technology (see SIDA (2009), NDI (2013)).

Conclusion

Though still being harshly criticized for their technology-deterministic view on development, especially concerning New ICTs (Leye (2009), Pieterse (2005)), the field of ICT4D has in recent years opened up towards critical debates. However, while in academia the importance of 'context' is regularly emphasized, projects that incorporate context in 'useful and meaningful ways' (Ratan & Bailur: 2007) are still rare, not least because the majority of investments in new developments in hard- and software solutions simply tend to be made where profits are to be expected, rather than more open and adaptable solutions. The debate amongst practitioners and development agencies is no longer about whether ICTs are relevant or not but about how and in which area New ICTs should be introduced and supported (Brown & Grant (2010), UNESCO (2005), Walsham & Sahay (2006), Sein & Harindranath (2004), WSIS (2003a)). Most influential in actively partnering with development agencies and practitioners are powerful ICT4D actors such as Microsoft and CISCO (Leye (2007), McLaughlin (2005)), or more recently

Google and Facebook or the One Laptop Per Child (OLPC) program, which received considerable attention at the World Summit of the Information Society in 2005 (Twist (2005)), with each of these partners following their own set of interests and trying to guide the outcomes.

The history of ICT4D has shown that technology projects in developing countries have long been treated with unjustified optimism (some would say naivety). A failure rate as high as 70% in ICT4D projects to 'promote universal access' by the World Bank was shown by The Independent Evaluation Group (2011). However, I don't want to make the mistake of going from technological determinism into the other extreme. There is certainly a strong role of the social and cultural in all aspects of technology that needs to be considered and taken seriously. But with the social in focus, there is also the risk of losing track of the artifact itself and failing to engage with the technology as Orlikowski & Iacono (2001) rightly observed. I argue that there lies a potential in New ICTs for social development[1], with the technical and the social in mind, and that it is a question of 'how' rather than 'if' ICTs should be included.

1 The general term "development" which is mostly adopted from the literature (see chapter 1.2) still carries a strong focus on economic aspects. The more people centred "human development" approach sees development as capacitating (see chapter 2.2.3). Though its use in the literature is often similarly ambiguous as "development", I use the broader notion of "social development" to imply a focus on a context-dependent perspective to "promoting social well being" ((Midgley: 1995:12)) which is not limited to a "developing country" context.

CHAPTER 4

Investigating the instruments

4.1 Technological Determinism

> *"The single most influential theory of the relationship between technology and society is 'technological determinism'. This is the theory that technology is indeed an independent factor, and that changes in technology cause social changes. In its strongest version, the theory claims that change in technology is the most important cause of change in society."*
>
> (Wajcman & MacKenzie: 1985:4)

Similar to the optimistic view on the power of mass media to enhance development during the 1950s and 60s, New ICTs were seen as the solution to many development problems in the 1990s and by some they are still seen so today. This is particularly so within the education sector, where research on the uses of technology frequently overemphasise its influence (Oliver: 2011:1). Negroponte (2009), for example, announced in a presentation he gave in 2009 that there was no doubt about the positive effect of laptops on learning, he even states "the fact that somebody in the room would say the impact is unclear is to me amazing". The only question, he insists, is an economic one: how to afford it. This kind of approach, termed by its critics as 'technological determinism', sees the consequences of technology on society, in this case school children, as incontestable. Technological change in this view causes or determines social change, including social practices such as learning.

Another typically technological determinist view suggests that technology invention is an essentially internal process, which then sets in motion the conditions for social change and progress. In this "immensely powerful and now largely orthodox view", progress is seen as the sum of these inventions that 'created the modern world' as Williams describes

and “modern man and modern condition” (2005:5) are seen as being made by technologies like the steam engine, the automobile or, today, the computer. We speak of ‘steam’, ‘iron’, ‘stone’ and ‘computer’ ages and so do museums, schoolbooks, and much reporting on technology in the media. Whole nations are associated with certain technologies in which they have played a prominent developmental role as Wyatt (2008) observes, “Holland and windmills, the United States and cars, Japan and microelectronics” (p. 167). Thus, taking part in ‘the Information Age’ is seen as an unquestionable goal by most developed and developing countries alike, a step further in the history of progress.

Misa (1988) suggests the examples given above are actually two different versions of technological determinism, “(1) that technological change determines social change, and (2) that technological development is autonomous or independent of social influences” (p.309). I agree, however, with Wyatt (2008:168), referring to Wajman and MacKenzie, who describe these two statements as the main assumptions of the view that “technology impinges on society from outside of society” (1985:4) and as the two central aspects constituting technological determinism.

More relevant for my research is the first statement that technological change causes or determines social change, which as ‘optimistic determinism’ as well as ‘pessimistic determinism’ (Friesen: 2008), is quite prevalent in the development aid area. ‘Optimistic determinism’ generally emphasises the positive aspects of this technical change over negative ones while ‘pessimistic determinism’ warns about its destructive consequences. Both, however, coincide in their view that technology is the cause of the change, and simply differ in their opinion whether the change is desirable or not.
Other scholars differentiate between ‘hard’ nomological accounts, providing "descriptions of an inevitable technological order based on laws of nature" (Bimber: 1994:81) and ‘soft’ determinism allowing additional (social) factors to influence outcomes. While Woolgar and Grint (1997) argue that very few would position themselves as ‘hard’ determinists there are clear examples of this in the field of technology and development, such as Negroponte’s view on the impact of the OLPC laptop on learning.

This deterministic way of thinking about the relationship between technology and society had been uncontested for a long time and persists in many actions taken and justifications given. Technological determinism conforms with the vast majority of people’s experiences with technologies they use every day, for example, devices like mobile-phones that seem of mysterious origin and design and that most people have no idea how they actually work (Wyatt: 2008:167 ff). Not many people would call themselves technologically determinist, yet the view also persists in today’s popular accounts of new technologies as mechanical rule-following devices, though individual

technological practice is often shown to be far less clearly rule-bound and determined (Wynne: 1988).
Scholars in the field of Science and Technology Studies (STS) have since the 1970s increasingly concentrated on demonstrating the limits of technological determinism. Through a variety of empirically rich historical or ethnographic studies they demonstrated the great impact of the social on the processes of technological development. Furthermore, public discourse on technology development is changing for many reasons. Ongoing debates on "just because it can be done, should it be done?" reflect a move away from seeing technology as detached from moral values and as neutral in itself. Yet to simply ignore technological determinism or dismiss it as obsolete would also miss out on the reasons for which this popular view is used or adopted by social actors in specific circumstances.

4.2 Constructing Science

Not surprisingly there is also no shortage of (critical) writing on connections of academia, technology and development, as shown in the previous chapters. And while science and technology have undoubtedly served as important legitimators of imperialism and colonialism, there is relatively little research from an STS perspective addressing these connections (Sismondo: 2010:195f), as also described below in section 4.2.4. Nonetheless, Science and Technology Studies offer many critical accounts of the above mentioned deterministic ways of thinking about technology that add an important level for both the theoretical and methodological approaches to this research.
STS as a discipline started in the late 1970s with studies on the culture of science and how scientists constructed facts. A number of researchers had, however, previously started to adopt new approaches of studying the culture of science. One of the earliest works came from Michael Polanyi, describing science as "a diverse collection of different 'local traditions', tied up with individual scientists" (Polanyi, 1951:49 in (Schlecker & Hirsch: 2001:75)). The Science Studies Unit at Edinburgh University, established in 1969, was the first research unit dedicated to critical science studies and quickly attracted a number of scholars across disciplines, like David Edge, Barry Barnes and David Bloor (Fuller: 2000:191).

A similar constructivist view on science was taken by the early laboratory ethnographies, which drew attention to the skills involved in even the most straightforward laboratory manipulation and observation. In their influential book *Laboratory Life*, Woolgar and Latour (1986) describe the 'construction of scientific facts' by gathering

material which informs their discussion "from in situ monitoring of scientists' activity" (p. 27). Producing thick descriptions with sometimes apparently irrelevant details - "*9 mins. Julius comes in eating an apple and perusing a copy of Nature*" (p. 15) - they approach the field with what they call 'anthropological strangeness' to dissolve the exoticism surrounding scientists' work (p. 29). They demonstrate that what might later be seen as "groundbreaking historic events" in science is based on routine ongoing scientific activities and scientists negotiating the nature of data, and other results in conversation with each other. Such STS work helped open the field of science studies to a more qualitative, intensively observational set of studies of scientific work and practice.

Almost 20 years later Woolgar and Grint (1997) proposed a similar approach to technologies by introducing the notion of technology as text. Seeing technologies as open texts which are written (configured) in certain ways by those social groups involved in stages of development, production and marketing, and then read (interpreted) by their consumers and users with recursive feedback loops between the different stages "elegantly draws attention to the often unseen work by designers, financiers, marketers and others in crafting the materiality and interpretations of devices" (Selwyn: 2008:21). These configurations of technological objects supported by ICTs are, intended or unintended, mostly invisible to the users. Most mobile phone users, for example, are not concerned with hardware details, what role microchips play in the gradually shrinking size and weight of computable devices, what kind of infrastructure provides their connectivity or what the difference between closed and open software is. They use their phones as a so called 'black box', paying little attention to the objects inner workings. But the tendency to solve one problem only at the expense of another is as described by (Morley: 2007:252 f) a basic character of all design practice. The 'blackboxing' hides the opportunity costs of 'naturalised' technological 'solutions'. Which problem this solution addresses or, rather, whose problem is solved and who will benefit or lose from it, depends on the context.

Similarly Rabinow sees the need

> "to anthropologize the West: show how exotic its constitution of reality has been; emphasize those domains most taken for granted as universal [...]; show how their claims to truth are linked to social practices and have hence become effective forces in the social world"
>
> (Rabinow: 1986:241)

Technological objects produced in and for the West are deeply embedded in social and historical structures and offer solutions to problems that might not be the same

or not even exist somewhere outside the 'West'. Stable power supply and broadband Internet are only two of the most obvious preconditions for an increasing number of devices and applications. The objects themselves, by their specified designs, to some extent determine their own function and what activities are permissible by their owners (Morley: 2007:254), the more so if their software and hardware are 'closed' and not intended for modifications.
By the 1980s a growing group of STS researchers began to turn their attention to the production, design and use of technology, including ICTs, which Woolgar called "the turn to technology" in STS. By applying mainly qualitative ethnographic methods as in the early laboratory studies, these researchers studied the design, production, distribution and use of technologies (see for example Wajcman & MacKenzie (1985), Pinch & Bijker (1987), Woolgar (1991)).

They began what Latour (1987) called to 'open the black box' and, more importantly, to follow the scientists in their effort to close it. Woolgar (1991) presents in his research, carried out in an eighteen-month participant observation in a computer hardware producing company, how the 'user' is seen as an outsider, in stark contrast to 'us' (members of the company) as insiders (ibid. p. 73). The user (outside) is 'configured' (from within) by the producers and their vision of consumers and consumption practices which is embedded in the design of the technology. Woolgar also describes how he himself finds it difficult to belong to both worlds: as a user he has full confidence in the 'black-boxed' machine he intends to purchase. During his days at the company by contrast, he sees all the details its completion depends on and wonders how it could ever work (ibid. p.78) and how the testers are struggling to interpret the machine correctly. Friesen (2008) gives a more recent example of the adoption of learning management systems, such as WebCT or Moodle, in universities. The rapid emergence of the Internet, he claims, did not mean that it simply washed over the educational landscape, doing away with existing institutional and business models. On the contrary, through a complex series of developments, interactions and 'negotiations' it was refashioned through virtual learning environments in clear conformance with the interests and management structures of large educational institutions (ibid.). This example, at the same time, demonstrates why virtual learning environments developed at, and for, Western educational institutions often do not show the intended success in very different cultural and social environments. Similarly a Digital Library project, designed to be implemented by librarians from the U.S., faced several unexpected problems in Afghanistan, as library staff returned to their previous work habits instead of continuing to work with the digital library software (see USAID (2011)).

The 'true nature' of the artefacts themselves presupposes some process of establishing that truth, a process that is social, contestable, and political (Grint and Woolgar (1997)

in Oliver (2011)). By taking a long-term historical view with respect to meaning and practice, STS sheds light on crucial connections between ICTs and the broader world of artefacts and culture (Sismondo: 2008).

4.2.1 The Social Construction of Technology (SCOT)

The focus on the social processes involved in science and technology production that STS pursues can guide us towards a range of social theories which seek, as Pinch and Bijker (1987) put it, to open up the back box of technology. Their concept of the social construction of technology (SCOT) proposes that the success of a technology depends on the impact and scope of the group that take it up and promote it.

Pinch and Bijker (1984) drew parallels between science and technology, and highlighted what they call 'the interpretive flexibility' in the design and use of artefacts. They introduce 'The Empirical Programme of Relativism (EPOR)' approach and some of its characteristics, which they employed in their research. EPOR has been developed in the sociology of scientific knowledge with the aim of understanding 'hard' sciences under a social construction perspective. SCOT adopts several of its concepts as its notion of 'interpretative flexibility' which focuses on alternative interpretations of technological artifacts and the problems and conflicts that might arise from these different interpretations. As a consequence, they emphasise the value of studying technical change by mapping technological controversies through time to identify the social processes involved in the formation of technological consensus. SCOT seeks to demonstrate the design flexibility of a given technology which means it can have different meanings and interpretations for the relevant social groups (Pinch & Bijker (1987), Bijker & Law (1992)). A 'relevant social group' according to Pinch and Bijker can be various things, institutions and organisations, as well as organised or unorganised groups of individuals with a key requirement that all members of the social group share the same set of meanings, attached to a specific artifact (1984:414). This means that the relevant groups are not only the designers and producers of the technology, but can be competing producers, journalists, politicians, users, non-users and other interest groups (Selwyn: 2008).

The focus on the social and political processes that take place around technological development shows that both technological problems and social conflicts can arise in the process. SCOT, again in accordance with EPOR, attempts to identify the 'closure mechanisms' where a consensus about a technology emerges, involving the stabilization of an artefact and finally the 'disappearance' of problems. To close a technological 'controversy' the relevant social groups need to see the problem as being solved (Pinch &

Bijker: 1984:427) meaning the socio-technical system reaches a state where the technology is closed to alternative interpretations. Pinch and Bijker give the early bicycle as an example for this process of 'closure'. The changing expectations that different relevant social groups projected onto the technology led through several modifications from its early main appeal "to young men of means and nerve" (p. 34) to the alternative design and social image of the bicycle as a safe and comfortable transport device, appropriate for men and women.

The social shaping of technology perspective draws attention to the choices involved at every stage in the development and use of a technology and the way that these may be shaped by economic, legal-political, social and cultural settings, as well as narrowly "technical" considerations. It opens up technological innovations and developments for socio-economic analyses and explanations and might be helpful in identifying crucial factors for following certain strategies as it emphasises the potential negotiability of technological change amongst a range of players. This is where it is also of interest for this research project, helping to identify powerful players in the decision making process of New ICTs. Who are, what Pinch and Bijker call the 'relevant groups' with different interpretations of how to implement and use New ICTs in Afghanistan?

However, this can only be a first step in the process of analysing how these negotiations are taking place and where conflicts are hidden. As Klein and Kleinman rightly point out, the relations between those groups as well as the different background conditions remain largely invisible in the SCOT approach (2002:30). Differences in power and impact influencing the rules of interaction are not taken into consideration, society is described as composed of equal groups in an essentially pluralistic view of society, ignoring groups which "are consistently excluded from power" (Winner: 1993:369). The preoccupation with powerful and pro-active groups has led to a neglect of marginalised and subordinate groups (Williams & Edge: 1996:878) which, however, are of particular importance in a context where representatives of powerful transnational organisations are negotiating with powerful (or influential) representatives of local institutions about solutions for those often addressed as 'the poor and marginalised'.

There are also considerable differences of opinion within Science and Technology Studies about the extent to which the social as opposed to the material should be understood as shaping the evolution of technology or social processes (Oliver: 2011:9). The SCOT approach has been criticised for its tendency to substitute technological determinism with an extreme form of social determinism. Instead of technical causes leading to social change, society is seen as the root cause of technological change, downplaying the way

that technologies might shape practice (ibid).

4.2.2 Actor-Network Theory

More a method or research approach than a theory, Actor-Network Theory (ANT), developed from early laboratory ethnographies in the late 1970s (Latour (2005), Mol & Law (1994), Latour & Woolgar (1986)). ANT argues that successful social practice in the same manner as science is the result of "a process of heterogeneous engineering in which bits and pieces from the social, the technical, the conceptual, and the textual are fitted together" (Law: 1992:2). Its originality lies in the agency of non-humans actants[1]; society, nature and technology are no longer seen as separate entities, instead they can all be interlinked to form actor-networks. Each actant is itself understood as a heterogeneous network of other actants, but whilst it is working as a stable 'black box', it can normally be treated as a single entity.

ANT writers typically apply empirical methods in their research focusing more on how networks are formed and sustained than why. The analysis of histories and observations surrounding a network – with ANT's characteristic equal treatment of human and non-human actors, including technology – is seen as leading to a better understanding of an established actor-network (Callon: 1986). ANT suggests that an object remains an object while the actor-network constituting it is stable and the relations between it and its neighbouring entities hold steady. ANT explores the strategies which generate this object-ness, the syntaxes or discourses which hold it in place. Or as Latour describes it, ANT tries to explain the history of 'immutable mobiles'; "objects which have the properties of being mobile but also immutable, presentable, readable and combinable with one another" (Latour: 1990:6). These 'immutable mobiles' hold their shape as a network, they are networks themselves but held in an array of secure and stable surroundings, they are mobile and can be constant in different settings. In an interview Latour calls the history of computer such a history of an 'immutable mobile', as "Leibniz' dream, materialised at last" (Latour: 1997).

Later versions of ANT, however, have emphasised a more varied terrain, describing the adaptation and reconfiguration of objects and practices as they travel. Due to its focus on the operation of association and translation between its actants, ANT was also

1 Akrich and Law distinguish actors and actants as follows: "an actor is an actant endowed with a character (usually anthropomorphic)" (1992:259)

called “sociology of associations” (Latour: 2005) or “sociology of translations” (Callon: 1986) which avoids the highly contested ‘theory’ in its name.

ANT with its consideration of non-human actors in the ‘actor-network’ that forms social practice, offers an interesting alternative to other perspectives. Especially with its model of actants that remain ‘closed’ while they ‘work’ interlinked in the actor-network and are only opened up if they fail or, rather, if one entity of their own actor-network fails, offers an interesting view on technology within a ‘network of people and things’. Technologies often remain invisible while included in a stable infrastructure and are still popularly seen as these ‘immutable mobiles’ that are constant and usable in different settings while its adaptation or reconfiguration still seems to be more ‘happening’ than being anticipated or expected. ANT focuses on how networks are formed and sustained by describing social practice rather than asking for a cause (Law (1997)). This led other areas of STS to question the worth and even the morality of this approach as providing “no solid, systematic standpoint or core of moral concerns from which to criticise or oppose any particular patterns of technical development” (Winner: 1993:374).

In the case of decision-making around ICTs in Afghanistan, asking for causes and going beyond mere description is crucial. Especially as many decisions in the development and education sector are presented as being made for very moral reasons and in order to change or influence current circumstances. ANT has definite limits therefore for my approach when it comes to questions of reason and meaning.

Another limiting aspect for me is that actor-network studies are less concerned about the nature and influence of broader social and economic structures of power and interests as Williams and Edge observe, concentrating on local actors and “implying that technologies (and social systems generally) are highly malleable to local actors” (1996:870). In my case, the broader social and economic structures are meaningful in many ways, not least as representatives of institutions or organisations act not necessarily in accordance with their own convictions and might even differ in what they are expressing to me personally and what decisions are made in the end. Also, as mentioned above, similar to SCOT, ANT starts from an existing actor perspective, that is helpful to identify the most powerful actors but risks neglecting the marginalised, let alone missing actors (Star: 1991).

4.2.3 Media and Technology in STS today

The majority of qualitative STS studies continue to concentrate on technology and technology assessment, so that the original focus on analysing the social influences on

the content of science seems to attract less and less interest. Media and information technologies as objects of inquiry have, however, taken some time to emerge in STS (Sismondo: 2008:949). STS researchers began to shed light on technology production and consumption by the early 1990s, and resulting from these studies a growing number of researchers combining STS and communication studies have argued that "in the technology development process, technical choices are made, artifacts are symbolically framed, and regulatory environments are fostered in ways that have consequences for consumption" (Sismondo: 2008:960).

These choices, however, are not made by 'lone inventors or geniuses working in a social vacuum' (Mackay & Gillespie: 1992:688) but are negotiated in a fundamentally communicative process (Bucciarelli: 1994:20f) with the final result as the outcome of these negotiations. Bucciarelli (1994) talks about technology design lying somewhere between a technology-driven 'best solution' approach and the human 'needs' or markets; similarly I would suggest that decisions on the 'design' of New ICT structures in developing countries lie between these same poles, with the interesting question being, who defines the 'needs' and who states the 'market'?

STS's basic principle to situate the material aspect of technology within its various social, temporal, political, economic, and cultural contexts and its long-term historical view illuminates the crucial connections between particular technological systems and the broader world of artifacts and culture. Just like other technologies in the examples given above, the development of new media and information technologies is not just a matter of engineering or optimal solutions to technical problems but can be characterised as a socio-technical phenomenon (Lievrouw: 2006:247).

As New ICTs have increasingly become commonplace over the last decades, at least in the Global North, questions of consequences, and also the prerequisites of new technologies as infrastructures have been addressed, for example by Star and Bowker (2006). The ethnographic perspective that helped reveal the inner workings of science or technology research and development can be just as helpful in interpreting infrastructure (Star & Bowker: 2006). For all their potential wonders, as Morley (2007) points out, technologies are only as good as the material, social and institutional structures in which they are embedded (p. 239). If organisational structures, the necessary infrastructure or the financial system cannot offer the necessary environment, then e-government, mobile phones and credit cards are of little use. Technologies are, as Williams and Edge observe, in part prefigured by existing forms of work organisation, they embody elements of how divisions of labour and expertise were inscribed into their design and production (1996:876).

As in the case of New ICTs in Afghanistan, technical change is often also partly motivated by particular ideas about how the technology should develop or support certain organisational structures and may even be designed and implemented with particular objectives of transforming work in mind (Williams & Edge: 1996:876). But technology mostly depends on structures that are relative to working conditions. It never stands apart from the people who design, maintain and use it (Star & Bowker: 2006). Here infrastructure is an often neglected aspect that plays an essential role in my study especially in light of its widespread physical absence in Afghanistan in 2001 and the importance of the above mentioned historical dependencies. What was once an object of development can, especially in industrialised countries with a long history of communication infrastructure, sink into an invisible infrastructure over time that is only remembered when it fails. Star and Bowker (2006) also point out, referring to Tanenbaum (1996), that there is no predefined assignment of different tasks to different bodies of specialists in the design of communication infrastructures. Building up infrastructures often represents a number of possible distributions of tasks between hardware, software and people. Western models do not necessarily work in a very different context under very different conditions and should not be assumed to be the only option. Subsequent infrastructural developments are often based on existing infrastructures as each generation of engineers imports solutions from one infrastructure to the next. These underlying structures, however, might not exist elsewhere and thus allow different and even more effective solutions. Many of the early ICT4D initiatives neglected local infrastructural considerations such as availability of telephone lines for dial-up internet connections, the cost of maintenance and supplies, and privacy and security issues. Like donations of outmoded computers to a 'needy' classroom, not recognising the lack of power supplies, telephone lines and, most of all, computer skills of the lecturers. More recent work has, however, begun taking these considerations more seriously by working locally, cooperatively and designing localised solutions (see chapter 3.2 for details).

its normative work is multiplied.

4.2.4 STS and human development

One interesting question raised by STS in recent years is *who should legitimately participate in technical decision-making?*. The solution to scientific and technical controversies rests mostly on judgements by experts and these judgements, as we have learned, depend on the context, the environment and, thus, also the location of expertise rather than on any formal scientific method. How open this technical decision-making should, or should not be, is even called by Collins and Evans "the pressing intellectual

problem of the age" (2002:237). Similarly, Cozzens et al. (2008) suggest that by treating different forms of knowledge symmetrically, instead of valuing "professional knowledge" from the North higher than local knowledge from the South, an STS perspective helps draw attention to the asymmetries of power in decision making. The questions they suggest STS helps highlight are also among the ones I attempt to address in this research: "Whose project is it? What knowledge do the various actors bring to the interaction? Whose knowledge gets respect and deference? What are the outcomes of the project for the everyday lives of the people involved?" (ibid. p. 790).

Jasanoff (2005) suggests that there is no single template for diverse settings and contexts, but that historically grounded and locally situated understanding of techno-scientific politics demand historically grounded and locally situated normative approaches. This question, how expertise, participation and locally situated understanding and approaches can improve techno-scientific development cooperation, is also addressed in this thesis.

4.2.5 Appropriation

The claim that technology is not neutral has, as I have shown, been central in science and technology studies for the past three decades (Pinch & Bijker (1984); Wynne (1988)). How technological products are designed within a certain socio-technical context and how certain social values are embedded in those technologies has by now been explored in various cross-disciplinary studies. Functions depend on an expected environment of infrastructure and services and software applications are developed to match the assumed user behaviour. What constitutes 'technology' goes beyond the devices, it includes practices and knowledge that are related to them and the social arrangements that form around those devices, practices and knowledge (Lievrouw: 2006). Technology embodies fundamental choices, about how it ought to be used, by whom and for what purpose, which makes any technological implementation inherently political (Pinch & Bijker (1984); Winner (1986); Pisani *et al.* (2007)).

As described above, Woolgar (1991) shows in his study how the user is 'configured' by the producers, embedded in hard- and software design. These embedded choices are shown, however, to be flexible to some extent: technology is interpreted by its users in intended or unintended ways and can be 're-negotiated'. Wynne (1988) remarks, that there is – and remains also 25 years later – a misconception of technology as mechanical rule-following behaviour, while technological practice is shown to be a far less clearly rule-bound and deterministic. Eglash (2004) calls this process, in which technology that has

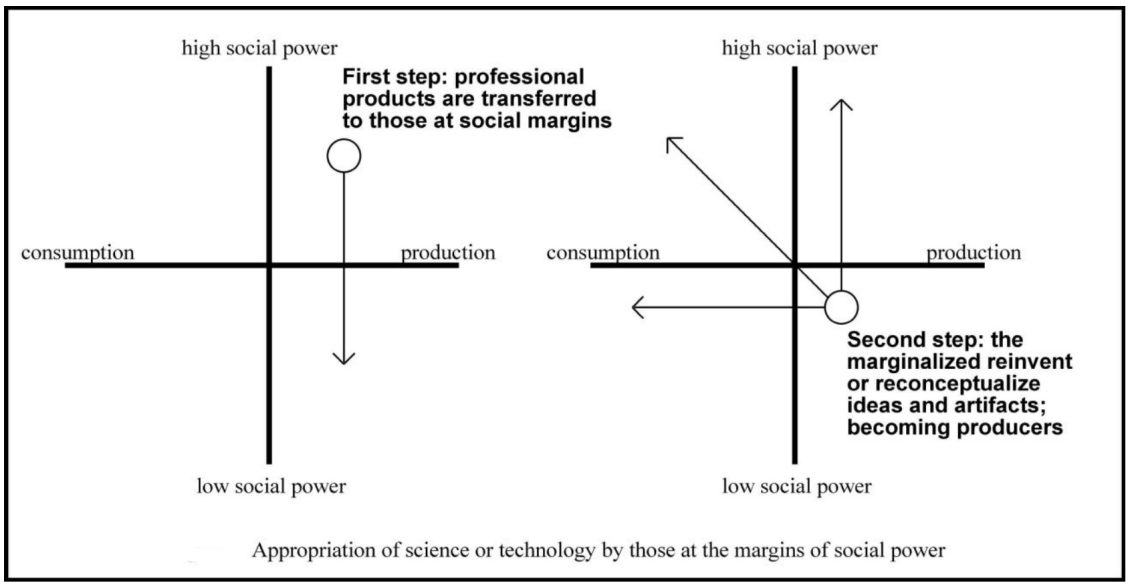

Figure 4.1: Appropriation of science and technology (from (Eglash: 2004:5))

been produced by professionals with high social power and is reinterpreted, adapted, or reinvented by users with low social power, the *appropriation of technology* (see figure 4.1).

What differs greatly from most STS approaches to socio-technical systems is that designers, developers or scientists are not at the centre of the research, but rather 'users' and use-culture. This also allows the study of a technological system that is geographically separated from its site of production (Odumosu: 2009). Eglash displays production and consumption as two antipodal extremes, see figure 4.1, implying they are separate procedures. He also differentiates between stronger and weaker forms of appropriation which he positions along the consumption/production axis (see figure 4.2)

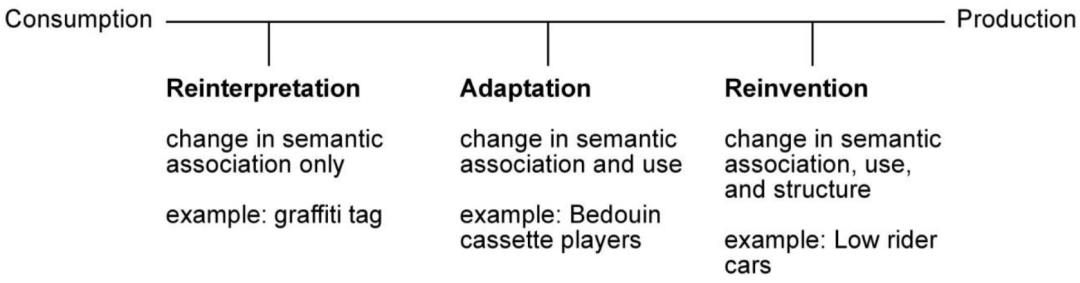

Figure 4.2: The consumption-production dimension (from (Eglash: 2004:6))

Pisani *et al.* (2007) take a similar approach in their study on mobile technology

appropriation in Latin America. For them the appropriation process is a "battle for power over the configuration of a technological system" (p.2). Like Eglash, they propose technology evolution as a three-step process in a cyclical manner with phases of adoption, appropriation and re-configuration, where the technology's evolution oscillates between providers and users. In the first phase users adopt a technology when it becomes available, basically by following the usage script suggested by the technology provider. However, "for a technology to evolve and become better adapted to its users needs and ever more important to their social and economic development, something more than mere adoption is needed." (Pisani *et al.*: 2007:2), which is what happens in the second phase. It starts when more aspects of a technology have been explored and the device gets better integrated into the users' lives. New practices are invented which transform both the device and social practice. Finally, Pisani *et al.* (2007) argue, the third stage of re-configuration takes place when the limits of the technology have been reached and a re-design, usually involving the technology provider, takes place. Once a re-designed technology is in place, the cycle repeats or rather jumps back to the first phase. In contrast to Pisani *et al.*, I argue appropriation can be, but is not necessarily a power struggle over a device. It can also be an intended or even required feature of a technology.

Another related approach towards appropriation is presented by Odumosu (2009) in his research on the adoption of mobile communication in Nigeria. He argues for an 'extended theory of appropriation' that avoids the opposition of layperson and professionals, with 'production' and 'consumption' as a continuum rather than two opposing poles or a repeating cycle. I agree with Odumosu, in seeing appropriation as a continuous process and would also suggest that technology appropriation does not necessarily only happen on an individual level, but can be influenced by a variety of actors or 'mediators' that shape the use and adoption of 'ready-made' technological systems.

Some technologies are more amenable to being used for a range of purposes (Mackay & Gillespie: 1992:702). In particular technologies that are deliberately 'open' for appropriation, as I would argue many technological systems are. Most hand-held devices are black-boxed in the users' own interest, and they freely trade personal data and control to receive uninterrupted services and connections in return (whether this ceding of control is always advisable is an entirely different question). Others, however, like open source operating systems, offer the users the ability to cross the boundary between consumer and producer by modifying settings or code on different layers of the system. This may be for personal appropriation, to share the results with others or even to work collaboratively in developing new applications, extend existing ones or change certain features. And, although this adds new features and even new meanings to the

system, I would not call this a re-invention in the sense that Eglash (2004) suggested for technology appropriation but rather a form of intended re-configuration. This study does not only look at the users, consumers or 'beneficiaries', nor does it take the producers and designers as an opposing distant starting point, but tries instead to examine the interface where external and local attempts at 'making sense of a technology' meet and mingle.

Orlikowski (2000) proposes a view of technology structures, not as embodied in given technological artefacts, but as enacted by the recurrent social practices of a community of users. She introduces the distinction between technologies as artefacts and technologies-in-practice, the latter are in her view never fully stabilised but only treated as black boxes for a certain amount of time. This also corresponds with how most users experience their own technology use, where both devices and use are adapted over time, until the device reaches its (hardware) limits and is replaced by a different type that offers the desired additional functionalities like increased speed, smaller size or new features. Similarly Carroll (2004) argues, referring to social constructivist approaches (Bijker & Law (1992)), that there is no linear path between the design, use and impact of a technology, as technologies can be adapted and interpreted in different ways. According to her, this appropriation process involves mutual adaptation of the technology's features and the user's practices. She goes on to argue that this appropriation process can also be seen as completing the design process of the artefact, instead of working against it. She differentiates between 'Technology as Designed', representing the underlying theory of use, and 'Technology in Use' as the completion of the design process through the appropriation of a technology by the user (Carroll: 2004). In complex environments, technology requirements can often not be accurately analysed in advance, but instead by observing the user's interaction with a technology and how it is refined and shaped to meet contextual needs. A new system, therefore, needs to be malleable but its function at the same time comprehensible to the users. Carroll calls this an evolutionary design approach, where users complete the design as part of the appropriation process.
This process, to explore, adapt and appropriate a new system can be encouraged and supported by managers, trainers and peers, who also increase the likeness of users' acceptance. Carroll also suggests on-going training, directed to users' current progress "initially to understand the malleability of the features and capabilities of the technology and the constraints on use, then later to support them as they adapt, and adapt to, the technology." (Carroll: 2004:8). When the limits of malleability of a technology is reached by the users, it's functions, features or as Carroll writes 'capabilities' need to be extended.

I want to extend this notion of 'technology in use' to what I call *participatory technology appropriation*, an interactive process that includes exploring a technological system and

dynamically testing its potential against one's abilities, needs and demands. Examples and possible implications for the participation in, and appropriation of, technological systems will be discussed in chapter 11.5.

4.3 Research Agenda

This literature review has juxtaposed three areas of literature that are not usually brought together, even though they deal with closely related topics. Apart from some fundamental differences that have been addressed above, they all have one thing in common: that the view of the world's poor and the conception of development need to be reconsidered and deconstructed (Heeks (2009); Quarry & Ramirez (2009); Smith (2009)).

Communication for Development can offer an important historical perspective on what role was seen in media and communication technologies for international development and how methodologies and conceptions changed with the broader discourses. It offers many lessons learned – that have not necessarily been taken up by other disciplines – and the persistence of influential concepts such as modernization or the diffusion of innovations, remind us that "The Passing of the Dominant Paradigm" (Rogers: 1976b) might never have been complete. The field of Information and Communication Technologies for Development appeared at a time when C4D's relevance seemed to decrease, shifting attention from (mass) media to digital technologies and from communication to access. Its focus on technology caused massive criticism, while at the same time distinguishing it from previous approaches: the field attempts to offer technical and practical solutions, which despite much academic disdain, received broad attention and approval from the development aid sector. Science and Technology Studies offer a perspective on technology and development practice that helps reveal the networks that surround them and that can easily be overseen. In preparation for this research I was guided by those scholars that 'crossed the disciplinary borders' from one field to the exploration of another and all three fields started to shape my questioning, methodology and analysis and add complementary elements to this study.

My research starts with trying to identify how and between whom the introduction of New ICTs is negotiated; and how concepts taken from the literature like those of 'opinion leaders' (Rogers: 1969), 'participation', 'relevant social groups' (Pinch & Bijker: 1987), 'actor-networks' (Callon: 1986), 'modernization' (Lerner: 1958) or 'appropriation' would apply in the field.

Thinking from a techno-deterministic perspective with technology as the missing

link to education and economic opportunities is, as I want to show in my research, as problematic as thinking from a mere human-centred participatory perspective, which treats technology as a neutral element in the process. Technology is socially shaped in its design, implementation and the way it is adopted (or rejected). But a certain level of technological understanding is necessary to make informed choices about technology as is an awareness that technology has been designed through the reification of particular kinds of practice that might not exist in a different context (Oliver: 2011).

Applying and combining elements of the above mentioned perspectives offer a useful framework to consider both, global structural problems as well as local realities that are important when looking at technology and development (Heeks & Stanforth (2007), Walsham & Sahay (1999)). They also help reveal the complex relations and interdependencies between different human and non-human actors that influence how context and participation are taken into account.

CHAPTER 5

Afghanistan

In the following sections I will try to give a short introduction into what I feel is relevant information on the political and cultural history of Afghanistan and that helped me gain better understanding of some of today's issues. I have divided the chapter into one more general review and two shorter sections on particular issues of the past 100 years: one is the development of media and technology and the other is education. Some numbers are, due to a lack of reliable data and due to the below mentioned controversies, only estimations, while some of the findings are based on interviews and personal experiences.

5.1 Background

The borders of land-locked, mountainous Afghanistan were delineated in the 19th century by international agreements, and as a barrier to neighbouring countries' influence and expansion, but do not reflect the regional networks or local ethnicities. The South, near Pakistan, is mainly populated by Pashtuns, while the border region to Turmenistan, Uzbekistan and Tajikistan in the north, is home to Turkmen, Uzbek and Tajik ethnicities. The central part of the country is mainly populated by Hazaras, whose allegiance to Shia, rather than to the Sunni Islam, – unlike the majority of Afghans – has been the source of persistent conflict and discrimination (Chr. Michelsen Institute: 2005). Afghanistan's current challenges cannot be viewed outside of their historical context. This is of course a truism that applies for any country. But few have been confronted with so many collapses of state power, political turmoil and global power conflicts within the past 100 years. Between 1901 and 2001 every succeeding Afghan head of state – and there were plenty – either died violently at home or was driven into exile abroad (Barfield: 2010). And with each change came a concomitant change in how history was written, meaning there is still no agreement today on how the past 40 years should be portrayed. One result is

that for the new school history curriculum in 2012, textbooks kept information about the past four decades at a bare minimum as "there is no national consensus"[1]. For a short introduction to Afghanistan's history since its independence in 1919 see appendix C.

1978 - 2001

The period from 1978 - 2001 was characterized by internal and external conflicts with one million Afghans killed and more than six million refugees (Amnesty International: 1999) displaced during the Soviet war, the following civil war and Taliban rule. The so called 'Saur Revolution' resulted not only in the killing of president Daud, his family and many key figures of the old regime, but also turned into a hunt against any potential or real opponents in the country and soon within the new regime. The internal conflict weakened the communist party PDPA, the number of troops and police loyal to the regime dropped considerably and their reforms were met by strong resistance all over the country. The Soviet Union watched the approaching collapse of the new member of the socialist bloc, the *Democratic Republic of Afghanistan*, with alarm and, when one of its main allies was killed by the former prime minister, and then president, Hafizullah Amin, they invaded Afghanistan in December 1979, killed Amin and replaced him with Babrak Karmal as new ruler (Barfield: 2010:234). The Soviet invasion demonstrated the limits of Soviet influence in Afghanistan and its inability to stabilize the country without military force. The following ten year occupation was marked by ongoing fights between the Soviets, supported by the PDPA, against the US and Saudi Arabia funded, Pakistan based 'holy warriors', the mujahideen (Rasanayagam: 2003:105f). This war forced not only the opposing urban elite, but also hundreds of thousands of rural Afghans to leave the country and seek refuge in Pakistan and Iran, after farming, which constituted the majority of Afghan's livelihood, had become impossible.

After Russia's withdrawal in 1989, the then president Mohammad Najibullah remained in power and tried to end the ongoing conflict with persistent financial and military assistance from the Soviet Union. He managed to cut deals with a number of commanders, who were willing to end what was now an internal conflict and no longer easily justifiable as jihad[2] against Soviet occupation. Yet this common enemy had also had a uniting effect on the regional forces, who started to become rivals for power again. Once the Soviet aid ended, with the formal dissolution of the Soviet Union

1 Quote from the Minister of Higher Education during a BBC interview http://www.bbc.co.uk/news/world-asia-18579315

2 "A struggle against enemies of Islam" (Morgan: 2010:87)

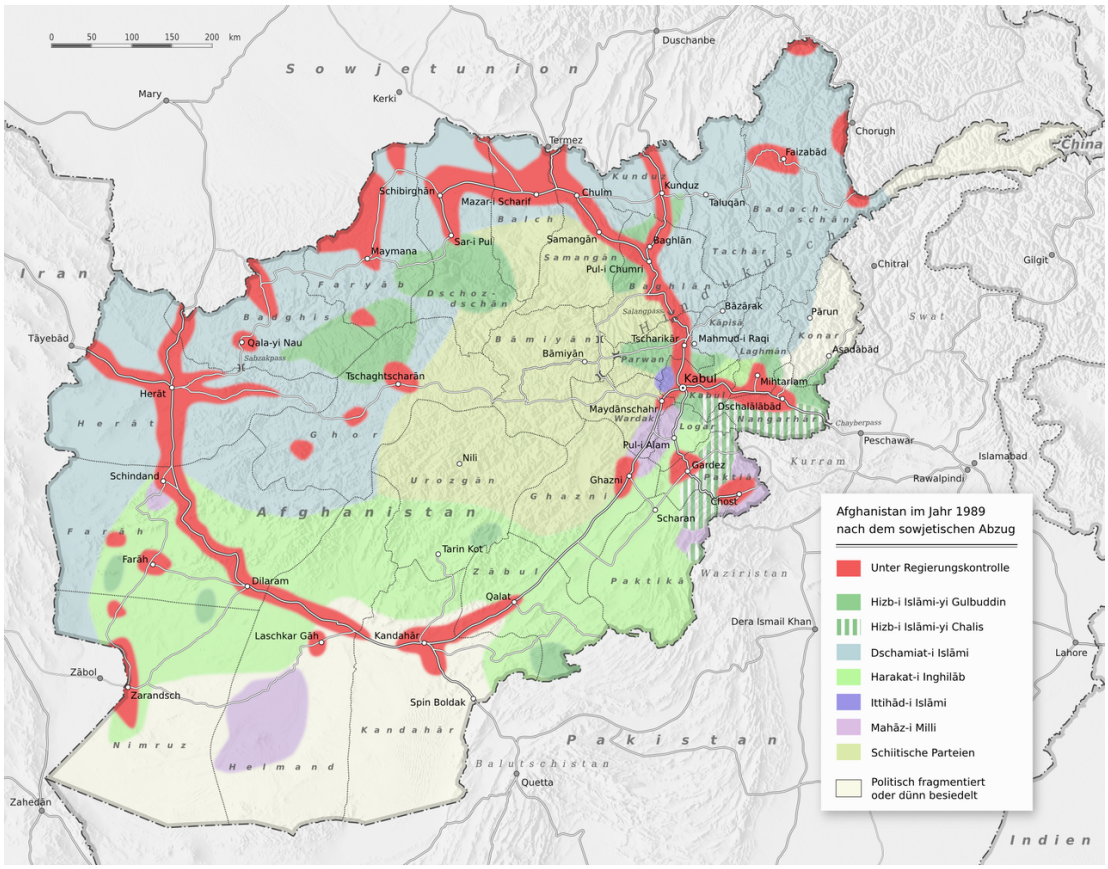

Figure 5.1: Afghanistan in 1989 (source: Wikimedia Commons)

in 1991, Najibullah lost his financial power base and mujahideen forces quickly defeated his now weakened troops and he was forced to take refuge in the UN compound in Kabul. A peace agreement on the distribution of power had been established among the mujahideen leaders in Peshawar, but was immediately broken after they arrived in Kabul (Barfield: 2010:250) and a new struggle for power between the mujahideen fractions lay Kabul in ashes throughout the following three years.

Gulbuddin Hekmatyar, founder and leader of the Hezb-e Islami political party, associated with Pashto interests and supported by the Pakistani Secret Service, ISI (Mielke: 2009:77), attacked Kabul and the troops of the new president Burhanadin Rabbani, leader of the Tajik-related Jamiat-e Islami, and his ally Ismail Khan. In 1994, Hekmatyar cut a deal with the Uzbek faction leader Dostum, however they failed to gain power, meanwhile the Tajik faction leader Massoud fought in the city against the Hazara forces of Ali Mazari. A common agreement was far out of sight and Afghanistan as a state was lost in anarchy, with Kabul's population suffering the most, while regional structures

gained more independence and influence.

The Mujahideen after the Civil War
Mazari was killed by the Taliban in 1995 which destroyed the confidence Hazara had initially put in the Taliban. Massoud was assassinated by the Taliban in 2001, Rabbani was killed in a suicide attack in 2011. Hekmatyar was repeatedly reported as cooperating with the Taliban but has also been involved in peace negotiations with president Karzai in 2010, Ismail Khan and Dostum are part of the current Afghan government. The involvement in politics of former mujahideen commanders is widely seen as controversial, as none of them was held liable for their war crimes. This is also one of the reasons given why the Afghan population shows little trust in their current political system and its representatives (Democracy International: 2012)

In 1994, the Taliban[1] entered the chaotic scene from the refugee camps in the border region, armed and trained by Pakistan and funded by Saudi Arabia under the United States' approving eye (Rasanayagam: 2003:143). The population longed for stability after more than a decade of war and anything seemed preferable to the ongoing chaos. The Taliban's "law-and-order" attitude and promise of security concealed the radical Islamist ideology that dominated their political course later on (Barfield: 2010:257). The Taliban soon had most of Afghanistan under control, except for the north-east where fights with the Northern Alliance, now consisting of Massoud's forces, persisted. Today, the Taliban era is probably the best known period of Afghan 20st century history. In 1996, Mullah Omar was elected Amir al-Muminin[2] by a shura[3] of 1200 ulema[4] and mullahs[5], and introduced a legal system based on their interpretation of the shari'a[6]. Questions of government, economy and social development remained largely unanswered and the Taliban never really made the transition from a movement to a government (Barfield: 2010:261). They banned all forms of entertainment, in particular music, films and images, and excluded women from virtually all forms of public life, employment and education, with harsh punishment for any disobedience. The Taliban's initial popularity soon turned into fear and an opposition between the 'government' and the population. Apart from the political conditions, the already war-torn country suffered

1 Plural of the Arabic *talib*, meaning religious student (Rasanayagam: 2003:143)
2 'Commander of the Believers'
3 Arabic for 'consultation', a consultative council in Islamic societies
4 Muslim legal scholars
5 Islamic religious teacher or leader
6 Islamic religious law

three successive years of drought between 1998 and 2001, and had little employment outside a precarious agricultural industry. By 2001 the World Food Program was feeding three million Afghans a day while any assistance was delivered under the most difficult negotiations with the Taliban (Rasanayagam: 2003:199). The *Islamic Emirate of Afghanistan* was only recognized by three states: the United Arab Emirates, Pakistan and Saudi Arabia; it had become headquarters of a pan-Islamic terrorist network. The Taliban provided foreign Islamists shelter and support, but never showed much intention to get involved in fighting for a world Islamic revolution like al-Qaeda and its leader Osama Bin Laden[1]. Bin Laden's call for an international Jihad even posed a threat to the Taliban's yearning for international recognition (Strick Van Linschoten & Kuehn: 2011). Yet they repeatedly refused to extradite bin Laden, including after the 9/11 attacks, with the consequence of another war entering Afghanistan as 'Operation Enduring Freedom' in October 2001.

2001 and after

Within weeks of the invasion of US and British troops, the Taliban positions unravelled, most Taliban retreated to Pakistan and the al-Qaeda presence was eliminated. The intervention's quick success seemed beyond the most optimistic expectations, but its preservation proved to be far more difficult. In December 2001 at the Bonn agreement in Germany, an Afghanistan Interim Administration (AIA) was appointed and further steps agreed to establish a "broad-based, gender-sensitive, multi-ethnic and fully representative government" (United Nations: 2001). First elections were held in 2004 and Hamid Karzai became the first publicly elected president of Afghanistan, with the first parliamentary elections following in 2005 (AREU: 2012).

In the years directly following 2001, an estimated three million Afghans returned to the country. Many of them, born and raised in other countries, knew life in Afghanistan only from their relatives' narratives. Many did not return to the farms their families had left and the urban population increased drastically. Most strikingly was the capital Kabul, whose population more than doubled between 2001 and 2010. The development of housing, public institutions and employment opportunities cannot keep up with societal demands. Despite the many welcome changes in most areas of society, initiated or supported by international aid over the past decade, Afghanistan remains highly vulnerable. Conflicts with the Taliban persist, the new government is entangled in countless cases of corruption and Afghanistan's drug production has reached an

1 Bin Laden's assassination by US military forces in 2011 also provoked little reactions in Afghanistan

all time high (Dorronsoro (2013), Chossudovsky (2013)). And with an estimated per capita GNI of US $700, Afghanistan remains one of the poorest countries in the world citepWorldBank2013a. The role of the international intervention in Afghanistan has in recent years been seen in an increasingly critical light. Despite the current government's dependence on international aid, most international spending "on" Afghanistan is not spent "in" Afghanistan but on international contractors working for the development sector and on imports like equipment and supplies for projects (World Bank: 2012). After several requests by the Government of Afghanistan over the years (Islamic Republic of Afghanistan: 2005:xxii) an agreement by the international donor community at the 2010 Kabul Conference was reached, to realign their financial assistance mechanisms by channelling at least 50% of development aid through the Afghan Government's core budget (Kabul Conference: 2010).

5.2 Media & technology in Afghanistan

Afghanistan joined the International Telecommunication Union (ITU) in the 1920s, after king Amanullah had started to build up the country's first telephone- and postal system. By the early 1960's the telephone system had expanded countrywide with several thousand connections but, altogether, Afghanistan's communication infrastructure remained marginal and limited to the bigger cities. Starting with the Soviet occupation and followed by 30 years of war and ongoing conflicts what little structures had been built up were almost entirely destroyed.

The (re)building of Afghanistan's communication infrastructure after 2001 was seen as one of the most crucial and enabling factors for the reconstruction process, "information can be used by citizens to facilitate their endeavours and enhance democratic values for sustainable human development." (MoC: 2003). Making New ICTs available for an increasing number of the population is one of the often mentioned priorities of the Afghan government, and, in particular, the Ministry of Communication and Information Technology (MCIT). The MCIT is frequently highlighted for being one of the most effective Afghan government bodies, successfully facilitating and implementing ICT innovations (Hamdard (2012); Wentz *et al.* (2008)). This positive image was not shared in all interviews and several critical remarks were made regarding the MCIT's lack of technical expertise. However, all agreed that compared to other ministries its achievements were substantial. And while other ministries like the Ministry of Education (MoE) and the Ministry of Higher Education (MoHE) had frequent replacements in their leadership, Amirzai Sangin has remained in office as Minister of Communications and Information Technology for the past ten years.

Investment in communication infrastructure has accounted for the majority of the overall total investment in the ICT sector, with the four mobile operators, AWCC, Roshan, Etisalat and MTN, followed by the Afghan Government, financially assisted by donor organisations, as the largest investors (Hamdard: 2012). Afghanistan has, with regard to its ICT infrastructure, no doubt undergone tremendous changes. From less than 20,000 fixed telephone lines, no mobile phone networks and zero internet connectivity in 2001, it moved to more than 20 million mobile subscriptions in 2014 and a vibrant and growing ICT service industry. The total number of Internet users for 2013 was estimated at 5.9 million according to ITU (2013). The telecommunication sector has with annual average revenue of $139.6 million, constituting more than 12% of total government revenues, become one of the largest revenue generating sectors in Afghanistan (Hamdard: 2012).

The quality of the available ICT training and education offers, however, was seen by most interview partners as insufficient to cover the need for ICT professionals at universities, ministries and the private sector. The demand for ICT professionals in the Asia Pacific region is, according to United Nations (2009), expected to continue to rise sharply and the need for ICT training and retraining will grow as ICT penetration and diffusion take off.

The national fibre optic backbone project, also mentioned in chapter 8.1, is currently in its last phase of completing the laying of 4810km of fibre optic cable connecting 23 provincial capitals and several principal cities to its five neighbouring countries: Iran, Pakistan, Tajikistan, Turkmenistan and Uzbekistan (Hamdard: 2012). Internet access is, in general, not restricted. However, regarding content, which is according to constitutional law under the responsibility of the Ministry of Information and Culture (MoIC), there is a ban for websites promoting pornography, gambling, dating or alcohol (Freedom House: 2013). In reality its actual enforcement is reported to be weak. There has been no evidence so far that the government has monitored e-mail or Internet chat rooms (U.S. DoS: 2011). The government has, however, made use of its control over internet content and blocked websites like YouTube to prevent certain controversial content from being viewed[1] (Freedom House: 2013). One comment I heard repeatedly regarding censorship was that people were not sure whether it was the government's support for freedom of expression or their inability to implement censorship on a technical

1 In 2012 YouTube was blocked because of a film about the Prophet Muhammad that was perceived as an insult to Islam. Previously reports about Koran burnings had triggered deadly riots in Afghanistan.

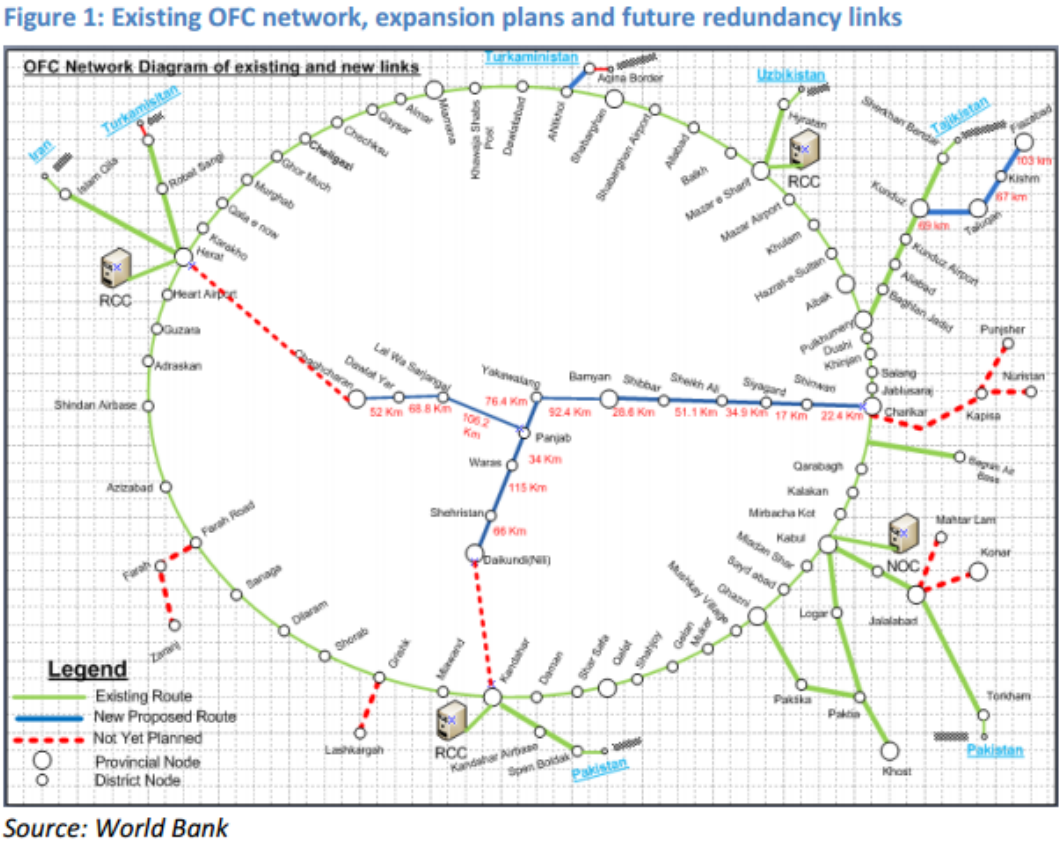

Figure 5.2: The planned optical fibre ring (source: the World Bank in Lokanathan (2012))

level that led to the current situation. Also suggested was that it was simply the general discordance within the government that – like in so many other areas – prevented decisions and political action.

5.3 The education sector in Afghanistan

Prior to the twentieth century, education and training were provided at home, in the mosques, in religious centres (madrasas) and through informal apprenticeships and on the job training (Samady: 2013). King Amanullah was the first leader to promote formal secular education in Afghanistan. In the 1920s he introduced six years of compulsory school-education, campaigned for access for women to higher education and established international academic exchange programs for students and academics (Sahrai & Feldmann: 2008:5). These were, however, radical changes at the time and his successors were more careful not to provoke the religious leaders any further with fundamental reforms. Though the significance of public schools and formal education has fluctuated strongly

in the following decades up until today, the country-wide literacy and higher education rate has never been exceptionally high, in particular for women and girls. In 1948, according to both Soviet and Western estimates, the literacy rate was only 8%, there were around 2800 teachers in the country and about 100 000 pupils (Vartan Gregorian (1969) in (Barfield: 2010:201)) with an estimated population of about 11 million (Samady: 2001).

In the 1960s, the first significant development of public education took place and spending on education was increased considerably. With financial support by the United States and the Soviet Union, more than 1000 schools were built, including high-schools for girls in all bigger cities (Rasuly: 1993:146). Similarly to today, the universities were unable to cope with either the quickly rising number of applications or the rising expectations regarding the quality of education and many high-school graduates went to study abroad (Schetter: 2004).

By the late 1970s Afghanistan's primary, secondary and higher education populations had grown to over a million students, including 20% girls. The majority of technical positions in the public administration were at the time already filled with Afghans who had studied or been trained in the Soviet Union. Some 750 came back with higher degrees and in 1967 the Kabul Polytechnic University (KPU) had been set up with some 50 Soviet instructors (Rasanayagam: 2003:66). KPU was mentioned in several interviews as being still controlled by former communists.

Despite the efforts of promoting education by the communist regime during the 1980s, school enrolment went down to 630 000 in 1990 due to the fighting and the massive emigration. Additionally the war destroyed most of the educational infrastructure in rural areas (Samady: 2001) and government schools operated mainly in the cities. In higher education the numbers increased slightly and there were 14600 students enrolled in Afghanistan by 1990, most of them in Kabul. The universities, however, were reported to be in a generally bad state. Another 7800 students were at the same time enrolled in Soviet universities (Samady: 2001).

During the 1990s primary and secondary education numbers went up again with international assistance, with a particular emphasis on basic education in rural areas. One strategy that proved successful were Radio 'soap operas', combining educational messages with entertainment in the form of a family drama produced by UNESCO in cooperation with the BBC (Samady: 2001:79f). In higher education, however, enrolment decreased and universities were operating under extremely difficult conditions, in particular in Kabul, due to the ongoing fighting between different political and ethnic factions (ibid. [81]). With the arrival of the Taliban, girls were banned from education and continued international support became increasingly difficult. Despite

the decreasing number of girls in school, the overall number of schools and enrolment, however, continued to increase slightly (Samady: 2001:89). In 1999 girls enrolment in primary education was down to 7%, secondary and higher education were limited and most universities were often closed and did not function effectively (Samady: 2013).

After the fall of the Taliban, education became one of the priorities in rebuilding Afghanistan. From 2002 to 2005, the number of enrolled students increased by four million, 35% of them girls, and the number of teachers has grown seven fold, with substantial interventions by the international community but badly coordinated according to the (MoE: 2006). Higher education enrolment went from 7900 to almost 40000 in 2005. The new constitution, adopted in 2004, includes nine years of compulsory education for boys and girls between the ages of six and fifteen (Samady: 2013) and education in public schools and institutions of higher education is free. This compulsory education can, however, in the current situation neither be guaranteed nor can it be enforced and only about 58% of school age children attended school in 2012. The quality and capacity of schools and universities also led to the establishment of numerous private education institutions, from primary to higher education, vocational and special training. As of 2013, Afghanistan has an estimated 8.6 million pupils enrolled in school, including 3.2 million female students and an estimated 100 000 students enrolled in the 31 public universities, with an unevenly proportion of 19% female, as well as about 50 000 students enrolled in the current 81 private universities (World Bank: 2013).

What continues to be discussed across all areas of education is teaching methodology and the general perception of what constitutes "good education", and how quality and access can be improved. This pedagogical aspect cannot be discussed here due to the limited scope of this thesis and will be addressed briefly in the empirical chapters. For a comprehensive discussion on Islamic and Western education see Karlsson & Mansory (2007). For more on higher education policy and funding in Afghanistan see McNerney (2009).

CHAPTER 6

Methodology

As one might expect, research in Afghanistan has generally been rare in the past decades and the body of research on related topics is even more limited. To date, few studies have been found by the author combining contemporary Afghanistan, New ICTs or education (for exceptions see Sengupta *et al.* (2007), Karlsson & Mansory (2007); Sahrai & Feldmann (2008); McNerney (2009)) and very few apply ethnographic methods. On the other hand, ICT has received a lot of attention in all sectors of development aid in Afghanistan – economic development, health, education, human rights and others – producing countless reports, recommendations and strategy papers that have had some value in the preparation of this study. The present research developed out of several years of personal experiences as an ICT practitioner in Afghanistan, it builds upon my masters thesis (2009) and is mainly based on qualitative methods.

From where I started

As demonstrated by Woolgar and Latour (1986) and many other STS scholars in their work on scientific practice, scientific facts and artefacts are far from objective, neutral 'achievements'. They depend on the choice of approach and methodology, personal preferences and previous experiences influencing the results, as well as, the interpretation by the researcher. In this account instead of 'the author' I mainly use 'I', as addressing oneself in third person often seems to conceal this subjectivity. This thesis is not about finding an objective truth, but about the very opposite, the subjective personal views, fears, expectations and hopes people associate with technology, its application and how it is organised. And about how these individually shaped human-technology-networks develop, are planned and set up and how they evolve and change; how they are interactively socially constructed. The notion of *social construction* provides, according to Sismondo, three important assumptions (or reminders!) for Science and Technology

Studies: that science and technology are social, that they are active and not themselves natural (2010:57).

This research does not apply a ready-made theoretical framework as a point of departure but builds on concepts drawn from three sets of literature (see Chapter 2), that are deemed meaningful in answering the research questions (see chapter 1.3) and has a strong emphasis on STS in its methodological approach. As my research questions demonstrate, I want to analyse networks of people and things that shape and influence ICT initiatives in the Afghan education sector. To identify the actors, to be able to understand their motivation and to see and experience them as part of the network I was looking at, I had to spend a considerable amount of time in the field. By participant observation I have been able to observe interactions between these human and non-human actors and experience how technology is included in different forms of communication, organisation, work and other aspects of life, giving an impression of what role (certain) technologies play for different actors.

Though not deliberately using 'grounded theory' some of its elements, namely 'generating theory and doing social research [as] two parts of the same process' (Glaser: 1978:2) made up the initial phase of my thesis. Having been working in the field prior to, during and after the three months reserved for "data collection" made it possible to revise initial questions and assumptions, include new stakeholders and consider upcoming issues. This flexibility was both helpful and necessary as, for example, some of the identified key persons were not available for interviews at all, while others could be interviewed later and again others were sometimes unexpectedly included when the opportunity came up. When entering the field I had a broad idea of the (then two) ICT4D areas I could look at, broadly themed "IT infrastructure" and "Technology for the poor". During my research "ICT capacity building" as a third aspect developed from being part of the latter two to a being an important theme in itself. To "unite the research process with theoretical development" (Charmaz: 1996:28) had a similar effect on my theoretical approach, which became more focused while being tested and compared in the field, some concepts turned out to be less useful, while others took a more prominent position.

To investigate my observations I applied what Toyama and Burrell (2009) call a 'non-dogmatic' approach, not insisting on any particular theory or technique but flexibly and creatively adapting and combining different tools or approaches that seem at the time best suited to gain a better understanding. These include 'common' research methods such as participant observation and structured interviews, but also hard to categorize aspects such as giving technical support or personal conversations regarding 'Western

behaviour' with a colleague, which can lead to a significantly better understanding of the context. Bot, interviews and informal conversations often led to invitations to visit ICT facilities, offices or projects and other (potential) interview partners being introduced to me as relevant to the area. I *followed* several actors in their daily routines and interactions to identify and include the pieces of an actor-network. In the following sections I will first describe my access to the field and then give account of the different methods applied for data collection.

6.1 Access

There is a saying about Afghanistan that "you either never come back or keep coming for the rest of your life" - I seem to belong to the latter and sometimes it is hard to explain why. In late 2004 a friend at the computer science department asked me if I might be interested in teaching at an Afghan university. They were interested in a gender balanced team and were looking for another female lecturer for the next term. I was immediately interested, the situation was said to be reasonably safe, even if the media still carried stories of occasional suicide attacks, Afghanistan had been displaced from the front pages by the war in Iraq.

I started working in Afghanistan in 2005 as a lecturer at the Computer Science Faculty at Herat University, I did not know what to expect, I had never been in a post-war country before and I had also never taught at a university before. It was an intense and not always easy time for a number of reasons, some of which are partly dealt with in this thesis. Dealing with information technology at Herat University opened up questions that I had not been aware of before and was unable to answer. Teaching and using technology is not the same thing in Berlin as in Herat - that much I was soon sure about.

In the following years I worked at Kabul University and the Ministry of Higher Education and was involved in different ICT projects within the higher education sector. I had the opportunity to visit several of the universities and to meet lecturers of various higher education institutions during ICT training workshops and conferences that I had helped organising at the MoHE and KU between 2007 - 2010.

I attended and observed processes around ICT implementation in Afghan higher education, from the early stages of the decision making till the final implementation and adaptation process. The most dominant and visible actors involved in these processes are the donor organisations, the project practitioners and the local partners. In my master's thesis about ICT in Afghanistan I had concentrated on 'the local context' which is particularly in such a diverse and rapidly changing country something that needs to

Figure 6.1: Students at Kabul University preparing the network (source: the author)

be re-negotiated during the whole implementation process itself and was in most cases impossible to predict (for a short summary of the findings see appendix D).

During my work at the MoHE I also gained insight into project negotiations with various international organisations and development aid procedures in general. Some years later, as a freelancer for a local IT company, I could observe these negotiations from the practitioner's perspective. I was employed as a consultant for education technology and for Monitoring and Evaluation (M&E) by an Afghan-European company in Kabul that was the main driver behind the *laptop for schools* project. This position allowed me access to areas like schools and training facilities in the provinces, that would otherwise have been rather difficult to enter for a female foreigner, and also included attending meetings and negotiations with ministries and donors.
I experienced the struggle of finding an agreement between people with very different backgrounds and expectations, which has strongly influenced my research interest. My doctoral study can benefit from my previous research in the field as it gives me a better understanding of the local situation. For the present research I fundamentally broaden and change the focus. As a complement to my studies of urban higher education I also consider ICT projects in primary education in both rural and urban areas. I also include international stakeholders and their agendas into my analyses of the negotiation process.

6.2 Case Study

The present research is a case study, surrounding ICT projects in the education sector of Afghanistan from three main areas: infrastructure, training/capacity building and what I labelled (in reference to how it was discussed in the field) "technology for the poor". These were no pre-defined themes, instead when selecting the cases and interview partners the primary focus was on covering a broad range of ICT in education projects with what I initially could only vaguely identify as 'most common patterns of cooperation'.

ICT for the poor

The theme 'ICT for the poor' describes technology used to compensate for a lack – like a lack of teachers, schools or time in the cases described here. Technology is either manufactured or localized to serve the needs of the users: low power consumption, alternative charging methods or content adapted to local educational resources. I have been involved in the M&E of some projects and was able to speak to primary school pupils as well as parents and teachers, literacy class participants and their teachers, to tech-companies helping prepare the devices and consultants advising the implementation, and I visited several ministries that were involved in the process (in particular the Ministry of Education) and spoke to several employees. I also interviewed volunteers and staff of NGO's involved in educational technology projects and scientists researching education technology. Some of the data I collected contributed directly to this study, while other data contributed to selecting a suitable project and environment for the research.

ICT infrastructure development

Within this theme I look at infrastructure development, mainly the university connectivity project, but also touching on something like the fibre-optics project (see figure 5.2) for national broadband internet supply, and the general education-related ICT infrastructure at the universities. Within this theme I was able to attend meetings and accompany IT professionals and consultants during their daily routine (if such a thing exists). I interviewed several international consultants advising the Ministry of Communication and Information Technology (MCIT) and the Ministry of Higher Education (MoHE). I visited (predominantly young) Afghan IT professionals at their workplace in the ministries and universities, and was lucky enough to be shown around and introduced. I

was also able to speak to employees of the MCIT and the MoHE in an official interview context, as well as in some personal conversations.

ICT capacity building

ICT capacity building had been an important issue when working in Afghanistan all along, but only during the extensive field trip in 2011 did it become clear that it was indeed a separate theme rather than part of the previous two. Capacity building takes place on a number of levels within three major areas: basic training in computer literacy, as offered to students and staff at universities and ministries; training of professional or work-related computer-applications, in the public sector mostly targeting administrative staff members; in-depth training in system administration, hardware trouble-shooting or web-technologies for an already ICT experienced group to manage, localize and maintain particular tasks and systems.
I came across all three kinds of training frequently during my previous work in the education sector. I had myself organised, offered and attended these types of training and could easily visit facilities and interview trainers as well as previous participants. Some of the projects within the above mentioned themes also offered training themselves to the users or local technical staff that was to become part of the implementation and maintenance.

6.3 Data Collection

The data collection is mainly based on, though not limited to, qualitative research and its main methods are interviews and observations. The selected projects were all special in themselves and often unique, but also resembled ICT project dynamics either in Afghanistan or other developing countries with similar purposes and are thus seen as appropriate examples to answer the research questions. Not all findings from this research are meant to be or are applicable for generalizations. Yet it is expected that even if taken from this very particular context the analysis regarding how ICT projects are planned and implemented and how different roles are assigned to, or taken by, the actors offers certain statements that can stimulate the analysis of other multi-stakeholder ICT4D projects or ideally sensitize future project planning.

Another, though less determinant reason for an almost entirely qualitative approach is the limited body of research and literature available on Afghanistan and a lack of reliable statistical data to be considered, even if both domains have been growing in recent years (see for example AREU or above). Where available I included statistics and reports

from the ministries, the World Bank and the above mentioned sources. Most of these publications are, however, rather limited in detail due to the current difficulties of data collection in large parts of Afghanistan. Additionally in some areas, like literacy rates, ethnicity and the diffusion of ICT, the findings are highly contested as these categories have no clear definitions and often depend on different interpretations. Nonetheless I have been able to extract some useful numbers and impressions from these sources that are not available elsewhere.

Figure 6.2: Random snapshot of a Kabul street corner (source: the author)

My data collection consists therefore of a combination of semi-structured interviews, informal conversations, observation notes, photos (mainly taken by myself) and where available documentary evidence (reports, newspaper articles, online sources and so on). The photographs often serve two purposes: they document a particular setting during my research, which can serve as an *aide de memoire*, in particular in situations when taking notes was impossible or inappropriate, and they can can help make important aspects visible or, rather, visual to the reader. Figure 6.2 may serve as an example here, as it shows a typical Kabul street corner with its global as well as local (or at least regional) influences: traditionally dressed men as well as women in burkas next to a man in a western-style business-suit, which also contrasts with the rather simple dressed workers with stained second-hand clothing in the right side. Modern vehicles sit next to

a self-made wooden carriage. Advertisements for 'modern infrastructure' like Samsung phones and prepaid cards (the mobile-phone provider Etisalat on the umbrella) next to the dysfunctional sewing system. What is missing in this picture is one of the many fruit and vegetable sellers that line many junctions in opposition to the omnipresent Nestlé products.

Researcher Role

As described above, my role as both participant and researcher in the field and how that influences my view and research perspective, as well as how I am perceived in the field places a special emphasis on reflexivity (Hammersley & Atkinson: 1983:14 ff) within all my field work. My role as 'participant as researcher' raises the risk of potential bias and can also limit the access to the area as "the participant will, by definition, be implicated in existing social practices and expectations" (Hammersley & Atkinson: 1983:94). I realized how much this was the case when in certain situations my role as the representative of my employer hampered access to people and information. In one case a meeting was set up between several stakeholders to discuss possibilities for cooperation. The meeting was initiated by a donor contractor that some people at the MoHE were in disagreement with. My participation, even if just out of interest, would have been considered as representing the Ministry, a position I could not risk to take. This was partly the reason why I resigned from that position in 2010 and continued working as a freelancer making sure to communicate at all occasions that I had no direct affiliation towards one employer and no conflicts of loyalty.

Afghanistan is (in)famous for the segregation of men and women from a certain age in the public sphere, meaning access to certain kinds of information is mostly linked to gender or family relations. A rather unexpected advantage, however, came about precisely because of my being a foreign, non-Muslim woman. Teaching young men roughly my own age was already a concern I had before I first started working in Afghanistan. However, I came to realize that while I was treated with the same respect and caution as Afghan women, at the same time it was clear to my students that I was living a different life in Germany so my behaviour was not judged by the same standards. "How does that work, as a woman doing research in Afghanistan?" - is a regular question I get asked and thinking of the burkas that dominate the image of Afghan women in Western media it is not surprising. This may be partly luck or a coincidence but I have thus far not experienced any personal hostility directed towards me.

I agree with Hammersley and Atkinson that "common cultural stereotypes of females can work to their advantage in some respects. In so far as women are seen as unthreatening, then they may gain access to settings and information with relative ease." (1983:85). At the same time they limit women's access to particular domains. But what if those stereotypes are not applied to all women alike? From the beginning I was predominantly working among men; I could be frank to my closer colleagues about living on my own far away from any parental or fraternal protection, which is something that would be judged as unacceptable for most Afghan young women. I also had access to family dinners and could sit and chat with both women and men, while my male colleges often experienced the women remaining in the kitchen during their presence. On the other hand, being, as a foreigner, part of the expatriate ("expat") community made it easier to be invited to (and allowed to attend!) informal gatherings or parties where often important introductions and decisions took place while drinking beer for $10 a can. This does not of course eliminate the fact that I am seen and treated in a certain manner, but again I try to reflect where this might influence situations or interview responses and be as transparent as possible about it.

My main data collection methods, as described below, were participant observation, semi-structured interviews and a field diary. I knew the institutions and environment I was interested in, but the individual interview participants and the projects / locations I visited were to some extent undetermined at the beginning of my first three months fieldwork, as I wanted to be open to react to the circumstances and what I would experience. I also consider flexibility to be key in approaching meanings and core themes in certain situations, instead of insisting on strict consistency in the way research methods are applied.

6.3.1 Participation and Observation

Participant observation helped me to get an insight into the different processes of ICT project realization. In addition to interviews, it was an important method used for collecting information, though observation and interview data collection techniques overlap and are not necessarily distinct. During interviews and conversations, reactions to certain questions can sometimes reveal much more than the actual answer given and strongly influence the researcher's interpretation. Similarly, the environment where an interview takes place can matter and provide additional information about the interviewee or lead to an uncomfortable situation for the researcher that might, without active self-observation and note-taking, be forgotten before the interview gets transcribed. Observing certain behaviour was also fundamental in interpreting interview

statements correctly. Seeing how people interacted within socio-technical systems – including technologies as well as people working with them – could often tell much more about their role within that network than asking about their formal position.

Observing one's environment can be crucial to understand the context. Things that have become invisible for those who live in the setting, can be important for outsiders to understand it. This, in fact, is also a danger for a researcher, like myself, who has already spent considerable time in the field and may overlook things that might appear striking to others. It is impossible to observe *everything*, one would simply get lost in detail. What one notices or decides to pay attention to depends on previous experiences and personal background. Reminding oneself, however, to consciously observe a setting will always reveal something surprising and noticeable – even if not necessarily relevant for the research.

As many have noted, there are different forms or levels of participation and observation. My approach to the research is what Junker (1960) calls "participant as observer" (p. 36), though the categories he and others describe are, of course, at times overlapping and shifting (see also Adler & Adler (1987), Hammersley & Atkinson (1983), Spradley (1980)). Karlsson and Mansory (2007) describe "a continuum from complete immersion as participant to complete separation as onlooker". I would describe my involvement at times as both extremes, but during most of the research as being in-between the two poles. I have tried to maintain in most situations a balance between insider and outsider ("moderate participation") but at other times have been 'doing what other people are doing' ("active participation") beyond merely gaining acceptance (Spradley: 1980:59-62). Active participation can help better understand social and cultural rules for behaviour, being actively involved in some decision making processes myself, I was able to both participate in and observe negotiations. However, I was not actively involved in all the settings I attended and sometimes also took a more peripheral membership role (Adler & Adler: 1987:33), as a guest of someone or was simply introduced as "she is doing research in the field of technology". I was extended invitations by several people to accompany them to one of their projects and even invited to attend several meetings related to their work and projects.
One salient aspect of many of these participant observation situations was the informal conversations, which often gave a hint or revealed details that would not be mentioned during the more formal interview situations or that might not seem relevant enough for the participant to mention during an interview (one such situation is described in appendix A.1.)

My having been professionally involved in the field implies several advantages and levels of trust, like being invited to attend meetings and getting information beyond the 'official interview scenario', but my role as a former consultant to the MoHE also influenced reactions and responses to my interview questions. Working in the field and knowing most interview partners from previous or then current work cooperation obviously gives rise to several questions about the relationship between the observer and the observed. I am aware that knowledge about my field that I generate teaches something about my membership role. The questions I asked as informed member of the working context, their missions and organisational models are different from the questions an outsider might ask. The purpose of this particular mixed methods approach is also to distance myself from my own experiences and try to understand the meaning that the actors themselves ascribe to their identity, their project involvement and participation and their activities in order to gain a reflexive approach within each of the target groups. Addressing these issues, as mentioned before, I resigned from my position at the MoHE and from then introduced myself as a researcher, interested in the dynamics of decisions on ICT projects. Not surprisingly this changed my position towards some of my previous colleagues and employees but did not seem to cause any distrust.

6.3.2 Listening and asking questions

Unlike than interviews in quantitative research, that tend to be clearly structured and specified, qualitative research consists mostly of in-depth interviews that are more open with regard to the different directions the interview can take and issues that can come up during the process. To investigate my observations and get further information I conducted unstructured and semi-structured interviews with more than 30 individual actors involved in the three areas, as well as five group-interviews, combined with data collected during countless informal conversations. Both, interviews and some of the conversations, were guided by a number of themes derived from the research questions related to context and participation, perceptions of technology and interaction between different stakeholders. The way these questions were phrased and embedded into the overall conversation could, however, vary greatly depending on the person I interviewed. I would not ask a teacher at a provincial school why he chose to work in Afghanistan, but I would ask him, as well as an international consultant, what changes they had experienced in Afghanistan in recent years.

Particularly considering the very different cultural and often social contexts my in-

terview participants and I are part of, how a question is posed and received, and how it is translated can be tricky. A senior ICT expert from India, for example, flying in for one week of consultancy work for a big donor agency seemed to feel puzzled, if not insulted, by the question 'When did you first use the Internet?'. Being able to elaborate the question and explain why I posed it to all my interviewees, visibly relaxed the atmosphere and led to a detailed account of the excitement of sending his first email. I prefer a conversational interview mode, where interactivity is not suppressed, questions can be clarified and responses can be elaborated in whatever level of detail the participants prefer (Suchman & Brigitte: 1990). This is again, as mentioned above, part of keeping a situational flexibility that helps improving the accuracy of findings. Some interview participants seemed familiar and experienced in the interview situation, while others behaved either very personably and open or were tense and suspicious and answered as briefly as possible. In particular young students and adults seemed eager to make a good impression and to answer "correctly". In these situations it was often most challenging to convince the other person that their identity would not be disclosed and to create a relaxed atmosphere.

As perceptions of technology and participation are often strongly connected to personal experiences and one's own history I tried to ask the introductory questions as openly as possible to allow the participant to decide about the direction he/she wanted to take. I consider it important for my research focus to see the participants as experiential experts, as storytellers not as respondents and to make them aware of that. They are the experts about their life and experiences and should feel comfortable in their position and not worried about saying 'something wrong'. When statements that were made during an interview, contradicted other accounts I had heard or experienced regarding the same topic, which happened on several occasions, I decided not to intervene directly. If it seemed important for clarification, I addressed the issue again later during the interview, but did not confront people about these inconsistencies directly. I have no reason to believe they deliberately tried to deceive me, but rather had different perceptions and interpretations of certain issues. There were a few exceptions where I tried to deliberately challenge someone during the interview if I had more information and wanted to know more details. This is tricky as it can have the opposite effect of people refusing to tell more if they feel trapped or interrogated. On the other hand it can also encouraged people to tell more if they identify you an "insider", who knew what they were talking about and understood the basic procedures involved. I had experienced the tense relationship between some of the students and their lecturers, but I also knew that respect towards lecturers and elders can work as a self-censorship among students. When asking about the situation at the university I knew I needed

to find the right balance if I wanted to avoid getting a normative answer about how ideal respectful interaction ought to be. However, I tried to utilize this knowledge very carefully and only in situations where I considered it important enough and worth the risk.

I see myself during these conversations mostly as an enabler which is also how I tried to present myself during the interview. Some ways to support this "enabling" are asking open questions, following up, clarifying and rephrasing unclear statements and keeping silent to allow reflection and making links (Kvale: 1996:133-135). To share situated details of certain experiences is crucial to understand why, for example, certain technologies are welcomed by some but seen as a threat or inappropriate by others. At some later point in the interview agenda I also included some direct questions concerning more formal issues, issues that might influence the interview outcome if asked too early. For example, a question asking how certain things in the company/institution are organised and funded, which not all participants could answer so easily.

If possible, I arranged not more than one interview per day. One reason was the necessary temporal flexibility that comes with Kabul traffic, security alerts and last-minute appointments – see also my comment in section 6.8.2. The other reason was to be able to impose (on my side) no time constraints regarding how long the interviews should last. Some interviews included a lunch- or dinner break but continued afterwards, others were interrupted by several phone-calls. Therefore, the interviews lasted from 30 minutes up to more than two hours, with most interviews, however, somewhere around 90 minutes. I tried to create a relaxed atmosphere during these interviews by letting the participant chose the location and — as far as possible — interview time. I started the interviews usually by introducing myself, explained what I was doing and asked some more general questions before announcing the start of the actual interview.

I recorded most of the interviews, all except one participant agreed after I reassured them that all the data would be anonymized and all personal details removed before publishing. In most cases the participants seemed to forget they were being recorded after some minutes. On two occasions, however, I was explicitly asked to turn off the machine for a few minutes because he/she did not want certain statements to be connected to them personally but thought it important for me to know in order to understand certain details or context.

Language

The main drawback for a Western researcher (or other foreigner), as Karlsson and Mansory (2007) describe in their research on education in Afghanistan, is the language. To rely on translators implies a serious difficulty and brings another level of uncertainty with it, in particular in a surrounding where conflict between different groups is ubiquitous. Was the question considered rude? Was it translated correctly? Is the interviewee reluctant to tell *me* something or does the presence of the translator cause discomfort? An Afghan translator may in certain situations feel as foreign as the researcher.

Figure 6.3: Interview situation with interpreter (source: the author)

The majority of my interview partners spoke English fairly well as they work with or for foreigners. Dealing with ICT and international cooperation, a conversational level of English was a prerequisite for most stakeholders. If the interviews were conducted in English, I have kept them mostly intact, errors included, unless where the meaning is obscured by language or grammar mistakes. Interviews that were conducted in German were translated by me. About 10% of the interviews, however, depended on an interpreter. As indicated above, I am aware that, in addition to myself, an interpreter influences the interview situation and in my experience this can be to a large degree. More than once I had to remind my interpreter Waleed, who had worked with me often in recent years, that he should not try to mediate between the other person and me. His translations were often more polite and diplomatic than what had actually been said. In one example a very short answer in Dari given with a broad smile turned into a long explanations in English, which after me insisting on being told the truth, put

my interpreter in an embarrassing situation. He was ashamed for his countryman, he admitted later, who had forced him into the situation of making something up. “He said *her organisation is rich, they can pay for everything*” he explained later. It has remained difficult to convince him or others who translated for me not to alter what is asked or replied. Another interpreter explained “sometimes you ask in a way that they don’t understand. I have to give examples or add some details to make it clear”. So on other occasions the interpreter actually works as a cultural mediator.

6.3.3 Field diary

I am aware that I enter the field not only with perceptions based on by my own socialization within a certain cultural context, family, profession, and broader society which shapes the way I interact and phrase my questions, but also how I interpret the results even if I objectively formulated my research interests. Additionally there is a tendency in the literature to address people in developing countries as ‘indigenous’, ‘poor and marginalized’ or ‘natives’ - terms hardly used in the other country’s contexts. When working or researching in a developing country context, one is often confronted with superior attitudes towards those “in need of development”. A field diary can help detect such tendencies in one’s own thinking and behaviour and reflect on one’s own role within such a setting.

Reflexivity is thus not only a matter of considering the impact of my own presence, and how that influences the field, but also of considering my assumptions about technology, education, equality, gender roles, and development (Toyama & Burrell: 2009). “Anthropological methods involve a subjective component” as Sillitoe (2007) rightly points out and a field diary can be a means to freely address this subjectivity before assessing how it influences the research. It can help reflect one’s environment and role in the field as well as one’s own struggles to accept or understand certain conditions and to give a “thick description" (Geertz: 1973) of meaningful situations.

I have been writing a sometimes more, sometimes less detailed field diary over the course of several years and various visits. In the three months of intensive research I kept a detailed record of each day, while in previous years regularly taking notes of significant events or exemplary comments. I also use it to reflect on my research methods, including a brief statement on every interview situation. I specified how I felt myself and how that might have influenced the interview conditions and described in as detailed a manner as possible the environment where the interview took place, whether there were any time constraints, interruptions or physical reactions to certain questions or during the

conversation. These additional details often seemed trivial directly after the interviews, but often turned out to be helpful in preparation for the next encounter.

And finally, I am also aware that one does not just leave the field behind. I have a keen interest in the issues I address in this study and have, since conducting the research, been back to Afghanistan several times. I hope my self-reflexivity also helps contribute in presenting my findings in an unbiased manner and makes the "subjective component" explicit to the reader.

6.4 Actors

"Follow the actor", a vital piece of advice from Latour and Woolgar (1986) that influenced my approach to the human and non-human actors that make up part of my research. However, to only follow the actors in the heterogeneous network of relationships that forms ICT projects in the education sector would be a different approach to mine. As discussed above, my participation and observation roles change, I might try to observe as invisibly as possible at times, but I was also actively taking part in some of the networks that I intended to analyse. Additionally and possibly due to my active involvement, I strongly agree with Fujimura;

> "In contrast to Latour, I am still sociologically interested in understanding why and how some human perspectives win over others in the construction of technologies and truths, why and how some human actors will go along with the will of other actors, and why and how some human actors resist being enrolled... I want to take sides, to take stands."
>
> (Fujimura 1991 in (Star: 1991:28f)

At the same time I am very careful not to exclude what Star calls the "invisible work" (Star: 1991:29). Not all actors that are part of the processes I explore are recognizable by outsiders. Some chose to remain hidden, others are intentionally excluded and again others were simply overlooked. These "missing actors" were of particular interest in some of the projects I explored.
The interviewees were chosen by "following the actors" within the selected projects and depending on their availability, accessibility as well as ethical and logistical reasons.

Ethical Issues

During the data selection process I realized that I would have to take three aspects into consideration: some would not accept being questioned if they could be identified, or at

least would be very selective in their replies. Some might talk freely and not realize they put themselves at risk regarding colleagues, employers, or others if some of their remarks became public. And thirdly some would probably not like the way I put their statements in context and I did not want to risk my impartiality by deciding not to use certain information in fear of insulting someone I had known for a while. I asked all of my interview partners to sign and accept a signed consent form stating I would do my best to protect their anonymity. I repeatedly had to insist before interviews and meetings, that I would not disclose any names and direct affiliations, "In terms of discussions with me feel free to quote me, to use my name" (P. R.), was a regular reaction of people who were entirely content with the value of their work and happy to make it public. Some changed their minds during the interview and made remarks such as "you can use this information, but you don't have this from me". My role as an informed insider, however, and my access to different "nodes" of one project network brought conflicting statements together that made anonymity necessary. A small number were reluctant to talk to me until I made it clear that I had no interest in exposing individual success or failure, but was more interested in the interaction and dynamics between different stakeholders.

All names, including those of smaller companies, institutions, organisations and NGOs have been changed by the author. This was partly done to protect the participants anonymity, partly because my aim is not to reveal one specific organisation's routines, with its strengths and weaknesses, but to draw more general conclusions from individual behaviour within these constellations. Prominent organisations' names might distract from what I believe are broader dynamics. For some institutions, such as ministries, these precautions would have altered the context and, thus, could not be made, but considering the high number of staff and contractors involved, I believe individuals can still not be identified. The ICT scene in Kabul consisted of a relatively small group in 2007, when I started working there more frequently. It has gained considerably in size and importance since then, however, those working in the education sector and living in Kabul and/or working there beyond one project contract (like me) mostly know each other or had heard of each other's work. It was through this network that I got in touch with the majority of my interview partners. The reception of each other's projects was mostly critical, possibly because there were few clear success stories, possibly because contractors were in competition with each other for funding, cooperation with local or international partners, expertise – first of all qualified local staff – and innovative ideas.

6.5 Limitations

This study concentrates on perceptions of technology and technology related decision making and all the people *in* this study, students, teachers, practitioners, consultants and others are in some way affected by it. There is no 'neutral observer'-voice (if such a thing exists) neither can the complete context and reasoning for certain positions fully be understood and taken into consideration. Though different perspectives on some of the issues were heard, and observations made, not every statement could be tested. Most statements were accepted as representing the interviewees opinion and could only be compared with other accounts and data collected during the research. This may in some cases cause irritation. For reasons of accessibility considerably more men were interviewed, in some areas even exclusively. This 'male perspective' may, in the view of some, not be sufficiently challenged, yet with substantial obstacles for interviewing *anyone* in traditional rural areas, being granted interviews at all with male teachers could already be seen as a gesture of goodwill towards me. It also reflects the 'public' discourse on technology for education, where some women were most likely consulted by their male relatives at home, but invisible to all other stakeholders. While in this particular area I refrained from asking too many personal questions, at least the issues of one's daughter's education/home schooling could in some cases be raised.

Though I justify a male dominance in the interviews here, I am also aware that this was one issue where my personal bias might have been perceived by some during the interviews. As already indicated above, I agree with LeCompte and Schensul that "predispositions constituted by [...] age, gender, ethnicity, physical size, physical and intellectual ability, social class, religious and cultural background, educational level, and personal style" (2013:29f) have a strong influence on choice of topic, methodology and field. I have also repeatedly felt unmasked, I must admit, remembering Said's writing, during my field research. Not joining a 'modernisation thinking' turned out to be difficult, when much rhetoric around the judgement of institutions or attitudes was based on the linear thinking of 'more Western means more advanced'.

Finally I was not entirely free in choosing the time and the sites where I could conduct research. It was clear from the very start that doing research in Afghanistan would not be a question of funding, but of a safe environment which could only be provided by working and living there together with others. In that regard, however, I was extremely lucky to be accepted in a position that was ideal for the research at an acceptable time and most of all consisted of unusually open and supportive employers who helped me organise some trips that were not without risk, left me enough time for my own research

and allowed me to use all the data I collected while working for them.

6.6 Data analysis

The first preliminary data analysis was already being done in the field and during the interviews; questions were adjusted, interview atmosphere and physical reactions to certain questions were recorded in a notebook and remarkable comments registered for later investigation. One consequence, due to its strong presence during the interviews, was the choice to make "ICT capacity building" an independent key area instead of a sub-category of the other two. The second level of data analysis took place during the interview transcription with a software called f4, when passages that were deemed relevant were marked in different colors and attached with preliminary coding schemes. During this phase most comments were free associations regarding my own experiences, exceptional statements, possible categories or recurring topics.

Following the transcription, the interviews were coded with a qualitative research data analysis software called ATLAS.ti. All interviews were added as Primary Documents (PD) into one Hermeneutic Unit (HU), which led to a collection of 42 PDs, some of which were follow-up interviews with the same person. The choice of a data analysis tool was tricky, as I mainly work with Linux and most (user friendly) qualitative data analysis software is only available for Windows or Mac. After briefly testing three different applications, Atlas.ti was selected and installed on separate Windows systems that were mostly used during data analysis. The fact that I had to work with different computers during the data analysis, because of working from different places, turned out to be problematic as the document management of Atlas.ti was unreliable when working with online (cloud) storage, even when the HU with all documents had been 'bundled' for export. Several documents could not be restored and I repeatedly lost already coded interviews. These two "barriers" - the need to boot a separate system and the problems during synchronization - led to using Atlas.ti not to its full extent. Nonetheless Atlas.ti was experienced as a helpful tool to categorize and organise the material and identify the central themes. More on how to use Atlas.ti in qualitative data analysis can be found in Friese (2012), examples of using Atlas.ti for different methods and approaches can be found in Rambaree (2013).

The individual PDs were first assigned to 'PD families', depending on the interviewees' background, position and the project(s) they were involved in. In a second step, interviews were coded as openly as possible, however, the research questions and theory certainly influenced the choices. The coding was therefore both data- and theory-driven

(see also Braun & Clarke (2006)). To preserve some context, the coded segments usually included surrounding data. After the coding process was completed, all codes were grouped into broader 'code-families'. From these groups of codes, the themes and sub-themes were defined. Again some of these themes were inspired by the literature or research questions while other repeating patterns had been identified during data collection, transcription and the coding process. But in most instances it was hard to identify the initial 'impulse' for a theme. No themes had been pre-defined, those suggested by the literature and research questions also had to "prove" their validity within the data, and those identified during the coding and categorization often turned out to reflect the literature or research questions (see also table 6.1).

The theme "adapting the user", for example, had been developed during data analysis, while also being evident in some STS literature and one of the research questions. Similarly had appropriation and participation been relevant in the literature, but only became a combined theme when the code-families revealed that codes grouped under "participation and cooperation" and those grouped under "ICT adaptation and appropriation" had a large number of intersections. When re-reading the segments coded under these two themes, the correlation became evident.

Themes influenced by the literature	Themes influenced by the research questions	Themes primarily from the data
- modernization - technology appropriation - technological determinism - technology design and configuration - influential local actors	- participation - context - flexibility of technology - change of strategy	- participatory appropriation - adapting the context - paternalism - conflicts between different groups - dependencies

Table 6.1: The final themes (without sub-categories)

The PD families helped structure the empirical chapters and making sure the different actors and their views are represented. Together with the coding, they also helped to identify similarities in certain views or statements regarding background and affiliations, like conflicts between certain groups. During the final writing process the interview data was again re-read, the themes refined and data extracts selected and put in context. The themes were then also linked with some of the available reports and papers. At this stage, Atlas.ti was only occasionally consulted as most of the writing was done under Linux.

With "context" being one of the central themes for this study, it was clear that detailed descriptions of the field, cases and actors would constitute an essential part of the thesis. The use of themes for my data analysis supports this "contextualist" approach, which acknowledges "the ways individuals make meaning of their experience, and, in turn, the

ways the broader social context impinges on those meanings, while retaining focus on the material and other limits of "reality" " (Braun & Clarke: 2006).

I chose to separate the findings from the interpretations to demonstrate to the reader how the themes had evolved and to let the empirical material speak for itself. I am certainly aware that the findings are a selection made by me, but by revealing how the themes were selected and by using a lot of verbal statements, I hope to stay close to the original voices. As this study is so heavily based on empirical research, which might allow different (and additional) interpretations, I decided to link my interpretations with quotes to the empirical findings and allow the reader to review the quote within the context of the findings if necessary.

Despite the inclusion of reports, unpublished project data and strategy papers, the number of 'Afghan' publications was too low and their background often fairly unclear to undertake a discourse analysis. Additionally, except very simple statistical data, no Pashto and Dari publications could be considered as the selection of suitable material and their translation would have exceeded the author's time and financial means. Much of the recent papers published by the Afghan ministries are expected to be modelled after examples from other countries or to be a product of the work of international consultants - despite being published in the name of the ministry[1] - and are not necessarily representing the ministries' actual view or course of action. Due to the ongoing conflicts between governmental institutions and individuals and frequent changes in staff, strategy and cooperations, most of these publications were treated in this study with extreme care and not given too much weight. Decisions, as it was experienced by the author, currently depend to a large extend on negotiations between groups of individuals and are less determined by official papers. Had this study concentrated primarily on the role international organisations play during these negotiations, a discourse analysis would probably have been taken into consideration.

6.7 ICT4D in Afghanistan - three examples

After discussing some of the broader implications of ICT in development in chapter 3.2, there are three prerequisites for my approach, which I would argue are widely accepted and which I will be taking for granted:

1 MoC's ICT Policy (2003) is a good example for this, while the MoE's Education Strategy (2006) was explicitly mentioned by the MoE to be a first step towards self-determination.

- ICT can have a positive effect on the education sector, though what this 'positive effect' implies can vary
- ICT has become an intrinsic part of the global communication infrastructure, with a strong influence on social and economic development (see also Mansell & Wehn (1998))
- The majority of people have an interest in using ICT and see intrinsic benefits in them. What these (actual or assumed) benefits are, depends highly on the context of where and how ICT are used.

I am aware that these statements are not uncontested and risk following "the narrative of progress" of international development (Mosse: 2013) to some extent. These statements could, of course, also be made with no reference to the present research or the aid sector altogether, yet the fact that "the majority of the worlds people still lack access to such goods and services" (Escobar: 2012:ix) raises the question of how this lack is addressed in a context like Afghanistan. And with the 'aid industry' as the most dominant driver in that regard, questions of 'solutions', power and relations will also need to be addressed in the following chapters.

Furthermore I take the following situations as (currently) given parts of the development industry, without going too much into further detail explaining its inner workings[1], with Afghanistan currently being one of the top priority countries for large donors like USAID or the World Bank[2]:

- Several donors allocate money to be spent on ICT in the education sector[3]
- There are companies and organisations writing proposals to get their share of that money or, as Monika Krause puts in her book on humanitarian relief, "*agencies produce projects for quasi market, in which donors are the consumers*" (Krause: 2014:168)
- Once a contract is signed, the goal is to produce a project with the predefined outcome under the allocated budget.

1 for critical accounts regarding development practice see (Mosse: 2005) on Aid Policy and Practice, (Krause: 2014) on decision making at humanitarian NGOs or Mosse's collection focussing on Development Professionals (2011).

2 see for example US overseas spending in 2012 http://gbk.eads.usaidallnet.gov/data/fast-facts.html; or the World Bank spending on Afghanistan http://data.worldbank.org/country/afghanistan

3 see recent article by the World Bank blog on the "Promising uses of technology in education"

These procedures are, without a doubt, highly controversial and have been contested by practitioners and researchers from various disciplines for good reason. But I take them, for the present research, as given to shift the focus from "the global aid system" with its competing interests and interdependencies, to the individual pieces of the network that make "the project". Also, they have been experienced and observed in the present cases as more or less accurate. The following chapters will show how these procedures influence decisions and outcomes, but they also show critical aspects of ICT planning and development that go beyond the aid industry.

6.8 Setting the scene

6.8.1 First impressions

Our first nights in Kabul in 2005 my colleagues from Technical University Berlin and I spent in a small hotel near the main road of Shar-e-Naw - the New Town. I remember the whole team gathered in one of the rooms, walls and floor decorated with thick Afghan carpets, sitting on the beds, laptops on our laps and chatting on Skype. With each other. Only later did I realize that the fact that we had a working wireless internet connection and electricity (to run the router) was not something to be taken for granted there.

The hotel was placed around the corner from Chickenstreet and Flowerstreet, the main shopping area for expatriates and visitors. The improvised run down little shops with often beautifully carved wooden doors and balconies full of ancient looking treasures reminded me somehow of my recent visit to India and I was both excited to explore this place and full of premonitory disappointment that in a few years this would be organised professionally and run over by tourists and would lose what I supposed to be its 'originality'. This thinking is particularly ridiculed by two factors: first my very being there as part of 'development' efforts, one of which was making Afghanistan a safe enough place again for locals and visitors to walk around freely. The other was the fact that these shops were actually the remains of Kabul's tourism infrastructure as part of "the hippy trail" from Europe to India during the 1960s and 70s and far from being the 'original Afghan culture' I had projected onto them at first sight.

During our first night we were shocked to hear gunshots from a nearby mountain area and only a few days later an internet café some of us had been to, was attacked by a suicide bomber. These first impressions were extreme but marked a combination of excitement and fear that I later experienced in many conversations with international aid workers in Afghanistan. The inaccessibility of most of the country made the work

adventurous and potentially risking one's life seemed to give any assignment an air of significance.

6.8.2 Daily routines

One of my longer and more difficult stays in Kabul was in 2007 for three months during the winter. The temperatures were well below zero for weeks in a row and the cold never left my side, at the university, at the Ministry, in the restaurants, in my hotel room. There was a constant slight draught from windows and doors, and dripping taps and showers. I was aware how much better my conditions must have been than most of my colleagues' and I felt squeamishly German with my never ending complaints to the hotel lobby about broken sockets, no internet, the malfunctioning heating, my flooded bathroom or the broken TV. The reply was always "we will fix this in a minute". And sure enough some time later a young man would knock on my door, fail to find the problem but would reassure me my complaint would be taken seriously and he would call the engineer to come the next day and fix the problem. And, more often than not, within a few days the problem would be temporarily solved. Everything can be fixed there, even if it is just temporary. The potential to improvise is extraordinary, because no one can afford "broken". The streets on my daily 30 minutes drive from the hotel in Shar-e-Naw to Kabul University were lined with shops selling objects I would struggle to find in Europe, perhaps on Ebay if at all. Car supplies of any brand, from rusty engine parts to car key cutting pushcarts were available, the food bazaar had live chicken and 10 litre oil cans on offer, while the technology bazaar held hundreds of different types of mobile phones I had never seen before (mostly Chinese and Indian as I later found out), generators, cables and spare parts. Each area specialized in one type of bazaar, and if you were searching, like I was, for glossy paper and a blue printer cartridge to print invitations, plus 50 envelopes in the same color, you would go to the office bazaar. Most of the shops acted as if not in competition with each other, but rather complemented each other's goods to cover the widest possible range. After being sent to 10 different shops I usually found something close to what I was looking for and, as in many other occasions, I had to learn that these things take time and that making requests by phone would never deliver the same result as going in person. Trying to split up my days into time-slots with different tasks -– getting up, having a shower, eating breakfast, being picked up for work, first morning meeting with my colleagues -– quickly failed to predict Afghan reality and the countless cups of tea. Even my German Pünktlichkeit soon gave up on me. Opportunities needed to be taken, only delays exceeding 30 minutes were announced and contingency plans needed be prepared for any and every event.

Figure 6.4: The electronics bazaar (source: the author)

Fitting in

In most areas of public life in Afghanistan there are clear rules for 'male' or 'female' behaviour. In my work environment at the Ministry of Higher Education and Kabul University my colleagues' interpretation of how to behave towards me resembled what I started to call 'a third gender'. Going to lunch and dinner in male only company as I often did, would for most young Afghan women only be acceptable if her husband or another family member was present. At the same time, I would never be hugged or approached physically as it was common among men.

In the city centre of Kabul foreigners and 'Western clothing' have become a common sight. The situation is different in the provinces where (foreign) women were less commonly seen in public. My presence there caused visible confusion, especially among

younger men, which led to a feeling of insecurity on both sides, of not knowing how to behave 'appropriately'.
After a while I sought advice from my female colleagues about how to dress "Afghan" – as if they had long waited this question they laughed about the black baggy linen pants I was wearing to make sure I did not 'show too much'. *"This makes you recognizable as a foreigner at the first glance. No Afghan young women would wear this"*. It should have been quite the opposite, I learned, as young urban Afghan women show as much as they are allowed to. Certain rules had to be complied with – long sleeves, butt covered, headscarf – but combined with tight jeans and blazers, transparent scarves, high heels and make-up was acceptable. In the field of higher education, young women as superiors are still a minority, but also seem to be widely accepted. The promotion of a young female elite by international programs offered many new opportunities, although at the same time, not being married by 25 was still seen by many as a stigma. My then 23 year old colleague Nadima told me how her fiancé came for four years asking her parents for her to marry him *"but I said no. I don't love him because I have only my studies in mind, but he loves me very much"*. Being allowed by her parents to finish her studies first before agreeing to marry a promising candidate is a privilege she was aware and proud of.

Keeping out

"*You're into Computer science? You have to meet my friend Hila. Oh and this is Ramshid, a nephew of President Karzai. Can I get you a beer?*" Behind a barrier where we had to leave the car and after three checkpoint controls, two sets of concrete walls and a name-list, I was in the packed backyard of an old Kabul house somewhere in Wazir-Akbar Khan. Very few Afghan looking faces and at least 200 internationals and one was reminded of Rajak's and Stirrat's (2011) account of the "expatriate lifestyle" in ghetto-like social cocoons. Possessing and consuming alcohol is illegal in Afghanistan – at least for Afghans. For foreigners there were some exceptions made, a number of bars and restaurants sell alcohol openly with the side issue that some of them explicitly ban Afghan nationals from entering to avoid trouble with the authorities. There are expatiate guest houses and compounds that hold regular events that range from social gatherings over sports to parties, and either being well connected or owning a non-Afghan passport is usually enough to ask someone to get your name on the list at the entrance.
I was reminded of the 'Afghan Scene' booklet that is being distributed for free at restaurants, where at first sight you wonder if those images of drunken people smiling into the camera subtitled "Bruce and Clara as we all know them" were actually taken in Kabul.

There was loud music, free beer and cheap long-drinks; a crowded inflatable paddling-pool and girls in bikinis. After weeks of trying to hide any kind of femininity, and being treated in a rather gender-neutral manner, this resembles a holiday-resort party. I quickly got involved in a number of conversations: "So where are you from? And what are you doing here? Who are you working for?" which led to the discovery of mutual acquaintances and recommendations along the line of "you should talk to my friend X he does something similar with the Ministry of Y". What followed were stories of personal experiences in the country so far and shared perspectives of 'the locals' in an attitude of companionship and 'speaking openly'. We were all able to tell personal accounts of our work with ministers and army generals, how we almost got killed, what we accomplished with international money or contribute a sarcastic remark on how many millions we had seen being wasted for a ridiculous purposes. It is also these expatriate cocoons where contacts are exchanged, new alliances are formed and ideas are developed. Justice (1986) rightly observes how this companionship among the foreign aid community distances them from the local population, "most foreigners, therefore, serve as their own reference group, remaining socially and culturally apart from the people they aim to serve" (p. 41).

In the following chapter I describe, based on interviews and participant observation, different views on projects from different actors involved in three areas: Technology for the Poor, ICT Infrastructure Development and ICT Capacity Building.

CHAPTER 7

ICT for the Poor

7.1 Project initiation

7.1.1 Sonatec

I was introduced to Florian, who works for Sonatec, a European-Afghan IT company in 2007 in Kabul, by a common friend at a small garden party in the backyard of the German Cultural Institute in Kabul. The number of people working in ICT was or still seemed small and I had heard about the company from a Computer Science student at Kabul University where Sonatec was trying to recruit new staff. After Florian had joined Sonatec some years previously, the company had expanded quickly, targeting the most common problems at the time like Internet speed and localisation, but also what he calls "using IT to overcome human capacity challenges" (F. P. a : 01:00). Florian and a colleague emphasised on different occasions that Sonatec was an Afghan-foreign joint venture but at the same time he admitted that all the sophisticated technical work was done by him or outsourced and that he found it next to impossible to find qualified staff at reasonable rates in Afghanistan (ibid. [1:11:18]). At the time Sonatec had two permanent and one freelancing international staff and, depending on the projects, 10 - 20 Afghan employees. However being an Afghan IT company with salaries only slightly above the local wages Florian said it was hard to compete with international organisations.

7.1.2 Laptops for schools

The project idea evolved from a previous cooperation between Sonatec and UCon, who were implementing economic development projects and worked as a contractor for a big U.S. donor organisation (UDon). The project, thus, needed a business component

to justify involvement and funding via UCon. The laptop itself is not a commercial product, it is described by the producer as a "rugged, low-cost, low-power, connected laptop (...) [for] self-empowered learning" ((SLAP: 2014a)) designed and destined for children in developing countries. Being a learning laptop for children its purpose is first of all to help and encourage learning among school children. The official partner for school related projects in Afghanistan is the Ministry of Education (MoE) and the main project partner within the MoE was the head of the Computer Department (CDME), Hameed Daoud. Furthermore, a local mobile phone provider (AFtel) and the Ministry of Communication and Information Technology (MCIT) were involved in the project initiation, but took no leading role during the implementation.

The roll-out-plan was developed by Sonatec, UCon and the MoE, mainly based on research and statistics on primary education and economic development in Afghanistan. Primary education, at the time of the research, faced two major problems: the lack of buildings and the lack of qualified teachers. Between 2001 - 2005 the number of children attending school increased from one million to nearly five million and rose to more than eight million in 2014 (see also chapter 5.3). The laptops were described to be introduced as an 'in-between' for some years, until enough teachers would be trained (H. D. :09:39).

The laptop's operating system included, according to Florian, interactive games that were thought to help overcome the memorization practice most common in Afghan education and encourage creativity (F. P. a :17:55). The Afghan rote learning was regularly criticised, as it was from a Western perspective seen as suppressing critical and analytical thinking. The laptops' purpose was to operate independently from the quality and methodology of the schools and the teachers and, therefore, be independent from the possibly 'learning-hostile' environment it was used in. Instead it was conceptualised to be robust and complete in itself and would only need to rely on the pupils' interest and self learning abilities.

For the economic development element, which was crucial for the funding, Sonatec and UCon had developed a concept on how the laptop could help generate or increase income. One aspect was a health information package on the device, that was designed to inform the parents about hygiene practices (F. P. a :38:28). The second package were micro business training units, as Florian explained, informing the parents about micro-business they were suggested to start (ibid. [27:10]), to decrease the "number of economically unproductive people in the households" (ibid. [22:25]). Florian described their approach as a way to partially 'refund' the laptop, not directly to the donor, but because generating an increased income for families would contribute to justify its costs. The project could, therefore, be funded under an economic development scheme and

concentrate on primary education at the same time.

Within the MoE there were differing opinions about how and where technology should be used for schools. Initially, the MoE had envisioned computer labs with the laptops, but SLAP refused to supply laptops under these terms, because of their *one-to-one* policy (A. S. :14:59) that was crucial to the above described concepts of self-learning. In the end, the MoE accepted the conditions because the funding was external and not used from their 'core budget'[1] but remained discordant on the topic.

7.1.3 The Ministry of Education

I had tried to contact Hameed Daoud for several weeks and it was my first visit to the Ministry to interview him. Mr Daoud was responsible for the area of information technology within the Ministry and his office was decorated with pictures and artefacts from the laptop project. He seemed well equipped with different devices, two mobile phones on his desk, one of the small school laptops lies on a table next to another laptop, a desktop computer and a printer. Mr Daoud treated me in an extremely friendly way, he seemed very interested in what I do and happy to chat about the project to someone who is interested in the details and his perspective.

One week later I returned to interview Abdul Rahim Sharif, as an advisor to the Minister he holds a prominent position within the Ministry. I had been warned about a conflict between Sonatec and the Ministry beforehand and I had not been not sure either of them would accept my interview request, as I might be affiliated with Sonatec. But both had confirmed the interview after a mutual acquaintance had insisted I should talk with them and probably mentioned my name. Mr Sharif was rather busy, the interview was interrupted a couple of times, but he also gave detailed replies and showed no sign of impatience.

Primary education

Despite much progress in the education sector since 2001, according to Mr Sharif, very basic problems remained the most urgent task for the MoE to solve. About 40% of school age children from grade 1 to 12 still do not have access to education, most of

1 The core budget is the official government budget, consisting of an operating and a development budgets, funded by domestic revenue, multi-donor trust funds, and donors' budget support. Most donor money, however, is still spend as 'external budget' outside the government budget (World Bank: 2012)

them girls. 50% of the schools do not have proper buildings and cannot provide a safe and conducive environment. 70% of the teachers do not have the minimum standards set by the Ministry. There are not enough textbooks, and the number of pupils is still increasing. On top of that, everything depends on the funding available to the MoE. Technology is one of the priorities of the Ministry but only mentioned last in a long list of shortcomings.

> "And also the use of technology, it's very important. We have a plan for the use of technology, computer lab for schools to learn the computer. Now we have introduced that from grade 10 – 12, [...] now we think it's too late for the children to start computer in 10 – 12, so maybe the revision will introduce it earlier."

(A. S. :23:51)

Mr. Daoud is a strong supporter of the laptops for schools project and had to fight for it within the Ministry itself. He saw them as a chance to improve teaching quality within a short time. The MoE had managed to increase the number of students but not to improve the quality of teaching at the same level.

> "Introducing this machine in-between can minimise the role of teachers to some extent. Because it really takes years and years for someone to become a teacher. And with our situation, 77% or even more, they are not teacher. In some cases we have, the teacher is [graduated from] grade six, and he is teaching grade 9, 10. Imagine what he is going to teach. But somehow, I'm really upset that the high administrative leadership they're not understanding"

(H. D. :09:39)

The Ministry's view concerning the use of technology at schools seemed to be generally supportive, but the focus of the MoE was far from technology. According to Hameed Daoud, the MoE was struggling to cover expenditure on salaries and dormitories[1] from its core budget (H. D. :32:29). Technology projects would currently only be acceptably if they were paid by 'external-budget' money, as Mr Sharif explained, and donors who wanted to support them should follow the MoE's 5-year strategic plan (A. S. :19:59). Mr Sharif insisted that support of the international community is needed but only on a

1 education in Afghanistan is free and a lot of students from rural areas stay in state-run dormitories during their time of studies

financial level (A. S. :40:25). Previous cooperation and coordination of tasks between the government, the donor and the implementation partners were described by Mr Daoud as unsatisfactory. According to him, the Ministry had been, and still was, at many instances completely left out, leading to situations where two schools were built in a very short distance and none in other areas (H. D. :40:31). The procedure of international projects to pass on tasks to countless subcontractors was described as leading to unnecessarily high prices and a lack of accountability. Other than the Ministry, Mr Daoud goes on to explain, the contractors left when their work was done and questions of responsibility were often left unsolved (ibid. [43:18]).

> "So that's the area we need the international support, to build more schools, and quickly, and that will create employment in the rural area but also provide conducive learning environment for girls to attend. But then the people in the rural area will also say yes, we have a government and it's delivering, that's the school, nicely built and its education is being well and they send the kids to school every day. So every day they say we are receiving something from the government. That's how it builds the trust. Otherwise it's difficult."
>
> (A. S. :40:25)

To build trust in the government and its services was also a strong argument for investment I heard from other stakeholders[1]. At the same time, the MoE, and other ministries, had its share of corruption cases and had been accused as well of a lack of accountability, poor quality buildings or investments in 'ghost schools'[2] that never got built at all.

7.2 Project design and conceptualisation

A pilot of 5000 laptops was agreed to be distributed starting in mid 2009 over a period of 12 months, which was later extended until early 2011 due to delays. UDon provided most of the funding via UCon. Sonatec and the Ministry acted as the main implementing parties. The Ministry was to choose five provinces and nine schools for the 5000 laptops to be delivered. Those schools selected by the MoE, were to receive one laptop for each pupil in grades four to six. According to the initial one-to-one plan the children

1 The more trust people have in the government, the argument runs, the less they would be at risk to rely on the Taliban for support and join them.

2 Although I also repeatedly heard these accusations from different sources, these 'ghost schools' have not widely been confirmed, see for example World Bank South Asia Region (2014)

were supposed to keep it during those grades, after grade six they should pass it down to grade four again. The teachers responsible for those grades should also receive laptops.

Sonatec were commissioned to do the localisation of the existing operating system, consisting of language translation and selecting from the available programs those to be included. The development of additional content consisting of schoolbooks and the business package was to be done cooperatively between UCon, Sonatec and the MoE. The MoE was supposed to provide the education expertise, UCon the economic development input and Sonatec the technical skills to digitise them. Aftel were to provide connectivity to the schools and parts of the funding for laptops. SLAP committed to supply the laptops.
According to the plan Sonatec would then visit the selected schools to talk to parents and teachers, to make sure they are receptive, undertake the teacher training and the electrical wiring and also install the server and the network. Finally they would invite all stakeholders and the media for a ceremony (F. P. a :47:36). The MoE acted as the main partner towards the schools and would also take over the entire project after the implementation.

7.2.1 The laptop

The laptops have been developed by the School Laptop Project (SLAP) with the mission "to empower the world's poorest children through education" and

> "[T]o provide each child with a rugged, low-cost, low-power, connected laptop. To this end, we have designed hardware, content and software for collaborative, joyful, and self-empowered learning. With access to this type of tool, children are engaged in their own education, and learn, share, and create together. They become connected to each other, to the world and to a brighter future."
>
> (SLAP: 2014a)

According to the manufacturer each child has to get his/her own machine and keep it. The laptop had been build to resist heat, dust and humidity. It is advertised to have low power consumption, an average battery life of 3h, 256MB of RAM and 1GB of flash memory. The standard keyboard had been replaced with Dari and Pashto keys. The price at the time was around 200$ per item, not including costs for localisation, implementation and the school server.

The laptops had a standard operating system with educational software on them, translated to Dari and Pashto by Sonatec. The only additional content for the Afghan schools in the first phase of the project were PDFs of all the schoolbooks and the business material for the parents. Each new installation had to be signed with a SLAP developer key in order to be installed on the laptop, otherwise the system did not accept it. This was done to ensure the laptops would not be used for other purposes or have any other operating systems than the localised education system installed.

7.2.2 The wireless school-network

In addition to the laptops, each school also received a wireless school network. This infrastructure included a router for each classroom, so the children could connect among each other, and access a digital library with selected Dari and Pashto websites and books on a school-server. The school server was a netbook, connected to the internet and configured to update preconfigured content. Therefore the internet connection was only between the server and the WWW, avoiding the risk that the children would access inappropriate content themselves, as Florian explained (F. P. a :39:52). The risk that, for example, pictures of girls or women could end up on the laptops was repeatedly described by him as a threat that could risk the project's local acceptance.

Figure 7.1: Server-room at School One with a car battery, an inverter and a multi-socket connected to them. (source: the author)

7.3 Project implementation

For the first distribution in 2009, 5000 laptops had been promised as a donation but only 3800 were delivered, 1200 laptops never arrived according to the MoE (H. D. :26:58), leading to tensions with SLAP. Selecting the schools took the MoE longer than envisioned and started to delay the project and frustrate Sonatec early on (F. P. a :46:36). The cooperative content development between Sonatec and the MoE caused conflicts, according to Florian, over questions who was responsible for which

aspects and how the financial resources would be distributed among them, which further delayed the deployment (ibid. [41:18]). These unplanned delays and reassignments of resources would foreseeable cause serious financial problems for a small IT company like Sonatec, whose staff were mostly hired on project basis. The MoE insisted it needed those resources to build its own capacity, in particular regarding technical skills.

Figure 7.2: First laptop distribution in Kabul in 2009 with stakeholders from all groups attending the ceremony (source: the author)

Despite the already mentioned delays and tensions, Hameed Daoud described the cooperation between the stakeholders as positive and as a joint effort. All partners contributed and in return got what they were looking for within the project, whether it was publicity as in the case of AFtel or gaining experience as in the case of the MoE (H. D. :29:08). The issue of capacity building and improving technical skills to be able to continue similar work independently was repeatedly mention by Hameed as one of the critical factors.

The delay of the project had left less time for the implementation and by the time Sonatec received some feedback from the schools, most of the project resources had already been spent and the assigned time for the pilot was almost over. The parents and teachers had been asked for their support but not been otherwise involved in the planning. Asked when he first got in touch Florian explains:

> "[A]fter the contract was signed. And the MoE said this is the school you go to. So go to [that province], go to the school, sit down with them, that's

> were the first picture of me with a bunch of old bearded guys turned up, with a laptop (sounds amused). And all, you know, seemed rosy. But of course it's pretty easy to be rosy and optimistic when you can basically say 'hey, I'm gonna give you 400 free laptops'. You're not gonna get many people go *well you know, that's very nice of you, but they're not really gonna solve my problems. And here's the answer to my problems.*"
>
> (F. P. a :32:08)

During these first visits, the project seemed broadly accepted among teachers and parents, according to Florian, and Sonatec had felt they could address any issues that came up appropriately. Some of the older teachers had been critical at the beginning and a few weeks after the first ceremonies, Florian explained, there had been a crises of confidence among some teachers and they felt they had to take initiative and react.

> "We mounted a rescue mission, ran to [the province], did extra teacher training, appointed a few of them as being like lead trainers, brought a few of them for, you know, motivational boost training to Kabul. Usual stuff. [...] Non of [that] was in the plan. Non of it. The plan was a big fat lot of papers to make the Ministry happy."
>
> (ibid. [34:45])

The precondition had been, that the teachers needed to be supportive of the project, which was to be achieved by motivating them to use the laptop. But, as Florian described, Sonatec soon realised they had overestimated people's capacity to take care of the project, and they felt the teachers did not really seem to have the motivation. In his view, Sonatec would have needed to provide much stronger supervision than they had planned for the project. Initially the teachers were seen as sole problem, their "lack of capacity" to understand and take care of the project, rather than the device and its conception were questioned. Later, however, Florian explained, he realised that the teachers would or could not adopt the role that had been anticipated for them. The laptop did not offer any solution to the problems the teachers or schools were struggling with. Big class-sizes and short school-time made it difficult to work through the schoolbooks and they had no additional capacity to work through the laptop as well (F. P. a :50:41).

> "Around that time I started to (pause) I guess this illusion, [...] that we're gonna take these laptops and change the world, was falling down. Was really falling down. I thought ok, we can get to this illusion if I get the teachers

> buy-in, get some extra relevant local stuff on there, then we'll achieve it. With room to spare. No."
>
> (ibid. [55:50])

Florian realised it was not the content the schools were missing but most of all time and feedback. So he started researching online, he explained, and found in some UNESCO report what seemed to be the problem:

> "You have to have some sort of defined curriculum, you have to have the time to learn that curriculum, you have to have feedback on learning outcomes, if you are missing any of these - it's not effective education. This doesn't seem like rocket science." (for the full quote see appendix A.3)
>
> (ibid. [57:24])

When he asked the teachers, they confirmed his assumption and Florian started looking for a way to address this problem with the help of the laptops. The original laptop software already included interactive learning-games that were popular among the children and Florian got the idea that if the schoolbooks were turned into interactive content in a similar way, the pupils could use them for self-training and the teachers could finish the books faster. So he decided the content needed to be reworked to become relevant to the teachers but in a way that could easily be reproduced and would not need software developers.

> "Say, ok, we have got to be able to McDonaldise this, we can make this like Burgers."
>
> (F. P. a :57:24)

Within the remaining three months Florian developed a tool that would allow creating games by simply adding content, without any technical knowledge required. This was necessary in his view to make the process easily reproducible for either his own staff or the MoE that did not have the necessary technical experience to develop other solutions. This tool was then used to turn the schoolbooks into interactive games, which replaced the static PDFs on the school laptop. Most of the resources had at that point already been spent and the development of the interactive books was mostly covered by Sonatec itself. But Florian described it as an investment and solution for future projects (ibid. [1:05:03]).

7.3.1 Technical skills

Skilled IT staff are difficult to find in Afghanistan and according to Mr Sharif certainly not at an average public service salary, so IT professionals were mostly hired as project staff with a project salary (A. S. :34:19). Mr Sharif did not see the need to consult international contractors, technical expertise was in his view locally available, there had been a lot of capacity building at the MoE, the only problem he saw was making the resources available for the Ministry (ibid [39:10]). This situation, however, that most technical staff were only there for a limited time was seen as much more critical by Mr Daoud, who considered them as the backbone of the Ministry. His department was responsible for all technical areas in the MoE, from basic support, to project implementation and project proposal development. Even the university graduates, he said, were not up to these tasks (H. D. :36:23). All technical staff were paid through project money and thus all IT services depended at the time on external funding.
Once the international organisations left, Hameed remarked, salaries might go back to normal, but the MoE will also have less resources available. Therefore, he explained, he tried to keep the numbers low and at the same time train the existing employees to become able for the tasks (ibid. [52:12]). But he admitted that it was difficult to prepare for that moment, while funding was still plenty. No one was trying to think ahead, he worried, and consider the consequences of current investments that would need to be maintained in the future (ibid. [53:17])

Sonatec was less optimistic regarding the MoE's capability to maintain the laptop project and part of their frustration, as Florian explained, resulted from the Ministry's inability to technically support the project, while at the same time not acknowledging the fact that they needed external expertise. According to Florian, they were not even able to distribute the remaining laptops they still had in stock without external help. Sonatec showed them basic maintenance tasks, he said, but it would take years to train the CDME for the necessary technical expertise. And Sonatec's contract did not include such training for the Ministry (F. P. a :1:14:38).

7.4 Project operation

7.4.1 The schools

To evaluate the experiences at the schools during the last laptop project I visited three schools in different provinces that received the laptop between one and two years before my visit. School One is a 30 minutes drive outside Kabul, I accompanied Florian, his

colleague Waheed and and two employees from the MoE for the official project handover. Their attitude towards us – I was seen as part of Sonatec – was reserved. The schools winter-break was about to end the following week and Sonatec needed to test all routers and the server to make sure everything worked when they hand over. As many times before, I was surprised Florian had to go and do these tests and configurations himself instead of sending one of his employees. We were led around, it was still very cold as the school has no heating facilities. The classrooms were very simple with old wooden chairs and tables, about half the newly installed sockets were already broken, which did not seem to worry the principal. He explained that the electricity at the school only worked for some hours a day and the school did not rely on electricity. He added that some teachers openly disliked the laptop and did not want the pupils to use it at school. He added, they felt they did not get enough support to know how to integrate the devices. Another problem he reported was the fact that not all teachers had received a laptop and training, but only those of grades four to six. In the new term the teachers had gotten different classes and now some of the teachers with no laptop and no training taught in a class with laptops and had thus banned the devices from class entirely.

Figure 7.3: Class-room in school One (source: the author)

It took another half hour to configure the routers and check the server – a re-purposed netbook – to demonstrate the system's functionality for the handover. I had the impression none of those present believed this school network would ever be used by the students but each played their part in this final ceremony of the project. The tech-company had delivered a working system, the school had agreed to cooperate and shown gratitude and the Ministry took over responsibility, made sure the systems were in place and supported the school. We left after about one hour with the impression that there was little interest to turn the project around. It was the first laptop school I

got to see and it seemed to confirm my worst expectations[1].

School Two is in Kabul, it is a girls school, but in the lower grades there are also some mixed classes. Florian and I visited the school unannounced one morning but were warmly welcomed by the principal, seated in his office and soon teachers and students lined up with broken laptops and chargers or questions about the software. We talked to the principal and some teachers and were invited to walk through the laptop classes, where on average 2/3 of the children carried their laptops with them. The school had received the laptops in 2009, among the first distribution.

To visit School Three I had to travel several hours by car, which turned out difficult to organise. It was not primarily my own safety that was in the way but the attention I might attract if the car was stopped. Not only Taliban were a risk in that case, but I would be a promising victim for professional kidnappers and there had been several cases of kidnapping where the drivers had been shot. On May 3rd after several rejections and a delay[2] I finally had a seat in a car of the Sheik Mohammad Foundation (SMF)[3], promising I would wear a hijab, cover myself entirely and not speak if we are stopped.

Abdul-Aziz, who works for SMF and supervises various schools and educational projects in the region, accompanied me to the school. The SMF had not been involved in the laptop project, but they were clearly committed to support the school in making best use of them.
The lack of space was obvious when we entered the school. All classrooms were packed with children and several provisional tents were set up in the yard, equally crowded. The school had recently introduced morning and afternoon shifts and yet there was not enough capacity to cover all pupils, as the principal Mr Fahim told me (M. F. :47:56). The previous year 50 students had graduated from grade nine, while 200 students had registered for grade one, but the school did not get more money to hire additional teachers. When they asked the district for advice, the principal explained, they were

1 Much to my regret due to the tensions between Sonatec and the Ministry I had not been able not visit the school again later, during its regular operation. I decided to mention this brief visit as it suggested what some of the shortcomings also observed in other schools could lead to.

2 On May 2nd Osama Bin Laden had been killed in neighbouring Pakistan and the trip was put on hold; his death seemed, however, to provoke very few reactions and one day later we could start our journey.

3 SMF could at the time still move much more freely, they were primarily working in Muslim countries and often associated with Islam and they recruited most of their staff from the region which clearly distinguished them from most "Western" organisations and led to a much higher acceptance among the population.

told to send them away to other schools (M. F. :01:23:05). The laptop made School Three even more attractive and became an additional incentive to the already growing number of school registrations.

7.4.2 Inventory

At school Three around 10% of the laptops were broken after one year, at school Two 25% were reported broken after two years. A considerable number of chargers is broken, so are a few batteries. The battery life is reported to have gone down from 3 to about 1 1/2 hours. Several laptops are said to have a screen problem. During the visits it was observed and reported that the laptops had different or incomplete versions of the software, probably because different or faulty versions of the image were distributed (School Two).

While the number of working devices had decreased, the number of students had increased considerably at both schools. At the initial distribution only teachers of grades four to six had received laptops and training, with the new school year allocation of grades changed, while the teachers kept the laptops. At School Two this led to a mix of classes where some of the teachers and some of the students had laptops and others did not. Mr Fahim from School Three explained, they had decided independently to distribute the laptops after the winter break only to grades five and six to have at least complete coverage in those grades (M. F. :00:14:29). Due to the restricted software, however, this was only possible during the winter break when someone from the Ministry had come for the updates to be installed on all devices. Otherwise the laptops did not contain the respective books. Yet more pupils joined those grades during the school year leading again to exclusions.

The school-server had not been in use in School Two and Three and no one had been able tell me whether it still existed or where I could find it. Most of the routers in the classrooms of School Three were unplugged or the cables were ripped off; it is possible that some worked but this could not be validated.

During our visit at School Two Florian explained the principal that chargers, to replace the broken ones, could be purchased on the electronics bazaar in Kabul. No one had been aware of this easy fix. Other than for mobile phones or commercial notebooks, there were no repair shops for school laptops where parents or teachers could have gone to ask. The parents were prepared to spend money for the laptop, had they known where to go. At School Three the parents had readily agreed to take financial responsibility

for the laptop, as Mr Fahim explained, one family already paid a small regular fee for a loss (M. F. :00:27:48).

During the winter break the laptops were all collected and stored because the school was worried they might go missing, according to the principal of School Three. To reach family members, in particular parents and girls, and to encourage the pupils to study during the four months winter break, as was initially intended, was limited by this precaution. The break was also said to be used to install the new software, though this would usually be done by mass-installation within a few days, as Florian explained. The installation was done by staff from the MoE, the teachers themselves or the engineer. On female teacher, who did not even have a laptop herself, showed me a USB stick and said she also knew how to install it, but there had been a problem with the software the MoE copied her on the stick, some of the books were missing (School Two).

7.4.3 Laptops at schools

At two out of the three schools the teachers seemed supportive towards the project, even some of those teachers who received neither laptop nor training had made an effort to support its use as well as they could. But with a salary of around $120, most teachers could not afford a personal laptop or even regular visits to internet cafés. Both schools reported they repeatedly requested support from the MoE, for more training, for repairs and for more laptops. The MoE had promised to come back but nothing had happened (T. 3. :00:05:56).

The schools worked in shifts, Mr Fahim explained, to cover all classes and each class was about 35 minutes (M. F. :00:47:56). Integrating the laptop would take additional time which was impossible with the already extremely tight schedule (T. 3. :00:14:16). The laptop demonstrated no obvious advantage for their daily class-routines, therefore, instead of supporting them, the laptop placed an additional burden on the teachers. One regular remark by the teachers was, that they would prefer to have projectors to connect to the laptop and show things during class, but the laptop had no video output, and the schools could also not afford projectors. Those who used the laptop criticised it also as too slow and said that they had to delete some games in order to store files, because of the low storage capacity. None of the teachers could report any positive influence the laptop had for their teaching, but this did not seem to undermine their belief in the importance of digital technology. Despite the obvious lack of evidence, the narrative of the power of technology persisted.

While at Kabul based School Two the teachers could still be expected to have some access to computers, the situation in rural areas is quite different. At School Three the principal had decided to hire an "engineer" to help with technical problems, the updates and to teach the children how to work with the laptop. The engineer was paid separately by the Provincial Education Directorate, but his contract only lasted for six months. This was, however, only a temporary solution. What the school needs, Mr Fahim explains, is qualified teachers with access to computer skills.

The students at both schools were reported to understand the computer very well and to be happy to work with it. Since they contain the interactive schoolbooks, however, some teachers complained that the students played the test-games instead of following the class (School Two). The children I met in class eagerly showed me their favourite applications, digitally drawn pictures and took photos with the built-in camera. However, not all children used all programs as figure 7.4 suggests.

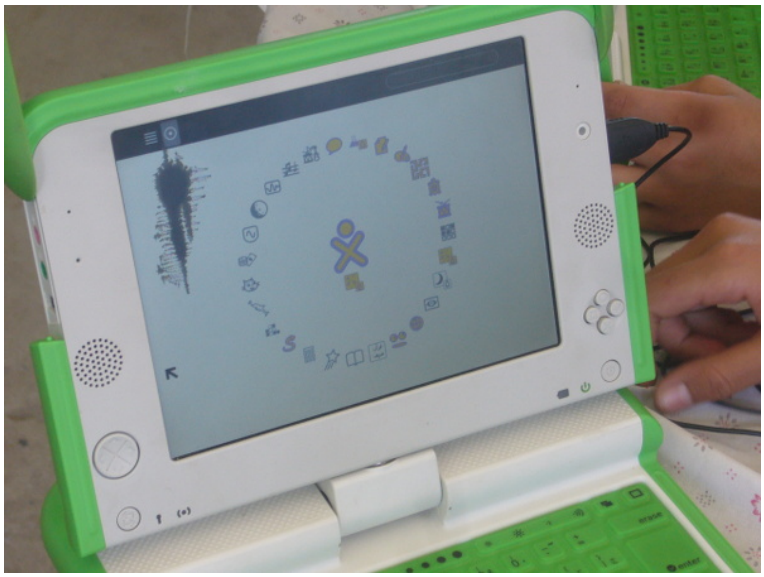

Figure 7.4: One of the laptops in School 3 (source: the author)

Figure 7.4 demonstrates three interesting facts:

- The screen shows an LCD leak, a typical problem that was observed in numerous cases, in some, a critical part or even the entire screen was black and no longer usable. Replacing the display required spare parts that were not easily available and the laptop has no video output for an alternative screen.
- Personal appropriation: there is a mouse attached to the device, which was not part of the delivery. Thus the parents (most likely) had invested some money to improve their child's ability to work properly. Other examples, as the problem of

broken chargers, showed that essential knowledge about the machine was lacking.

- Educational appropriation: the start-screen shows which applications had been used by the child[1], in this case the boy had not started the majority of the applications several weeks after he had received the laptop back after the winter break. This suggests that only a few of the programs were used at school.

At School Three the children also reported that they used the laptop at home and that their parents were interested in the programs. There had been no additional resources for promoting these programs to the parents. Florian had only done a sample questioning at one of the schools which had suggested that about two out of ten parents had used them (F. P. a :27:54). Though initially a critical factor for funding, the impact of the economic development package had never been assessed. The teachers at School Three also criticised that the laptops were distributed, but no evaluation of the situation at the schools took place (T. 3. :00:56:33).

7.5 Consequences

The funding and cooperation had officially been over at the time the interviews at the MoE took place and there was no other entity currently supporting the project, Hameed explained. He felt they were now able to run and maintain the project independently, as had been intended.

> "[L]uckily from the last one year now we have taken the initiation ourselves and we have developed the necessary capacity and Ministry is taking the full ownership and we are doing it ourselves. That's a very good and positive point. This project can be maintained easily."
>
> (H. D. :20:31)

Mr Daoud described the projects as mostly successful, and saw the schools having responsibility now to make proper use of the laptops, which he attested most schools did (H. D. :14:04). At the same time, however, both interview partners at the MoE mentioned that they never saw the project as a long-term self-sustaining intervention and, without continued external funding, it was expected to come to a halt soon. One

1 Florian gave me an introduction to the device and explained that the activities are coloured if you have used them before, the ones that you have not used are grey. This way I could see if the kids had at least once tried all programs. Whether this is a general function in the operating system or whether he configured them that way was not clear.

of the most critical problems was seen in the still rising numbers of children every year, also described by the schools. The other was the limited life-time of the laptops and the increasing number of damaged devices they could not repair (ibid. [1:02:51]). Mr Daoud mentioned that SLAP had a meeting with president Hamid Karzai and the commander of the International Security Assistance Force. In terms of funding, he explained, compared to military expenses a country-wide laptop deployment did not appear that inconceivable (H. D. :14:55). Mr Sharif, however, pointed out that even if a country-wide implementation and deployment of laptops would be covered externally, the MoE would not be to able afford the operating costs (A. S. :18:22).

At that time, Hameed Daoud had no support within the MoE to extend the laptop project and little influence on higher rank officials. He strongly identified with it, but it was also clear that the producer's narratives he adopted to explain the laptops' importance, were not easily transferable into the Afghan context. And he understood the resistance within the MoE.

> "They will say that, come on, we don't have a building, we don't have chairs to sit, and you are coming with this luxurious computers? But, I totally disagree with them. Because as [...] the founder of these laptops, he said something very good and it really touched me. He said that these computers are like someone who needs food, you cannot just say that no, food is not important for you. These computers are something like food." (for the full quote see appendix A.4)
>
> (H. D. :11:10)

He emphasised the laptop project would need scientific evidence on its impact to convince donors to further invest, but SLAP could not provide any and no one seemed to be interested in funding impact analyses (H. D. :18:43).
Three aspects caused tensions that made a continuation of the laptop project among the same group of stakeholders unlikely. First of all the pilot had done little to change the MoE's official view to prioritise buildings, enrolment of girls and teacher training (A. S. :40:25) and they seemed likely not to support the laptop project any further. Secondly, an ongoing frustration with external contractors that were seen as expensive and unaccountable, increased the tendency within the Ministry to claim more responsibility and funding to commission local contractors or build up their own capacity. Finally Sonatec which had done most of the work in developing and initiating the first phase, was not included for the follow-up proposal as it was seen as a conflict of interest. In the end, CDME together with a different group of stakeholders, submitted a proposal

to a potential donor that concentrated on capacity building and the maintenance of the existing project, but it was rejected.

In Florian's view, the surplus in funding opportunities had led to a mentality among the local stakeholders to take the money for granted without seeing the need to develop meaningful projects. And, as he intended to take a different approach, Sonatec also started seeking partnerships outside the MoE for a new laptop-project.

> "Spending this much on just a few thousand kids doesn't make any sense - and it doesn't. Unless it's part of a wider pilot validation, research and all the rest of it. I don't think that's something they really understand. Not to be patronising, I just honestly don't think they see it that way. So in the sense right now, [Sonatec] and the Ministry are in competition for the same funds to do the same thing. So [Sonatec] happens to be the entity that can actually do it and the Ministry happens to be the government body in control of that subject."

(F. P. a :1:22:59)

Sonatec managed to secure funding for another small pilot at School Four in one of the insecure areas. Through military funding and, as he explained it, with *building security and trust among the population* instead of education as the primary goal, they could avoid direct involvement of the MoE, as Florian described (F. P. a :1:30:03). And the military, he continued, would also be willing to spend considerable amounts on larger distributions of the laptop if they could show at School Four that the device had a positive effect in on stability[1] (ibid. [1:44:15]).

7.5.1 Lessons Learned

Hameed Daoud saw little need for changes from their side, most suggestions from his side depended on ongoing or extended external funding. The server solution with off-line content did not prove to be working and for future projects, Mr Daoud suggested to provide internet access to the pupils directly, funded by AFtel or the MCIT. There would have to be some filtering he added, but the children also needed a bit of freedom (H. D. :0:23:53).

1 One of the calculations Florian explained to me was the following: considering the estimated $250 million the US spend on military expenses in Afghanistan in 2013 every day (National Priorities Project: 2013), giving tablets, smart-phones or laptops to all eight million pupils that are according to UNICEF currently in school UNICEF (2013) would at a price of $330 per device including training, cost $2,4 billion. An amount equivalent to 10 days of military expenses.

While inappropriate content, downloaded from the internet, seemed less of a concern to Mr Daoud, he saw the need to develop more localised and culturally embedded content for the laptop to make it a success. Most of its applications he said, were built for Western kids, while in his view Afghan children thought differently. The books and interactive content developed by Sonatec were just a start as he said, which he intended to continue with his own team (H. D. :0:19:23). The localised interactive books would then also show the teachers when they made a mistake, he continued, and they could use it themselves to prepare for the lectures.

> "That way the teacher will understand it, he is not damn teaching well, because as soon as he teaches, if he performs the quiz, you will see that non of the kids can really perform the quiz. You realise that there is some problem, either with his teaching method or he doesn't know how to teach. So that way he can improve himself."
>
> (H. D. :21:09)

The project was, according to Mr Sharif, too technology centred and a country-wide deployment was not seen as acceptable under the current terms. The content development had been done only partly and not with sufficient quality and expertise.

> "[T]he Ministry, initially, when we had discussion with them their objective was injecting technology, computer into the education system. Without looking into how schools can make best use of technology. [...] So for any computer technology to be massively employed in schools, we need to invest in developing a digital curriculum. Otherwise it would be just a computer for computer literacy, not for education."
>
> (A. S. :09:54)

Mr Sharif agreed that ICT was important, but the laptop project was the wrong approach in his eyes. He saw no longer the need to use special hardware, the prices of computer had gone down and they could buy much better quality for the same price locally (ibid. [27:35]). Yet, though Mr Sharif repeatedly acknowledged the relevance of ICT, he emphasised that building PC labs as important as it is, was not on top of the Ministry's priority list. First they needed to build schools (ibid. [31:08]).

Sonatec on the other hand, looking back two years later, identified several issues that went wrong, but Florian also added that there were no guidelines they could have followed.

> "There was very much learning as we were going. I mean remember, even to date, there is no textbook implementation where people will say *'this is how you do one-to-one laptop program, everybody watch and follow'*. [...] And actually, we took it very much like bite it off as you can chew it. You're first issue is gonna be convincing the teachers. Cause if you don't have the teacher support, you are just doing everything for nothing."
>
> (F. P. a :18:54)

In retrospect, he explained, they could learn from their experience, but he also admitted that there were some problems with the content development and teacher training on their side. He acknowledged he had not only overestimated the Ministry's technical capacity but also of his own staff. He had expected the creation of training materials would be an easy task, but his staff had problems with it. So he decided to develop a clear step-by-step manual for them, how to create teacher training material. Some of his employees, he added, saw this as a threat to their jobs, because this manual meant anyone could follow it. But in his view this was the only way to assure consistent quality of the teacher training (ibid. [48:21]).
For future projects, Florian said, they were now willing to change some things, like integrating the parents and teachers in the process. The first phase of the laptop project, as described above, had been centred around translating the operating system and offering additional educational content on the school server. After Sonatec had identified the missing time-per-class as the central problem, the interactive books came for them into focus as a solution. They had never asked the teachers in advance, he admitted, what their biggest problems were. It should have been Sonatec's role, as he saw it in retrospect, to identify the problems and offer them the appropriate solution. "So we didn't really do our like market analysis or homework. We were all a bit like carried away [...]" (F. P. b :1:19).

One result of the missing time, Florian described, was the lack of feedback the children received from their teachers and in his view the laptop could help overcome this problem. Together with rote learning[1], which, Florian mentioned, was still dominant in Afghan education, the way teachers tested and evaluated the pupils was in his eyes a serious problem to education.

> "There is no standardised testing of any form in Afghanistan. One of the things which is really messed up right now is that basically each teacher writes their own test. No kid is objectively assessed. *You're the first position*

1 A learning technique based on repetition

> *holder, the second position holder, the whatever.* So even if the kids are almost all the same, there's like ten marks between them, like A's and B's, you have one kid saying *daddy I'm the greatest* and the other kid's like *I suck, I must be stupid.* For no reason. [...] even in high-school. The first standardised test anybody in the state Afghan education system will see is the concour[1] exam."
>
> (ibid. [1:37:10])

Though the teachers' formal education was described as insufficient by all stakeholders, even by the teachers themselves, a change of teaching methodologies or how to use the laptop for didactic reasons had not been discussed with the MoE or the teachers. The lack of a standardised measurement system that would allow the students to judge their own achievements over the school year, as is common in most Western education systems, was assumed to be the result of three things: short class time; an outdated education system; and the fear of the teachers that standardised testing would prove their low teaching quality. The laptop was seen by Sonatec and Hameed Daoud as a workaround to all three.

Despite the conflict with the MoE and a number of negative experiences during this first pilot, Florian still said he believed the laptop could in the current situation save a generation. To train the minimum number of teacher necessary, he went on to explain, would take no less than 5 - 10 years and with the laptop they could have quality education instantly and also gain control over what was being taught in the provinces, which was, according to him, currently not always the case. The laptops could reach, in his view, the girls at home who currently did not attend school because of the lack of female teachers. A countrywide implementation, as Florian saw it, could tackle all these problems, but it would need to be done now, while Afghanistan still mattered and the funding was still available, and he rather saw the military as a promising partner, not the Afghan government (ibid. [1:38:52]).

How such a digital school system would be built up, supported and maintained, however, did not seem to have been discussed by Sonatec and the CDME. Equally, the question how such a system could first be introduced in an instant and after five years simply be removed from the schools is not posed.

1 University entrance exam

7.6 Project succession

7.6.1 School Four

While a cooperation with the MoE was described by Sonatec as problematic and at best would be avoided, regional cooperation with Provincial Education Directorates (PED) was possible without direct confrontation with the MoE or dependence on the core-budget. School Four was one of the schools selected for the second phase of the project, funded by the US military and located in one of the so-called insecure provinces with persistent Taliban presence and influence, the main reasons why few Afghan and even fewer international NGOs were active there. This situation made funding via the military possible, but there was also a general interest in finding solutions to support these insecure provinces, without putting aid professionals in danger. We could only travel there from Kabul by Helicopter, as the roads were not considered safe and we stayed as guests at a military camp during our visit. As I was hired by the project as monitoring and evaluation officer, I could conduct interviews with teachers, parents and pupils.

We left the camp the morning after we arrived to meet with the education director and the school principal in the neighbouring governors compound. Our interpreter Samie embraced both men like close family members and to my surprise first the education director Dr. Sangin Zadran and after him the principal took my hand to welcome us. Samie was not a professional interpreter but emigrated with his family to the US where he was raised trilingually in Dari, Pashto and English. He clearly struggled with some of the translations he had to master.

Compared to other places, Mr Zandran described, the education level in this province was very low. In other provinces education was seen as a means to get a better future, whereas here the security situation and a general distrust of and reluctance to develop education led to the current low literacy level. Mr Zandran's replies often seemed to represent the inner conflict between Taliban, the government and the international forces, all exerting pressure on the community and his resistance to take sides. Unfortunately some of the nuances of his thoughts most likely got lost in translation.
Mr Zadran said the laptop project was his first education project with technology involvement in Afghanistan and the first one he had heard about in this province. He was sure, he added, the schools were excited about technology, but he was also worried that people were not aware what a computer can be used for. The risk of people using computers in a *wrong way*, was a recurring factor he mentioned during the interview.

The majority of people had no computers in their homes because there was no electricity and generator fuel was expensive, he explained, but some visited friends in the office to use a computer, download songs and check their emails, and some also had mobile internet access (S. Z. :00:24:04).
Because computers often are associated with Western culture, entertainment and inappropriate content, the laptop was introduced here by Sonatec as "the electronic book". There was also no internet access planned to avoid any risk of unwanted content being spread through the laptop. As an electronic book it was hoped, the image would not be that of a computer but of a technical learning tool.

Despite his critical comments about computer use, Mr Zandran also emphasised his support for computer technology, especially in his current situation. When he could not move around freely, he could still communicate and send files without travelling. When he first heard about the laptops for schools project, he said, he was hoping to get the project to their province as well. During the course of the interview, details of the conflicting situation he found himself and the province in, became clear. He criticised the fact that the government acted ineffectively and intransparently and no one knew where all the money had gone (ibid. [53:25]). He also accused the government of cooperating with uneducated people locally, who might belong to the elders and be well respected but could hardly write their names (S. Z. :42:39). Simultaneously Western influenced projects like some of the TV stations, promoted in his view, inappropriate content and drove religious people to the Taliban (ibid. [59:24]).

He was sure, however, if projects would be done with more respect towards Islam, they would not be seen as enemies and get into trouble with the Taliban. He then carefully elaborated how they had to find a way to get along with the Taliban. The Taliban had their own education people working in the province, while Mr Zadran and his staff work for the government. He said it was dangerous work, not only for him but for the Taliban education people as well, because those working for the Taliban were arrested if they were caught in public. And not only them, he continued, but also teachers who were suspected to work with the Taliban were arrested by the coalition forces and these arrests, in his opinion, only worsened the situation.

> " If we don't arrest these people so we will be able to coordinate each other, so we will be working, so the education will be getting more day by day. If you are going to catch these people, if you are going to arrest them so the next people, they have a lot of people, they are gonna come, they are gonna close all the schools."

(S. Z. :01:07:37)

There seemed to be a need for shifting identity between *Taliban* or simply a religious person, depending on the threat or support scenario. Most people seemed to care for their children's education, but with religion as a central part of it. Mr Zadran gave an example how they managed to deal with these conflicts between government and the local community: the Taliban had complained about inappropriate content in one of the schoolbooks. The teachers, he explained, presented the Taliban with the choice: if they did not want to accept the books, they would need to provide new ones. This, he added laughing, they refused, so they accepted the books (for the full quote see appendix A.2). When new books had been introduced, he went on, they had given them to the elders to show to the Taliban, to prove that no inappropriate content was in the books, and as a result no changes had been requested. If they involved the Taliban, he was sure, they in turn would not start closing the schools unannounced (ibid. [01:05:44]).

Parents and Teachers

In the following days we met the teachers, pupils and the parents at the neighbouring governor's meeting hall. We had originally envisaged visiting the school, but we would have needed a military escort, we would all have been obliged to wear helmets and body-armour and decided such an appearance would give a more frighting than likeable impression to the children. Therefore 450 children together with the teachers took the 3km walk to the compound to participate in the the baseline test and (at least some) to be interviewed by me. Samie was again translating all conversations. Florian started each group-interview with a short introduction and presentation of the electronic book and answered questions about the project.
Though the groups were introduced as 'the teachers' and 'the parents' and 'the pupils' we knew in advance that all participants would be male. The atmosphere during the interviews was first slightly tense but then friendly, relaxed and respectful; the fact that the interview was led by a female seemed completely accepted and not to limit the discussion. The tendency to give a very positive picture of the school was obvious during all interviews.

One of main issues raised during the group interviews was the increasing number of students and the lack of buildings, as had also been described at the MoE. The school had been promised some tents that they were urgently waiting for. One parent remarked that there were up to 700 students in grades four to six. Florian replied that the official number was 410 and there were 450 electronic books, but the parents insisted

that the numbers would go up because some other schools had to close due to a lack of teachers and buildings and those students would register at School Four. In particular when they heard about the electronic book, another father added, there would be even more interest. They were worried this would cause trouble between those students who received a laptop and those who did not. Florian assured them that they would not risk a fight, if there were not enough electronic books, they would have to reduce one of the grades (PG1 :01:15:24).

The parents were also worried about who was in charge, how to keep the devices safe and what to do if they were stolen or broken. Florian explained that from their experience in other provinces they knew that they could easily be repaired and that somebody would be trained to fix them. This remark surprised me, as the repair service that the MoE was supposed to offer had never been realised. One of the lessons learned mentioned earlier by Florian, however, had been to introduce repair trainings to local mobile-phone repair services. The details were yet to be decided. The parents suggested to involve the teachers in the distribution as the students respected them and would be more careful if the teachers were involved. They also assured that both parents and teachers, would make sure the children treated their electronic book with the necessary care (PG1 :01:30:43).
The parents reported that the security situation had improved considerably; before they had been afraid of sending their children to school, now the boys could walk the 3km to the school in groups of 20 or 30. The number of first graders at the school was mentioned to have doubled and the fact that there were computers[1] at school, that they had a computer instructor, and that the school had chairs and desks, were all mentioned as positive change.

> "Most of the students, their parents are farmers, they have been working really hard, they are [repairing] holes in the [roads] and stuff, but they never say to their children you have to work with me or help me out. They always tell them to go to school, do your job, work hard to get more educated. This is more important for us." (The quote is a summary by the interpreter.)
>
> (PG1 :01:49:59)

Though the situation was generally reported as having improved, most of the girls could still only get home schooling in groups of 20 - 30 up to the sixth grade (ibid.

1 There were some Desktop computers for the higher grades, but they were reported to be too few and in rather bad condition. This showed, however, that computers were by no means negatively connotated at the school.

[02:22:21]). This learning environment had not been evaluated for distribution within the laptop project, though the support of girls and women was one of the high priorities of both the MoE and the donors. The only option that had been considered was that the boys who received a laptop at school, would share it at home with their family.

The most pressing problem, however, was said to be the arrests of teachers by the coalition forces. More than 40 teachers had been arrested, the parents explained, causing not only personal problems for their families but also worsening the already difficult situation at the schools, with too few and poorly trained teachers (PG1 :02:04:51). A teacher training centre that had opened only a few months earlier had to be closed because its director had been arrested. One of the teachers described how he experienced the current situation.

> "I have the pressure from both sides. From the government and from the Taliban. Especially the teachers. Those teachers wearing nice cloths, having no beards and so on they are being forced, arrested and given hard time by the Taliban. If you have a long beard, turbans and the like you are getting a hard time by the government. And most of the teachers are still being arrested, maybe they are in Bagram jail, they are in Pul-e-Charkhi jail, somewhere, so nobody knows where they are."
>
> (TG1 :00:08:31)

The security situation was perceived by the teachers as good and they attested to a lot of positive changes, yet they were afraid of these unpredictable arrests. They could easily get a better paid job with an NGO or in an office, they said, but they believed in education and wanted to be teachers to help their people.
The lectures and schedules were described by the teachers as similar to the other schools, with big classes and too little time to cover the books (ibid. [00:27:24]). They felt their job was appreciated, but the government only paid them 3000 Afs per month (less than 40€) which was not enough to support their families and even this salary often came with several months delay (TG1 :00:21:16). The question whether this electronic book would support them in their teaching led to a discussion among the teachers. There were still several questions unsolved like the number of laptops and the exact grades.
One of the teachers expressed his doubts that the project was really going to happen, another one asked to put someone in charge to take care in the long run. Previous negative experiences, they explained, taught them how these supposed donations often brought little actual improvements (TG1 :00:43:07).

> "You say for one year my company is taking care of everything, have someone in school and so on. I'm saying after one year, what will happen? Maybe you can give it to some other NGOs? Because we are really worried about these things for the future, it's not just for one year."
>
> (TG1 :49:06)

Florian assured them that the teachers and additional staff would be trained in advance, and that the laptop could be repaired easily, *"like a Toyota car"* (ibid. [00:49:54]). Most teachers reported they had used computers at internet cafés or at the premises of the provincial education director. They confirmed that computers were seen as important and should be taught more in school. However, apart from the cost of the hardware, there was also the lack of electricity which made it impossible for the school to afford. But more than a PC lab, they said, they would have liked to have a science lab to show the children experiments (TG1 :00:58:26). Florians reaction was to tell them that these things could be shown on video on the electronic book, but Samie was reluctant to translate and suggested not to make too many promises in advance.
Asked about what they saw as most important for their children to learn, the parents mentioned Islamic culture was the highest priority, followed by English, Science and Technology (PG1 :02:33:09). The teachers also mentioned personal development as a Muslim came first together with respect for family and elders (TG1 :01:07:52).

The Pupils

The morning before interviewing the teachers, all 450 students of grades four to six had participated in a baseline test which was developed by Sonatec according to the national curriculum for science, maths and religious education, the subjects, that would be as interactive books on the laptop. The Afghan school system did usually not involve testing and Sonatec soon realised that they had not taken this into account sufficiently. After the papers were distributed the teachers started reading the test questions aloud in front of the students for all three grades. Some still had trouble reading they said. After the test had started, all children started talking and copying from their neighbours, which the teachers did not seem to care too much about. Our idea of testing seemed so entirely foreign to both teachers and pupils that the poor results in the end were not surprising.

An interview with a selected group of about 20 boys took place after the baseline test, also accompanied by one of the teachers. Samie and I sat on a couch, he translated again

Figure 7.5: Interview with the pupils from School Four (source: the author)

and managed with jokes and friendly encouragement to establish a relaxed atmosphere. The children sat around us on the floor and all seemed to enjoy the attention but also were unprepared to be asked for their opinion. Most of the questions appeared to be answered according to their teachers expectations. Maths, languages and Islamic studies were listed as the most popular subjects and they all confirmed they liked going to school. When asked what they tell their parents at home about the school the replies sounded almost rehearsed, Samie summarised the replies.

> "When they go back to home they say the teachers are so nice and the good thing about teachers is, they are not beating us. So still they give us more subjects to read and to write. [...] they go home and they say to the parents that all the teacher were present today at school and the reason we are so happy about the teachers is because they treat us very well."

(SG1 :00:03:26)

With the complaints by the parents about the arrested and absent teachers still in mind, I was increasingly sure the pupils had been prepared for the interview and even without one of their teachers present I would probably have received the same answers. Later they also mentioned the arrests and that their teachers had disappeared (SG1 :00:40:06). When asking what subjects they would have liked to have more of or what was missing, the first reply was "Islamic studies" and then with a laugh followed by "computer!". They really need computers one said, but then another again repeated how

well they were treated by the teachers and that there was nothing else they need (SG1 :00:35:32).
Asked about their career aspirations they gave the same list of professions I usually heard: doctor, engineer and teacher. Their parents, they explained, were mostly shopkeepers, one was a teacher, one a policeman, all seemed to have some agriculture as well.

To my surprise when I asked about mobiles phones and computers, several boys showed me their phone and five reported they have a computer at home and that they knew how to use it. Others had used one in Pakistan or in their father's office. *Would they like to use a computer?* All raised their hands. They said the computer helped with studying, with home work and learning English.

7.7 The International Development Bank

With the interactive books, Sonatec was convinced about having found the missing piece to make the laptop for schools a success. Another option for continued funding to deliver the necessary results for an extended deployment was seen in the International Development Bank (IDB). I joined Florian and his colleagues Tim and Yonos in a meeting in the Wazir Akbar Khan district in Kabul. We were greeted at the entrance and accompanied by a guard to meet Amrita Chaudhary, the director of the education section of IDB.
Mrs Chaudhary was not an IT person herself, as she repeatedly emphasised, but she was in the position to make decisions and recommendations for future program planning. After hearing about Sonatec's concept of using technology for self-training Mrs Chaudhary was instantly interested. These devices, she commented, held the prospect of reaching out to areas that are considered too dangerous for most NGOs to become active there, meaning spatial as well as societal areas like reaching girls in insecure provinces. In the five insecure provinces, she told us, all efforts of IDB had failed so far to get girls enrolled in school (IDB). At the same time, she added, there was a general fear that computers might be seen by the Taliban as pornography and western ideology which would have had the opposite effect. But there needed to be an opening up, Ms Chaudhary insisted, in a subversive way, showing the children the world out there over the internet (IDB).

Elaborating on the possible steps of a pilot implementation, Ms Chaudhary emphasised the ministries' roles. Though the money was managed by IDB, it was part of the 'core budget' and directed through the Ministry of Finance to the relevant ministries and

they would not easily give away several million of their funding. She suggested capacity building at the MoE in order to enable them to manage the project in the future and react if something went wrong. This had been one of the critical points in the previous project and Florian suggested instead to de-skill some of the tasks involved and offer those to the Ministry. He was openly sceptical about how capable the Ministry would be in managing any edutech projects, and whether it was possible to build the MoE's IT department to a level that it could handle severely complicated processes.
Tim and Yonos confirmed that the relationship to some people in the Ministry was tense but that others were very supportive. Tim added "one mistake we made with the original plan, is, there was not a single carrot in it for the Ministry" (IDB). They did not offer the MoE new equipment, he explained, not much training, no trips abroad and no research trips. Mrs Chaudhary agreed that these were important incentives.

Independently from Sonatec's plans with IDB, I returned one month later to meet one of IDB's IT consultants Mr Soumitra Gopal for an interview to find out more about IDB's view on technology projects, in general, and in the education sector, in particular. Mr Gopal saw his, and IDB's role, more as a change maker than as technological transfer and described the process of getting the ministries' approval as time consuming but necessary. The technology, he explained, was only a small part, the more difficult task was to get people to change their current processes and stop resistance against change (S.G. :16:15).

Managing this change needed persistence, Mr Gopal was convinced, that foreign led projects often lacked. People came from developed countries as experts to Afghanistan, he went on to explain, made good money, were highly accustomed to computerised system and were getting frustrated with their local partners when they realised things were not going the way they were intended to. So they left. Afghanistan needed people whose priorities were development, *"at the core of their heart"* (S.G. :17:35). He compared the ideal aid worker with a mother that patiently needed to teach her child a lesson.

> "You know, every child is told by the mother: keep those slippers in its right place. Right? I'm sure your mother would have said that to you at some point of time. Do you know psychologically how many times a mother has to say this to the child before it could possibly become a habit with the child? [...] Psychologists have said that this needs to be repeated 25 000 times in a period of ten years before it could possibly become a habit with the child. It works exactly the same way in the developing world. To make that guy move

> away from current process, current way of working, current thinking and to come to computerised system and tell him: stop seeking rent. Imagine, you're also actually hitting at a social revenue[1]. [...] He's making big time money and you're saying stop making that money. So imagine how many times you'll have to say this for what period of time. It's a herculean task, it takes sometimes centuries to change nations. And you're trying to change a nation."
>
> (S.G. :18:47)

In order to assure a long-term commitment, in his view, the projects needed to be affiliated with local institutions, projects should be rated according to their sustainability, not regarding quick results, ribbon cutting and and press coverage. And this sustainability, he was sure, could only be achieved by the aforementioned institutionalisation. Backed not only by the head of one department, as he said, but by broad support within the institution, with everyone believing in and depending on its success (S.G. :52:15).

Following his argument, the laptop for schools project would be one such example for 'quick results, ribbon cutting and press coverage'. It was lacking the institutional support within the MoE, run exclusively by Computer Department (CDME), separate from MoE's other operations with no obligations or consequence for any of the other departments.

Similar to Florian's view Mr. Gopal also doubted that local capacity needed to be built in all departments and in all provinces. He suspected part of it as the desire to increase one's own ethnic group to gain more influence within an institution.

> "IT systems are built by IT companies. They implement it and then they are managed by the respective departments. But these people want, 'oh no, give us four people, we'll develop it ourselves'. So there is a very strong desire to in-house keep everything. [...] everybody wants to build their empires. [...] So I get a feel that there must be a Hazara or a Pashto sitting there who wants to get five of his Pashto brothers to come in and get into the department. Probably that is what is driving him."
>
> (ibid. [01:06:36])

1 He referred to the argument that computerised systems would reduce the possibilities for individuals to influence decisions and would make corruption more difficult

In his opinion the government needed to have more confidence in the private sector and let the market forces take care of communication and the internet infrastructure. The government should provide political stability, he added, and simply act as a regulator (S.G. :1:18:00).

CHAPTER 8

ICT infrastructure development

"Infrastructure" is, when working with ICT in Afghanistan, an issue one can hardly fail to address. There have been efforts made to design devices that function 'independently', as in the case of the school laptop. But even those have been shown to depend on cooperative services, technical or otherwise, to run smoothly. Infrastructure is what runs "underneath actual structures" (Star & Bowker: 2006) and remains invisible, or black-boxed, while everything runs the way it has been designed to. The current level of stability in infrastructure including roads, electricity, water or, more recently, broadband internet in most of Europe, was reached over centuries of (re)building. Providing internet access to universities in Afghanistan means reproducing similar conditions in order to make systems work that are built to run within certain institutional and organisational structures and depend on certain services. An uninterrupted, steady supply of electricity is still an exception, as are technologies and services that provide secure internet access. But the achievements in the area of internet and mobile-phone penetration are considerable (see also chapter 5.2) and are regarded as a combined effort of the private sector, the Afghan government and international donor organisations (Hamdard: 2012:10). When Kabul University received its first satellite dish in 2004, connectivity was still expensive and not widely available. Since then charges have dropped steadily, countless ISPs have started their service, internet cafés have opened, and access and usage have increased exponentially. By the time the Ministry of Higher Education and the military alliance agreed on a cooperation to connect seven more provincial sites in 2008, a country-wide fibre optics ring was already under construction.

8.1 The broader infrastructure

I met Ekran Sherzai, who works for the computer directorate (CDMC) of the Ministry of Communication and Information Technology (MCIT), in his office overlooking one of

Kabuls busiest traffic intersections. MCIT is among other things also responsible for the countrywide fibre-optics infrastructure project and I asked him for an interview to find out more about MCITs work and their involvement in the university connectivity project.
As I had heard from several people before, Mr Sherzai also emphasised the MCIT as one of the most productive and effective ministries, the only one indeed that managed to spend around 75% of its core budget, while most ministries only managed to spend 20 – 25%[1] (E. S. :1:24:12). Meanwhile, the telecommunication sector under their responsibility was one of the most (and one of the few) flourishing sectors in Afghanistan.

Ekram had returned to Kabul from Pakistan in 2002. He had no formal background in computer science, but described himself as experienced. In 2009, as he said, he had joined the CDMC at the behest of a close friend and he was now responsible for information security and cyber defense issues, the assignment of the top-level domain .af and a number of other projects. As at MoE, Ekram also explained that hiring technical staff for a government salary was impossible and all technical staff salaries, including his own, were paid by international organisations (E. S. :1:26:00). Ekram enumerated all the projects he was involved in and I assumed from his remarks, that he took a managing, rather than a technical, role. But he made sure to clarify the CDMC's, and his own, prominent role within them (E. S. :31:55).

The sheer number of international cooperations on extensive and complex projects he mentioned being involved in, and often responsible for, whilst simultaneously attending training abroad and pursuing an online degree in internet governance (E. S. :08:52), was hard to believe. But later he described in more detailed how these cooperations were organised. The projects were negotiated between MCIT and international donors who provided the funding. Implementation was then contracted after a public call for tenders.

> "Installation is always done by the contractors and under our supervision. Once the project is over, it's established, the establishment, the entire operation is run locally by us. We have not outsourced any project so far to others to run it for us or to report it. We are doing it ourselves. And we are really working hard on building capacity as well."

1 These numbers are so low because spending procedures are closely monitored by the donors, even if they are part of a ministry's core budget. Spending has to be negotiated and if approved, often gets delayed or implementation turns out much slower than planned. Most Afghan ministries have low 'execution capacity', meaning "even if money is available, it cannot be committed and used"(Jalali: 2008:43).

(E. S. :34:09)

This suggests that MCIT was not strongly involved in technical decisions and configurations, rather they were recipients of systems designed by others but later run and administrated within the MCIT's in-house data centre, which Mr. Sherzai described as the only reliable place to host such data (E. S. :33:04).
CDMC was also one of the main entities managing the country-wide digital infrastructure project and Ekram Sherzai described it as having been challenging in the rural areas, but after some initial delays even some of the insecure provinces like Helmand and Kandahar had been included in the optical fiber ring (E. S. :1:37:57). When I asked about restrictions or filtering mechanisms he did not delude himself about the possibility of a watertight filtering process and even the present one had not yet been implemented by all ISPs. There were several government entities involved in deciding on the content, he said, when finally the technical implementation was transferred to him (ibid. [1:55:13]).

Hamidullah Qadir works for the Afghan Computer Science Association (ACSA) and has strong ties with several ministries, in particular the MCIT. He is one of those people that seem to know everyone, which was why I wanted to hear his perspective. I had come across him at several ICT related events but only been formally introduced shortly before and took the opportunity to ask him for an interview. Generally, Mr Quadir acknowledged that the government decision making was transparent to some extent, but the problem was that the different government bodies did not understand the laws and policies around ICT and that everyone had their own interpretation leading to conflicts between SMEs and the government, but also between different government entities (H. Q. :2:11:48). Policies, therefore, were according to him, implemented in a rather arbitrary manner, reinforced by the lack of understanding.

Mr Qadir described the development of the *Information Society of Afghanistan* as the main objective of the MCIT and ICT as a major enabler for economic development (ibid. [1:30:01]), while the biggest obstacles were seen by him in the lack of understanding, the security situation and the generally high corruption (ibid. [01:25:52]). Though he attested to MCIT's achievements and altogether good work, he criticised the concentration on infrastructure. Both the government's and the internationals' support was focused on connectivity instead of developing service and utilisation strategies, he explained. The provinces had been connected down to the village level, but the government had no strategy for what should be done with this connectivity. The local staff was still mainly using phones (H. Q. :2:04:25) (for the full quote see appendix A.5).

8.2 Project initiation

The initial impulse for the university connectivity project had come from Frederic Tailler and his team who work for a military public diplomacy (MPD) section of a military alliance in Europe. There had been similar projects implemented in the region before and, according to him, they saw it as an opportunity to use a tested approach and technology for Afghan universities as well. It was uncommon that such a project would be initiated by one of its donors, instead of being approached for funding, as Fred explained.

> "It was my initiative and that was a new approach, which took so much internal persuasion work, leaving the botton-up approach and not waiting until someone would come with an application. Instead we tried with a top-down approach to cover all needs at a single blow."

(F. T. :00:23:44)

Fred had been appointed as project coordinator and in 2006, but a first test satellite dish had already been installed at Kabul University in 2004. Working at the Computer Centre at Kabul University (CCKU) and the Computer Department of the Ministry of Higher Education (CDMH) during the same time, I had met Fred repeatedly and could observe how the project developed over the years and how the plans to expand beyond Kabul had evolved. When the project was to be expanded, the CDMH was increasingly involved in the planning and implementation, while the CCKU, which had initially managed the campus network, withdrew from this task and the network administration was handed over to the newly established Campus Network Centre (CNC). The necessary hardware and its configuration had been contracted to companies outside Afghanistan.

According to the project requirements document the following actors are involved: the Afghanistan Ministry of Higher Education (MoHE), and its network of university sites across Afghanistan (plus other governmental sites of choice) who act as the *End User*. The Military Public Diplomacy Section (MPD) is defined as the *Customer*, while the companies contracted for the implementation are the *Service Provider*. It also states that the End-User only interfaces with the Customer, who interfaces with the Service Provider on behalf of the End User (MPD: 2008). Fred explained:

> "We have a service contract, it's all in their hands, once the project is over they can take the satellite dishes down or leave them there as they prefer. We have no ownership over the installed material. Pure service contract. And my support comes from a team that emerged from the [previous] project."

(F. T. :30:33)

Mr Tailler was supported in his position by military IT and communications consultants, he explained, who helped with technical tasks like the contract with the satellite ISP in Europe, or the monitoring of the work of the technical contractors. As was common for such projects, the international company that won the contract for the technical implementation, worked with subcontractors in Afghanistan – often international companies who specialise in post-conflict environments – that were responsible for delivering and installing the dishes and the pre-configured hardware in the provinces (F. T. :00:35:06).

In Afghanistan the MoHE and Kabul University were their primary partners (or *End-Users*), later the cooperation was expanded to a selection of universities, appointed by the MoHE. The choice of universities was controversial, in one case the university had neither electricity nor any computer related department (or staff) at its disposal. Mr Tailler made it clear that he was not happy with that choice, but could not easily interfere with the Ministry's requests. At the time the Ministry was already quite aware of its position as a necessary entry point for donors and after a number of failed projects it was no longer willing to accept any proposal as it had previously done.

The End-User responsibilities included local distribution of the bandwidth to different facilities within and outwith the universities (Local Area Networks and Metropolitan/Regional Area Networks), as well as user management (MPD: 2008). Typical university network services like email, a user portal or online storage were not part of the project.

To get the university chancellors on board for the infrastructure project, they established a system where a '*godfather*', who was then formally responsible for the project, needed to sign the application for the grant together with the university chancellor. The '*godfathers*' Mr Tailler mentioned as examples, were two American women (sic) and one Afghan American man who were, or had been, working in Afghanistan. Their role was to supervise, as he explained, and advise the universities during the project execution on a non-technical level.

> "Project-management, project-supervision, making sure that reports are written the way they should be written. When it comes to evaluating tenders of course, we are looking for someone to be involved and to have a look when it comes to determine the winner of such a tender."

(F. T. :01:02:14)

Fred visited the country regularly, he mentioned, and also tried to visit all the sites where dishes were installed. He said he could move freely in many places like Kabul, Herat or Mazaar but in other areas like Jalalabad or Kunduz the situation was more tense, in places like Kandahar he even needed a military escort, with armed vehicles and soldiers securing the area, a scene he described as "*not exactly public diplomacy*"(F. T. :01:39:20).
Fred described himself as the central node of the project, as he was the only person who worked with all involved parties directly. None of his consultants, his team members in his department or the contracting companies responsible for the implementation and services had ever been to Afghanistan, as he remarked. So he tried to establish and keep contact with the partners in Afghanistan where necessary. Locally he was planning to hold more regular meetings where at least the 14 CNC managers could meet in person. Currently they tried to establish regular conference calls, he said, but these often interfered with teaching and other obligations and the whole routine had to be reorganised. These were small things they had to struggle with, he said (ibid. [01:03:14]). He tried to encourage them to meet or exchange over the phone, but disappointedly added he had the impression exchanging information was not something that was done voluntarily in Afghanistan (ibid. [01:05:20]).

8.2.1 The Ministry of Higher Education Computer Department

The main cooperation partner for Mr Tailler was Fayeq Bezhan in the Ministry for Higher Education (MoHE). He was a technical advisor to the minister and the head of the Computer Department (CDMH) there. He belonged to the last generation who started to study computer science in Kabul during the Taliban regime. There was no electricity at the time, but the science department possessed one computer to show to the students and explain the concepts in theory (F. B. :00:03:25). Mr Bezhan had graduated shortly after the fall of the Taliban and started working as a lecturer in the computer science department right away. In 2008 he started working for the MoHE as the head of CDMH, while continuing to work at the neighbouring Kabul University as a lecturer. We had known each other for several years at the time of the interview, as I had already been working at the MoHE by the time he started. It had been certainly partly due to his ambition that the CDMH soon after he got his position expanded considerably by taking on a number of large projects.

The CDMH was established in 2004 and started to grow in size and importance within a few years. Initially most universities worked directly with NGOs without the Ministry being in the loop. Today all IT related projects in higher education need to be registered

with CDMH.

> "In IT now we do not have anything coming from outside [...]. Now we are planning and proposing to others and then we collect the money."
>
> (F. B. :01:10:47)

Fayeq strongly believed in all the cooperation CDMH was involved in and presented it as their accomplishment (for the full quote see appendix A.6). Some of the projects he mentioned, like CISCO Academies and digital libraries had been running before CDMH was established and were run by external organisations, though by now probably in cooperation with CDMH. Others like MPHE and the university websites[1] had been developed and run within Bezhan's department. Most of the projects CDMH was involved in were funded externally with only very basic support by the government that did not even cover all salaries. All the rest of it was covered by international donors (ibid. [00:14:05])

8.2.2 The University IT staff

Darya Nazri is a graduate from Kabul University (KU) Computer Science and worked as a network administrator for the Campus Network Centre (CNC) as part of the university connectivity project. I had known him for several years since I had been working for the CCKU, an entity famous among KU's computer science students and for those who had managed to acquire a membership card, a popular place to hang out after class. We met for the interview in one of the rooms of the CCKU, but Darya was visibly not comfortable when people came and left during the interview and we moved to the small CNC office, a windowless room in the center of the university administration building. He was one of the few who ask me what the interview will be used for and what exactly I hope to find out.

Darya grew up in Kabul and, among those I interviewed, was one of the very few whose family never left the country during the war, so unlike those who had lived in exile, he first came in contact with ICTs after 2001. He taught himself some computer science basics, as he explained, before he enrolled for a degree in science at KU. In the second year of his studies he had started to work for the CCKU, at the time the main institution that provided IT support and training to the university. There, he said,

1 When last tested (August 2014) most of the university websites were off-line again.

for the first time, he came in contact with practical ICT work. In the early years the CCKU was an exceptional facility with internet access, new hardware and advanced computer training opportunities. It was connected to the first satellite dish that had been installed in 2004, and was managing the campus network. But the network was quite improvised, as Dariah described, and only a few offices and computer labs were connected (D. N. : 2011:25:00). Computers and internet were still very new at the time and those university members who used them needed lots of support. Currently, Darya said, the situation was quite different and everyone was familiar with computers and the internet and it had become an important part in the life of students and teachers (ibid. [27:33]). Thanks to the fibre optics ring, he added, the internet connections that were now also available at home were much cheaper than the satellite connections.

I interviewed Noorzad Emani and Khaled Nekzad at a Kabul restaurant where we met for dinner. I had known and worked with both over several years. Both they and I were familiar with their excellent reputations as computer scientists at Kabul University and beyond. They had earned their masters' degrees abroad and were now working at Kabul University. They both worked as lecturers, as network administrators for the CCKU and were involved in the planned IT directorate at Kabul University. In the early years, they told me, the equipment had been scarce, there were few opportunities for training and education, and none of their teachers had a master's degree. The situation at the university had changed after a few years when more scholarships and programs had become available and several labs had been built (N. & K. :11:12). Now all faculties were connected to the internet through the university connectivity project (ibid. [14:14]).

One of the biggest problems they saw was that the university did not have its own budget. None of the people currently working in IT support were officially part of the university structure and all depended on external support. The university, as they described, was aware of the importance of IT and internet connectivity, but not yet to an extent that it was seen as being important for research. People at university were not aware what ICT could bring to education, Noorzad and Khaled were sure, not only the management, but also the lecturers, because they were not research oriented (ibid. [16:31]) and promotion was not based on research but on other things. For a long time, they continued to explain, it did not matter what faculty you graduated from, you only needed a certificate. But now with the increasing number of lecturers with masters' degrees from other countries this was changing, in their view, and the attitude of the students was changing as well (ibid. [19:04]). There was lots of money coming to the university for support, they said, but the university did not do enough to strengthen the IT directorate; investments were made in the wrong people and projects were duplicated.

Now Khaled, Noorzad and a few others planned to build up a university network infrastructure that was more research oriented, all faculties should have access to journals and have stronger ties with other universities (N. & K. :20:30). So far only a few faculties had PC labs for students and the internet was mainly for lecturers and administration and the dormitories.

> "Till now the university should have been able to have their own web-servers, their own data centres, at least their own web platform."
>
> (N. & K. :23:40)

But instead, they regretted, it did not even have a running website and the electricity was still regularly down for several hours. Kabul University was the most advanced university in terms of ICT, they were sure, but there was still no long-term strategy concerning what it could be used for, how to extend the structures, maintain the systems and afford the costs in the future.

> " We have solved all the problems with the fiber project, we have centralized servers, we have local servers at faculties, we have divided the bandwidth according to needs of faculties – but what do they want to do with it? They don't know this. I think the solution is a strategic plan, first drafting it and then implementing it."
>
> (ibid. [1:30:51])

They had little confidence in the current system. Noorzad said, he kept encouraging his colleagues in IT to work on their own solutions and not rely on the government, because nothing would come from them. But they were convinced everyone had an interest in good solutions, including the donors, and if they saw a solid plan they would support it and that would convince others to follow. From the government side they did not expect much. Most people, they believed, were comfortable in their position and would never give too much power or responsibility out of their hands. And these people, Khaled added, did not even understand they could just let the correct bodies do the work and still get the reward for it (ibid. [1:36:06]).

8.3 Project framework and implementation

8.3.1 MPD

When I met Fred Tailler for the interview in 2011, there were already several universities and public institutions in Kabul connected, partly via VSAT (Very Small Aperture

Terminal) dish, partly via the fibre optics ring, which was still under construction. When the project first started in 2004 there had been no affordable fast internet available and the goal was to provide some of the bigger universities access to information and learning resources. The higher education connectivity project was in its second, heavily delayed, phase. The delay was, according to Mr Tailler, due to ongoing problems with power supply in some of the provinces, while in others the precarious security situation had resulted in a reluctance of the contracted companies to go there. Yet no threats or attempted attacks had been directed against the project itself, according to him, though the satellite dishes were of considerable size and mostly in full view on one of the roofs of the universities. At Kandahar University, he described, the 3,80m dish had been on top of a three story building for more than a year already, causing no problems so far (F. T. :01:14:01). In most provinces, he went on, the dishes were installed, running and used during the day. At the time the total bandwidth was 43Mbit/s down and 14Mbit/s up shared by all included universities and government entities[1]. The connection was not split between the universities, as he said, so if all others shut down, one entity could use the entire bandwidth (ibid. [51:03]) though this was described slightly differently by the network administrator of KU. Fred explained that there was no prioritising of any kind, as the usage seemed more effective if they just gave free access to people. There also was, he continued, no monitoring or analysis system yet. The only interference was the government ordered filtering system that all ISPs had to follow since 2010 and that they would comply with as well, implemented at the hub in Europe (ibid. [00:53:28]). As to which exact sites are blocked, Mr Tailler did not know.

The university connectivity project consisted of several components, as Fred described. Providing bandwidth was one. Providing extra grants for the networking-infrastructure on campus another. Each university could submit an application for funding of their ICT infrastructure in the region of 150 – 250 000€ which was, as he added, usually given sympathetic consideration. They had recently established the '*Afghan first policy*' and now paid particular attention that the funds were given to local companies (F. T. :00:12:47). However, experience had shown him that the universities often had difficulties implementing their plans and actually spending the money (ibid. [00:35:53]), which also contributed to the above mentioned delays. Another component of the university connectivity project, Fred went on, was technical training for the network managers. Some of it had been outsourced to a two to three week training in "*how to manage an academic network*" as well as "cybersecurity" at universities in Europe (F. T. :00:41:34).

1 For comparison: at the same time the average connection speed in Ireland was 6.1Mbit/s (Akamai: 2011)

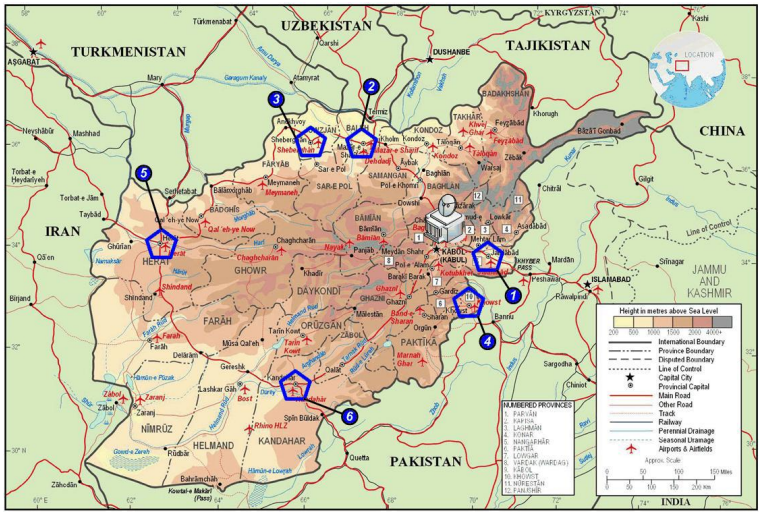

Figure 8.1: The selected locations for the connectivity project (source: MPD (2008))

And part of the trainings were organised locally by the CDMH. Having an IT training facility in Kabul, as the CDMH requested would, in Mr Tailler's view, solve many problems for them, like the trouble of getting visas for Afghans (F. T. :00:44:03).

> "Its special appeal would lie in holding the training locally. Not having to bring people out. Simply for logistic reasons. And beyond that maybe offering not only training for the universities but for general administration. [...] Computer usage, general skills, from basic to high-level."
>
> (F. T. :00:44:03)

What he failed to mention, or might not have been aware of, was that such facilities existed at both the MoHE and the university. Considering the small number of administrators involved it was not the premises or even the technical equipment where the deficiencies lay, but the lack of qualified staff and funding for extensive training.

At the universities there was usually the chancellor or one of the vice-chancellors involved, who had the leading position, although according to Fred, "to call it a 'team' might be a bit exaggerated", and generally consisted of one or two IT people "if we are lucky" (F. T. :01:06:23). Some universities like Kabul or Herat were better equipped with well trained staff, but Fred admitted that to be more of an exception. Fred said he knew that this could not be a sustainable solution to place the whole responsibility on one person with little experience. Through further training they tried to recruit more people, but he was also aware of the challenge to keep technical staff on a government salary in a job that was not even official part of the government pay system, which would

at least have offered some stability and career prospects[1]. The MoHE had promised to equip all universities with sufficient IT positions, Fred explained, with decent salaries so they could work with original university structures instead of '*alien elements*'. This was currently causing him some problems. (F. T. :00:40:18).
Therefore finding competent cooperation partners at the universities was described as one major issue. Most universities did not even have the technical expertise to write the application for the campus wiring grant,Fred worried. They could not translate their technical 'needs' into a plan that would be valid for funding. The weak points, as he admitted, remained the payment and training of local staff at the universities, to maintain and administrate the network in the future.

> "Well Afghans, we'll have to find some. We actually do not have funding for salaries, you know, that is our big handicap, it is [military policy]. So we depend on finding cooperation partners and make a deal with them. [...] There are other projects that receive some bandwidth from us, 1 Mbit maybe, and they pay the salaries in return for network management on the ground."
>
> (F. T. :00:38:08)

.

The administrators usually belonged to the young generation which often could not assert itself sufficiently to implement their own ideas in conflict with established structures, Fred explained. They had to compromise with superiors that had no experience with ICT whatsoever and, in many cases, failed to understand the significance of it (F. T. :00:57:15). The biggest problem apart from institutional integration, however, remained the lack of experience. Decisions regarding technical details were made beforehand by the implementing company in Europe, if something did not work correctly, there was no one on the ground to fix it.

> "When it comes to routing problems and someone who is sitting at UCL in London [...] then that is pretty far away. At the same time, locally there is no one capable to offer a solution for the routing problem either." (for the full quote see appendix A.7)
>
> (F. T. :01:10:17)

1 "Pay policy is set centrally for all public employees in Afghanistan. [...] through years of service and regular promotions (once every three years), staff in lower positions of authority can occupy a higher grade and earn a higher salary than their managers" (AREU: 2012:93f)

Though he had travelled to most of the universities, Fred Tailler admitted it was often difficult to get a clear picture of the actual situation there and they soon realised they could not rely on their government partners' estimations. They felt misinformed about the actual conditions at the universities which were much worse than they had expected (F. T. :00:46:14). Fred gave an example where the lack of both technical experience and institutional support led to conflicts. The equipment had been delivered to a particular university in June the previous year and had not been connected a year later. They had received the infrastructure grant but it took them too long to obtain offers and spend the money. When, eventually, they had bought the generator, discussions had started with the MoHE over who would provide petrol, which was an issue that several universities still complained about and that had still not been settled. In his view the government took it for granted that the project would cover all additional costs, when in fact the Ministry had signed an agreement to reimburse expenses for generator fuel (ibid. [00:48:23]). Therefore, the internet was at most sites only running during the day, as soon as the generator was switched off the campus was offline.

Mr Tailler clearly realised that the experience needed for planning and administrating a campus network of the kind they envisaged for the universities could not be acquired within the few weeks training they offered. Not even those with a master's degree, who were regarded as the best qualified IT professionals, could solve all the problems, as he said. The instability of local conditions and the vulnerability of the network, due to a lack of expertise, were just accepted as inconvenient factors.

8.3.2 CDMH

Fayeq Bezhan's statements, regarding the university connectivity project, often contrast with Frederique Tailler's view. Fayeq clearly saw the university connectivity project as part of CDMH's responsibility and referred to it as *our* (CDMH's) work.

> "The concept of [the connectivity for] Afghanistan project is to provide network and structure for universities, the electricity, support of electricity and the internet connection. So this is the concept of the Afghanistan [connectivity] project. We have completed four Kabul based universities, now we complete Nangahar university, now we have Internet connection for Mazaar, for Herat, for Bamiyan university and now we're working to provide for others as well. So 18 universities is under support of [university connectivity] project."
>
> (F. B. :00:22:16)

From his perspective, the CDMH was in charge of the project planning and implementation and the military alliance only provided the funding. The project extension from neighbouring countries to Afghanistan was, according to him, initiated following a request by the Afghan president in 2008. The CDMH had then, he explained, in cooperation with the universities applied for money and facilities from the military alliance (for the full quote see appendix A.8). When the applications were approved, Fayeq continued, they started a public bidding process and the company who won the bid implemented the project in cooperation with CDMH and the universities (ibid. [00:28:41]). The initial server configuration had been done by a company from Uzbekistan, but apart from the hardware and funding, he added, CDMH did everything (ibid. [00:29:33]). This, however, had not always been the case. Before 2009, he felt, they had not been involved sufficiently. They did not have qualified staff back then, he admitted, and the coordination between ministries, universities and the military alliance was very bad, but now CDMH had a team working with the universities for the connectivity project.

> "Before that everything, it was at that time running by the foreign peoples and we were not enough involved in the project so at that time we had a lot of problems, but now it's ok."
>
> (F. B. :00:30:31)

What sounded like a contradiction to me first, that both CDMH and the MPD felt they were in charge of the project, also made sense when considering the different perspectives and interaction they were involved in. From CDMH's perspective, before 2009 they had not been involved in the project. Now they had received an important role, they had to help the universities apply for money, organise the wiring, select administrators and 'only' received money and 'the technology'. The preceding decisions and the details of the configuration and implementation remained invisible to them.

Like Mr Tailler, Fayeq explained the difficulty to find appropriate staff at the universities and that the short trainings in Europe were not sufficient for those who are not computer scientists (F. B. :00:25:59). He suggested the planned video conference between the CCMH and the universities would help to solve some of the network management problems, because with video they could show the administrators how to configure the network (ibid. [00:45:52]).

Apart from the difficulty in assigning sufficient bandwidth for such a video link - 45Mbits/s shared between several universities is still not a lot, it would probably depend on the completion of the optical fibre ring - it can also be seen as rather uncommon to

use video for network configuration issues, when a remote log-in over the network with a shared desktop would seem to be much more useful. The video equipment had most likely been suggested to him by one of the donors and he used the cooperation as an argument to support this.

Like the MPD Fayeq also requested a stronger commitment by the government. In his view there was still not enough understanding regarding ICT and digitisation, and his biggest worry was how salaries and connectivity would be financed in the future.

> "Still I'm worried about that, the universities, the stability of the universities, internet connection and such things. Because still we bring everything from the support of the foreign countries, the [military alliance] and other. If we do not have support of them, how can the government of Afghanistan provide such facility with the budget of Afghanistan?"
>
> (F. B. :00:35:04)

Apart from that he was pleased with how things were going, he said, in particular with his department, which he described as superior to any Computer Department at the other ministries (ibid. [01:12:46]). Fayeq did not mention any further cooperation, like the '*godfathers*' Mr Tailler had talked about. He presented himself as the main person in charge and demonstrates confidence that his department was capable taking over full responsibility for the project and could address the current problems like capacity building and institutional support. Mr Tailler is only indirectly addressed as a member of the military alliance – the donor – never in his position as a project coordinator. What Mr Tailler described as a future plan – the MPD's withdrawal from the project – seemed from Fayeq's perspective, already very real.

8.3.3 CCKU and CNC

When Darya started working at the CCKU, with the first satellite dish connected, he was able to gain some experience in network administration. When the university connectivity project was expanded to connect all faculties via fibre optics, he was offered a position in the newly established Campus Network Centre (CNC) (D. N. : 2011:30:42). All issues concerning the internal campus network are the responsibility of the CNC (ibid. [35:38]). With his experience with networking, Darya said he did not need much training and quickly got used to the devices. He explained they had full control and were planning some improvements in the future (ibid. [35:56]). At Kabul University, he added, they had few problems and already seven years of experience running a network.

They only needed some support at the very beginning but at other universities they had very little experience and were struggling with very basic problems (ibid. [41:57])

According to Darya, the bandwidth was divided for all faculties according to their needs, but the network was also closely monitored and when requirements shifted, they could change the configuration. He explained there were also no filters installed and access to internet was completely free (ibid. [50:50]). The government ordered filtering was one of the issues that still needed to be implemented, but so far there were no complaints from any side (ibid. [53:31]). His statements show that when working with the system, some configurations are changed, like the the monitoring and the filtering, that had been described by Mr Tailler quite differently.

Darya was careful about commenting on flaws and mentioned none of the problems with the network I had heard of and even experienced myself during visits to CDKU. Though he was an experienced administrator, which was acknowledged by his former colleagues, the network was not as stable and uninterrupted as he described it (partly for reasons beyond his influence, according to Noorzad and Khaled). Furthermore his positive picture might result from firstly, his affiliation with and loyalty to CDMH, where he served as the networking expert. And secondly, his discomfort with CCKU, where he had worked previously and received most of his admin training. His transition to a better paid job at the neighbouring CNC had raised some discussions. While his personal reasons for accepting the offer were mostly seen as legitimate, the university connectivity project was accused of poaching IT experts from CCKU after they had been trained there for several years.

Noorzad and Khaled were among those who were much more sceptical about the University connectivity project. They criticised that neither the network planning nor the maintenance had been given enough consideration. According to them, the network contained a so-called 'single point of failure' (see also figure 8.2), meaning if one switch failed, the rest of the faculties were disconnected (N. & K. :00:25:24).

When the campus fibre network was planned, Noorzad and Khaled explained, no one at the university, neither students nor lecturers, had experience in how to build a campus network, so the military alliance did most of the work, but without sufficient consideration of the situation on the ground.

> "Just they come with one idea. You can bring a server here, that's not a problem, they have money, they can bring. But here in this side there was nobody to maintain the server, to work with that, to administrate the system.

Figure 8.2: The Kabul University campus network structure (source: Saay (2009))

> There was nobody. And they did not include that in the plan. We have now, they connected all faculties but we have very basic technical problems. They put a firewall in and the firewall is a simple PC. For maybe 600 connections. Of course it cannot work for 600 connections, if the connection number is very high, just the PC goes down and disconnect the people. That's very basic problem, but they didn't plan anything. They have just money, ok do this do that."
>
> (ibid. [28:29])

The same mistakes were now being repeated at the other universities, they said. The lack of a strategy and the short term thinking was seen by them as the main problem. There were no long-term concepts, they just planned for the current year and current project, spent the money and failed to think about what would happen after that (ibid. [30:03]). The universities had no IT budget, they explained, no overall estimation of costs, everything was dealt with just in time by separate entities, but no one knew what the situation would be like in a couple of months (N. & K. :39:40). The problem, as they saw it, was not necessarily the lack of technical expertise, but a consistent strategy.

> "Now we have these people with experience and knowledge. So we make the plan and when it's ready in some weeks we will make a draft, share it with faculty authorities, when we have all comments from ministries and foreign partners, then we will finalise and they can choose any part they want based on this plan."
>
> (N. & K. :26:09)

Like Fayeq from the CDMH, they felt they had the necessary experience now and did not need external entities making decisions for them anymore. They had developed a plan that they hoped to be convincing enough to receive support. The money was not the problem. They were, as they said, regularly approached by different donors asking what they needed (ibid. [49:43]). The more challenging part would be to convince the other stakeholders.
The unsolved issues of the maintenance, according to them, were already visible now, even while the universities still received the external support. When I asked about the network security Khaled laughed "there is no security" and Noorzad added "the system is open" (ibid. [02:15:11]). It was configured for 100 users, they explained, but 10,000 were using it and the only person who knew a bit about security was Darya. Like him, Noorzad and Khaled said, those few better qualified administrators at the universities were additionally involved in many other responsibilities, be it teaching, network administration or helping with any technical planning (N. & K. :51:29). Simply, computer scientists were urgently needed at all universities and the numbers were still low.

8.4 Project continuation

Providing connectivity by VSAT is much more expensive than fibre optic connection would be. Fred explained the satellite dishes were only seen as a temporary solution until coverage with fibre optics and WiMax was completed (F. T. :01:17:47) and would replace the dishes with lower running costs. The project was planned to merge into a regional academic network cooperation, he said, that was also expected to cover some of the ongoing costs and the military alliance would withdraw entirely. The current phase of the project had secured funding till summer 2013 and was expected to be extended beyond that.

Whether the lack of institutional support and integration would change any time soon was unclear. Currently most costs were covered by international organisations directly, they were not in the 'core budget' and channelled through the Ministry of Finance. So according to Fayeq Bezhan, the government was not even aware of most of the costs.

> "Everybody think that the internet is free. So still I'm worried, if we give this proposal to the government that we are using $100 000/ months for the internet for example it will be a shock for the government. [...] we are always sending the record of the finance and such things to the government because they have to know that internet is not free. [...] they are thinking

> if such things are coming free, why we should be worried about that?
>
> (F. B. :00:56:37)

With the increased interest in ICT and also an increasing dependency on digital communication and administration within government entities like the MoHE, attention to ICT, however, was according to several interviews, expected to grow.
Altogether Fayeq Bezhan was very optimistic about the achievements and current developments in the ICT field, especially at the universities and among the younger generation (F. B. :01:04:24). Only with the help of ICT, he was sure, problems like corruption and the slow work pace in Afghanistan, could be solved (ibidd. [1:05:44]). At the time of the interview most students owned a laptop and used the internet, hardware prices had gone down and internet was, at least in the cities, widely available (D. N. : 2011:56:20). Within a few short years most universities had been connected to the internet, and Darya described the recent developments at the universities as entirely positive. They had the latest technologies, he described, knew how to use CISCO devices and Linux and had very well trained technical staff (ibid. [58:34]). However, it is not clear if with he was mainly referring to Kabul University. Darya described only positive changes in the field of technology, and in his view the situation had improved on every level (ibid. [1:00:34]). Like Fayeq he was convinced that in the field of technology it was only financially that Afghanistan depended on other countries, on a professional level he felt people were ready (ibid. [01:05:05]) and he was together with the CDMH working on several IT projects for the universities, to present to potential donors.

Though working at the same university, Darya was not involved in the plans Noorzad and Khaled were working on, despite similar goals. Both approaches, it seemed, resulted from the same frustration with inefficient donor led projects, as Darya explained.

> “ We have experienced many funders coming and going back, so we have experience of working with them and from that experience now we have reached to the point that we have our own plans and if someone comes, a funder comes to help, then we propose them the project we have and they can help in implementing it.”
>
> (D. N. : 2011:37:22)

There were too many donors at once, he complained, and each came with their own interest and rules, sometimes leading to duplications. But the situation was changing, now “they directly contact with us” (ibid. [38:47]).

Khaled and Noorzad were much more sceptical regarding the current situation. They did not see the awareness of the importance of ICT at the university and among the deans of the faculties. One of the training courses the CCKU offered was for one candidate from each faculty to support the faculty in administrating the network and looking after the PCs. But in some cases, they described, the deans did not even grant these faculty administrators access to the hardware room where the switch was located or else favouritism played a bigger role in choosing a suitable candidate than computer abilities. There was no awareness, not even among the lecturers, about what ICT could contribute to academic life and to research.

> "They don't have a plan for doing research so if they have a plan for doing the research, then they will have a plan for needing the supporting tools [...]. If they know that the supporting tools are important, they will look for the ways how to get it. And if someone is training free administrators for them they will really appreciate this. And they will push this. But I know that they don't know the complexity behind it, but still they don't understand the importance of it."

(N. & K. :42:33)

Fundamental problems at the university also influenced decisions concerning ICT, Khaled and Noorzad explained. There was no academic competition among the lecturers, faculties or with other universities and the faculties had no strategy or plan how to improve their performance. If they did, the first thing they would encounter is IT (ibid. [42:33]). They suggested that there needed to be more productive scientific competition. At the moment the rivalry was more about the number of PCs or labs, not about what they were actually doing with them.

The same thing happened, in their eyes, with projects that came to the university; people came from abroad and started working on them. They offered short trainings, but there was no strategy for their future usage, and the local partners did not know how to continue. Bringing IT expertise in is one thing and very important and necessary, in their view, but the local conditions also have to be taken into consideration. The training, the work and conditions needed to be adapted (N. & K. :1:50:00). The money was there, they were sure, but there was no path to follow. The projects hired someone locally, made that person responsible for a while and when the project was finished, it was over, they said (N. & K. :59:23). But they did not blame the internationals only: The problem was also from their own side, they added, "we should have the capacity to receive it." (ibid. [1:51:29]).

The dependency on international money was something Khaled and Noorzad were also

aware of. Though the CCKU was often seen as technology flagship project, an IT capacity multiplier and independently maintained at the moment, if the funding stopped, they were sure, it would disappear within a month.

> " It's like taking some people who don't know swimming by ship in the middle of the sea and then throwing them in the sea and taking the ship away (laughs). Everyone will die."

(N. & K. :1:52:40)

The university should start preparing for times when the international money will stop, they claimed, the CCKU could offer paid services, but they were not allowed to do that. And with the universities having no budget of their own and all cash flows being transferred through the Ministry of Finance, it would pass through too many hands anyway, they added, to ever return (ibid. [1:54:19]).

CHAPTER 9

ICT capacity building

A lot of the criticism to technology driven projects was directed to the lack of "context awareness". The provision of equipment is regularly mistaken with that of a running system, in particular, in a context where technologies cannot simply be "connected" into an existing infrastructure. One outcome is that of technology not even being used – whether for technical or for social reasons. Another, probably more common outcome, is the time-span during which a technology can be run without any maintenance or intervention being needed. This provides an opportunity for a successful report, displaying images of groups of happy users, but the real results show only months after external support is cut. The lack of ICT literacy has been identified as one of the main reasons for these failures and most ICT projects now include capacity building, or even declare it as the main goal. *ICT Capacity building and training as part of the implementation activities* are some 12% of the most common recommendations in ICT4D literature (Gomez: 2013). Capacity building is focused on (re)building missing capacities and predominantly places knowledge and expertise on one side, and the necessity to learn on the other. It usually comes with a predefined concept of institutions and management or in regard to ICT with a preconfigured system that needs to be understood and adopted. *Capacity building* is a similarly blurry concept as participation. Who decides which capacities need to be built, how they should be built, and for how long training and support should last? As described in chapter 3.2, and seen in the two previous chapters, the way ICT is perceived – as an independent tool, as an enabling structure or as an end in itself – strongly influences how capacity building is discussed. InfoDev (2010) suggests a three stage model of ICT integration in education, based on the UNESCO (2008) ICT competency standards:

- the technology literacy approach, that enables technology integration
- the knowledge deepening approach, that enables one to apply knowledge to solving

complex, real-world problems

- the knowledge creation approach, that enables to innovate and produce new knowledge

There is a multitude of "capacities" one could link to ICT, but these three stages offer suitable approaches to be linked to ICT capacity building in the education sector in Afghanistan. This chapter aims to take a closer look at these different forms of ICT capacity building as they have been observed in the field, what these efforts aim to achieve and what significance is given to them by project leaders and participants.

Apart from the demand for stronger institutional support (often linked with the questions of long-term funding), issues surrounding questions of "ICT capacity" seem to be most critical. In Afghanistan, due to the decades of war, most of the urban elite left the country, and there remains a serious shortage of professionals skilled in ICT (United Nations: 2009). Florian Peukert criticised the lack of sufficiently trained personnel among the local partners (F. P. a :1:11:18). Similarly, the university connectivity project struggled to find qualified personnel at the universities. Teachers felt they had not been sufficiently prepared and trained for the new technology they were expected to work with. The young ICT professionals, on the other hand, were well aware of their status as experienced computer scientists who no longer wanted to follow poorly coordinated and prepared international guidance. Their capacity included the potential to gain control.

9.1 Kabul University

In 2002 when the number of international organisations supporting Afghanistan went up but power supply was still marginal, private IT and English training courses were already in great demand. Christine Olson, who worked for the United States Agency for International Development (USAID) as a coordinator for several ICT projects in higher education, had returned to work in Kabul shortly after the fall of the Taliban. She had a particular interest in distance learning and ICT for education and was positively surprised about the interest in technology.

> "The public system wasn't doing anything about IT and was doing very badly anything in English but these courses, these private courses were trying to teach IT and typically they had between two to five computers in a room, but the demand was such that they were running - this is in Herat, Mazaar, Nangahar and of course in Kabul [...] they were running from five am to nine at night, that's how much the demand was."

(C. O. :23:33)

The prices were as high as $30/month, which was a huge sum at the time when little money could be made for the average Afghan family, but people were ready to pay these amounts. The quality of this training was usually low and very basic, but the first of its kind.

Figure 9.1: IT and English training centre on the outskirts of Kabul (source: the author)

The past decades of war had caused serious damage to Kabul University. Before 2001, the science department had no electricity, there was no digital infrastructure and the internet was banned, the university possessed only one computer for hardware demonstration purposes and other computer science classes like programming, were only taught using pen and paper. When international aid money and attention entered the country, the universities received significant attention.
Rabeha Karim and Uzma Rezai, two young computer science lecturers at Kabul University were among the first generation of students who started studying computer science after the Taliban regime collapsed. Back then, computer science was part of the science faculty, with most of the lecturers having no experience in computer science at all. Others had just graduated from the same faculty themselves and had little more experience than their students. Occasionally for those subjects international scholars were hired for the short-term (R. K. :22:44) but the language barrier was often a problem in these cases. There was no proper curriculum and, especially in subjects like programming, it was hard to find suitable staff at all. Both Rabeha and Uzma started working at the

Computer Centre (CCKU) early on, which was their only possibility for practical work (R. K. :05:13). Other students went to additional computer classes outside university for training or visited internet cafés, often in the evenings. Neither of these were an option for girls, unless a relative would accompany them. With lower prices of devices and the expansion of the digital infrastructure on campus, as well as in the bigger cities in general, access and availability of ICT has improved considerably in subsequent years, while the quality of ICT education remains contested.

Mr Fidai, an Afghan-European scholar who teaches at a European university and works as a consultant for ICT and higher education in Afghanistan, judged the quality of education in general as not at any level that could compare with higher education internationally. He described computer science and IT as one of those areas that received particular attention (T. F. :21:12). 12 years earlier there had been no (real) computer science at Kabul University. In 2008 their computer science department was turned into an independent faculty and by 2011 three more computer science faculties had been established at public universities and various others at private institutes. But in his opinion it was done too quickly. At some of these new faculties the lecturers had just graduated themselves and were already expected to help develop a curriculum (ibid. [21:08]). The government's current answer to the rising number of students was expanding universities, but the quality of the education could, in his view, not keep pace and the number of jobs did not match the number of graduates, in particular, once the international organisations started to leave (ibid. 38:21).
The increased interest in technology was not primarily due to the international aid programmes, as Mr Fidai explained, but a development that came naturally through neighbouring countries.

> "Obviously the people of Afghanistan can not live in an isolation with the rest of the world. So if some of them visit Pakistan, Iran, the neighbouring countries, Dubai, etc. they will see the technology over there. The majority of them now own their mobile telephone and the young generation is very keen to learn computers and obviously every one is trying to have a car, a vehicle so they cannot escape from the technology. [...] especially the young generation, is very keen to learn technology. But sadly again the government hasn't got any proper plan."
>
> (T. F. :42:55)

With several million Afghans living in exile during the time of Taliban rule, the demand for services and new technologies entered the country together with the returning

population. The majority of the Afghan interview participants had lived abroad and reported using digital tools before moving back and finding it initially difficult to do without.

9.2 Computer literacy - enabling technology integration

Computer literacy training programms flooded Afghanistan after 2001, when prior knowledge was literally non-existent and anyone with a PC and electricity could offer such training. It was still the most common one, mostly concentrating on office software, web search and digital communication. The high demand for English and computer classes was also reflected in international aid programmes and induced countless ICT training programmes and facilities at universities and other public institutions, including "capacity building" in using digital tools. This *computer literacy* or *learn how to use a tool or a system* approach is the most commonly observed type of ICT capacity building in both the literature and also observed in the field.

One of these support programs was the Afghan Digital Learning Union (ADLU) that started its capacity building effort at Kabul University and later expanded to nine more universities as described in their final report:

> "[The Afghan Digital Leaning Union (ADLU)] project was designed to build the capacity of faculty members and higher education administrators to enable them to support the provision of quality education and enlightened public policy for the Afghan people."
>
> (USAID: 2011)

This included eLearning centres offering basic IT training, eLearning and web design courses, and English language instruction for professors, university staff, and students (USAID: 2011). The centre at Kabul University opened in 2007 and included a lab with around 20 PCs and was open for all students to use. It had changing staff, usually short-term trainers from the US or South Africa. Though the project's goals were generally seen as relevant and useful, it was confronted with a number of problems during its implementation that were also observed in similar projects.

At the time I visited the centre, it had been handed over to a new coordinator, Christine Olson, who was charged with preparing the project for its final phase – to be handed over – and was not too happy with the results. The budget had been underestimated, most of it had been spent on subcontractors and few of the initial goals had been achieved or maintained, as Christine explained (C. O. :01:50). The

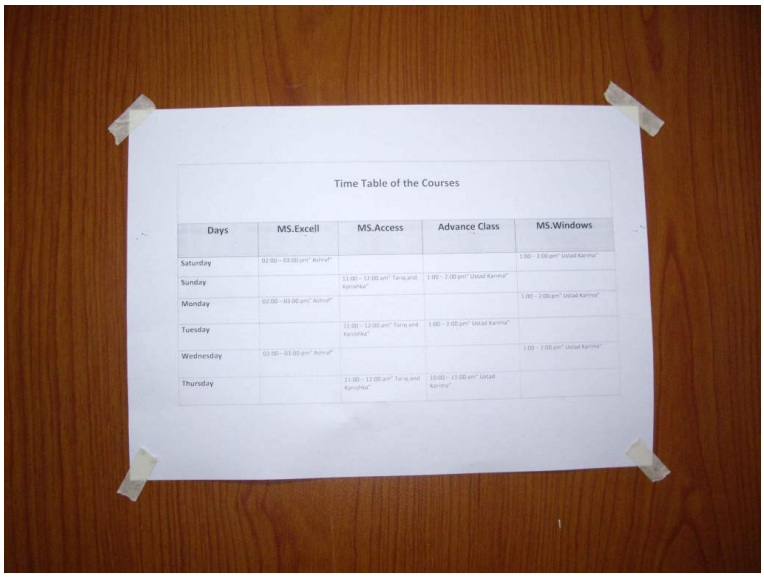

Figure 9.2: Basic computer training classes at the MoHE (source: the author)

project's declared focus group had been lecturers and faculty staff tasked to build a lasting capacity in the faculties, but as they had been reluctant to attend the training, they had trained students instead who were more willing to come. They had also focused too much on IT and neglected the English component, in her view, which made most of the computer and software classes inaccessible to those who spoke only Pashto or Dari (ibid. [06:45]). For the basic computer classes they had local computer science graduates, but most of them left the university for better jobs and they frequently had to be replaced. When Christine took over, there was no standardised curriculum and no consistent course content, as the courses depended entirely on the trainers they had at the different universities. So she decided to introduce the international computers drivers license (ICDL) and hire only certified teachers (C. O. :50:29) (for the full quote see appendix A.9).
For the digital library component it was planned to digitise books and thus make them available to more staff and students and set up a catalogue system. But the librarians were trained by a team from the US and after they left no one followed up on them, so the system was not in use. Only after they had hired local staff with a background in library science could the project be continued. They established a mentoring system where the librarians were treated as partners, with more responsibility, which also motivated them to use the computerised system (ibid [55:21]).

Rabeha, then a computer science student, attended one of the training courses at the centre and experienced it as confusing and badly prepared. Before starting the course,

CCKU first had to help them install a new operating system on their PCs (R. K. :42:21). The trainers had come from South Africa, she explained, and despite her experience with IT she did not understand what they wanted and what the course was about.

> "He was not able to clearly define what he wants, so we couldn't understand what he wanted. But I know there was a system and it had some modules, he was asking us to develop some more modules.[...] And after it was finished they gave some certificates to us (laughs) and it was very strange."
>
> (R. K. :42:21)

In Khaled's view, the training centre was only a burden to CCKU. They were calling CCKU every day to help them with technical issues and as the training centre was part of the university, CCKU felt obliged to help. If they did not help, CCKU worried, the chancellor might complain (N. & K. :00:31:03).
The project had started with the goal to build capacity with little consideration for the local circumstances. Electricity and internet connection turned out to be major problems, but also the interest and attendance of the focus group was low and the technical course preparation insufficient. "Providing access" as a first step to capacity building still predominantly concentrated on the hardware, with little attention to the dependencies and – in a European/American context – invisible systems that this hardware is embedded into. The local partners were given no active role in preparing the provision of access and technologies, and could thus not contribute to its appropriation. They are only asked for help, as Rabeha and Khaled described, to fix urgent problems during the course of the project.

9.3 Institutional capacity building – solving real world problems

The second most common complaint regarding ICT implementation in the education sector was the lack of understanding and support of ICT at institutional level, a particular problem also mentioned by those working with or for government institutions. Similar examples have been given from CDME and CDMH, the Computer Departments of the relevant ministries, who mostly described themselves as being in a difficult position to stand against this attitude. With little interest from the government and a high demand for technical expertise, they depend entirely on international funds and projects to maintain their status. And to fulfil the requirements to attract these funds, and maintain the technical systems, considerable efforts were being made in terms of institutional capacity building. Hameed Daoud from the MoE also addressed this issue repeatedly during the interview;

> "We [should] provide first the human capacity, to maintain whatever we develop. If we don't have the manpower, to provide the future coming support, then it's better not to build. Because, I'll give you an example of ministry of communication. Yes they do have the fibre optic now, they do have the data centre. But what is the usability? We have the fibre optic ring almost completed, but when I say lets connect these locations, there is no technical expertise, or it is damn slow. They have spend, I don't know, 800 million or something? But we're not taking full advantage. It's because we don't have the capacity. [...] Because technical expertise can not be found in a day. Or in a year."
>
> (H. D. :57:29)

The most common procedure for public sector ICT projects was also illustrated by the laptop and the infrastructure projects. Digital tools or systems are developed and implemented by external contractors; operation and maintenance are expected to be organised by the governmental project partners, in these cases the technology sections of the ministries. With little trust in (and also experience with) other entities, such tasks are not outsourced but instead "capacity" is hired or build in-house.

9.3.1 The Management Platform for Higher Education (MPHE)

In 2008, the MoHE hired Baseer Mohammad Omar, who had previously worked as a system developer for the MoE, but came with no clear assignment to MoHE. I remember when we started at the CDMH and no one knew what he was doing and when I interviewed him he explained that his mission was also not clear to him at the start and the task he was given was changed on a daily basis (B. M. O. :01:00:40). For the development of a student management system there was, at the time, an Indian company and an Afghan developer already hired by two other donors and Baseer was asked to evaluate these systems and he started a system analyses for the Ministry.
It took him several months to scrutinise the current paper-based system the universities and the ministry were working with and to translate that into a digital version. Someone from outside would not have brought the necessary understanding for such a system, since it was fundamental to know it from within. I remember him spending days interviewing and visiting different ministry administration sections and drawing sketches from the routines. And he also needed to find the right way to present his results to the ministry people, he described, who did not have the technical understanding about how such a system would work. It took him six hours, he explained, to present the system requirements because he needed to make it simple and visual enough to understand. He

finally recommended the use of one of the currently developed systems to the Deputy Minister, and to customise the system according to their needs. But the Deputy Minister told him to develop a new system from what he had presented. So he had to start from scratch, he explained, and with no guidance from anyone because no one in the MoHE understood the technical requirements (B. M. O. :01:15:35).

He completed the work in 2011 after about two years. During the whole time he had no supervision, but received many complaints, as he said, because it took him so long and no one was able to understand why and what exactly he was doing. In 2011 Fayeq Bezhan told him to finish the database, Baseer mentioned, and they got into a fight.

> " When I show him he told me: *ok you finished.* I told him: this is finished, ja? I asked him: how do you understand it's finished? He told me *ja, when I saw.* [I told him:] you don't know by yourself, how you can tell me that I finished? He became angry."
>
> (B. M. O. :01:25:19)

The system was at the time of the interviews running in test-mode, but not ready for web-based services. When Norzai and Khaled, in their position as university IT support, met with Baseer to get an idea of the system, he could not answer most of their questions, as Khaled described, but also did not feel responsible for these parts. He only took care of the database aspect, but "it has database part, it has programming part, it has network part, it has IT part, there is hosting and these things" (N. & K. :01:18:18) (for the full quote see appendix A.10).

In 2011 Abdul, a young computer scientist who had just returned from completing his master's in Europe, joined the project and after Baseer left the ministry shortly after, he took over. They had started testing in 2011 at four Kabul based universities, as Fayeq told me, including training for 140 university employees (F. B. :20:53) and Fayeq was very optimistic about its implications.

> "For example if we implement a [MPHE], I'm sure we will decrease the load of the work for MoHE and the universities to at least around 50%. And we will make at least 50% faster the working process. So nobody can do any corruption if we implement this."
>
> (F. B. :01:15:11)

The introduction of such a student and teacher administration system would need secure country-wide power and internet supplies, security and back-up solutions for the server. Staff would have to be trained how to administer the system at all universities and

it would, apart from the technical challenges, also mean a complete about-turn in how the universities were currently run and organised. It would reorganise responsibilities and duties and make certain positions in the current manual process redundant. Its above mentioned limiting effect on corruption also meant cutting privileges and filling loopholes, which might not be seen as a welcome change at all universities.
Since 2011 the project has been supported by a number of other donors, but by 2012 it was still not completed. The universities did not fully support and implement the system, and the incomplete state of the system itself also prevented its adoption (ZiiK: 2012).

9.3.2 Private sector ICT capacity

Iqbal Muhammad is a young Afghan computer scientist who worked for an international NGO in IT for several years before starting a software development company with some friends and now mainly works for international organisations and government entities. He emphasised that all their employees hold international degrees and certificates, as Afghan degrees count for very little. Similar to most international consultants, his judgement of the quality of public sector ICT staff was critical. Those with an international education looked for better paid jobs or jobs where they had better career and training opportunities. So the government ended up either with short-term contractors paid by international donor money or inexperienced staff. To secure these positions, the Computer Departments tried to secure money for capacity building and insisted on implementing technical projects in-house, to hire new employees and pay the existing staff, as described by both Hameed, from the MoE, and Fayeq, from the MoHE. Iqbal suggested IT companies should be taking this supportive role. The private sector was growing and maturing quickly and invested a lot of money in its staff capacity building; if international companies did the implementation, they should in his opinion take only an advisory role with a local company which could later continue the customer services (I. M. :10:48). But currently the donor money was invested in solutions that appeared to support governmental institutions' capacity building.

> "They are giving these salaries, hiring people, lots of experts, bringing internationals – they have budgets available for this. [...] if 10 people are being paid from the World Bank side to MoE lets suppose, and after two years the World Bank project gets closed. And you just count, a system is even not developed and not completed over there and everything gets multiplied by zero and then USAID comes and then they start another project and then they bring new people and then they are not aware of what was done before and what was done now."

(I. M. :26:27)

The government should, in his view, focus on policies and procedures and outsource IT tasks. A lot of ministries developed their own systems, he explained, – like the MPHE – and then, on the one hand, struggled to keep them running after the developers left and, on the other, they had no clear vision for implanting the systems into the environment they were supposed to run in. There was no awareness, he said, of the difference between developing a solution, applying and maintaining a system and managing the whole process. He assumed the ministries' IT people were afraid the private companies would replace them (I. M. :22:16) (for the full quote see appendix A.11). They wanted to secure their jobs, he added, by expanding the number of projects they were running.

> "The technical people they start opposing and saying *"well if you spend some amount of money on this and you train us then we will implement this for you, why should somebody else do this"* and in this sense like trying and trying and trying. And nothing is done."

(I. M. :27:28)

If projects failed that were only funded for a few years and paid by international money, there was much less accountability, Iqbal explained. But he was sure that this situation would not last forever and once the international aid money was withdrawn from the country and no one was paying the bloated salaries any more, he was sure it would be easier for both public and private sectors to hire qualified people (ibid. [57:44]).

Chief Information Officer

ICT capacities at public institutions need to reach a certain level so that requirements can be understood and estimated, and support within the institution can be established. These competencies were also being increasingly discussed among international consultants, who advise the Afghan government and the international donors involved in the telecommunication strategy and spending. David Kemp, a member of the Telecommunications Advisory Team (TAT) suggested that the ministries had, regarding the dependence on ICT, developed considerably, so what they needed to be doing in the near future, was to start to differentiate between technical staff responsible for maintenance and trouble shooting, and a Chief Information Officer (CIO) (D. K. :01:01:11) (for the full quote see appendix A.12). His colleague Paul, who worked as a researcher for the same team, discussed a meeting with all ministries' IT people he attended that had revealed similar issues. When they were asked what they were planning, once the ministries were connected to the fibre ring, most had no idea, Paul described, "it's just

they are all given some equipment, hook it up and turn it on and now figure out how to use it." (P. R. :55:54).

Figure 9.3: The printing machine used for university announcements and official correspondence (source: the author)

Like the universities, most ministries still had manual procedures in place that could not simply be replaced by providing hardware and infrastructure. Paul described a situation at the Ministry of Foreign Affairs (MoFA) that had similarities with the restructuring issues Kabul University had faced with the introduction of the MPHE. When he visited their facilities and was shown around, he saw that despite their new digital equipment, they were still working mostly manually. Instead of retraining their staff, Paul explained, they just kept the current procedures even if it made the work much more complicated (P. R. :01:16:04) (for the full quote see appendix A.13). Both situations described by Paul show what can happen if new technologies are introduced, but the process is not supervised and supported along the way.

9.3.3 ICT as change makers

The resistance or inability to use to new technologies was not always met by understanding or a call for capacity building. Technology, some assumed, could also play the role in overcoming outdated, non-transparent or unreliable manual processes and enforce a change of attitude, as Hameed Daoud hoped the laptops would discipline the teachers by indicating their mistakes. In that regard, the technology would contribute to institutional capacity building by eliminating those who would not follow the system, or

as Peter O'Neill put it, "if you want the next project then you just use this tool and you do these things" (P. O. :38:57). Peter was a retired military officer from North America – a background not unusual for international contractors in Afghanistan – who worked for a locally registered NGO that mostly provided technical consultancy and software development services to the government. He described the mandatory introduction of project management systems as an important factor for the government's development and said that the ministries had to implement it, whether they wanted to or not.

> " The acceptance of the system will come when they realise that's where the money comes from. No acceptance no money.[...] So it's really a question of conditionality and the condition is: here is the system through which the money flows. If you don't like it, then you don't get the money." (for the full quote see appendix A.14)
>
> (P. O. :13:34)

The system was to monitor money flows and aid effects and offer a complete set of planning and implementation tools, it would provide the necessary transparency, in his view, the donors could expect to see where their money went and that it didn't end up in someone's pocked.

> "So, where I'm getting at is this system deals with effects. It's effects based management. [...] It's deciding what's needed, planning it properly, executing it properly and then figuring out if you got the result you wanted [...]" (for the full quote see appendix A.15)
>
> (P. O. :18:32)

Peter said he experienced the same problems in software development during the training of his staff but also in the private sector in general. It was important and necessary to adapt to Western systems and standards, he was convinced, and Afghan programmers were not up to these standards yet. His NGO, however, worked differently, as he said, and could deal with big Western contractors because he had disciplined his staff to take a 'Western attitude' (P. O. :57:08). If the ICT industry in Afghanistan did not change, he predicted, the market would be overtaken by the neighbouring countries. With regard to the private sector, he described the international aid money as an *aid virus*, leading to high prices for low quality. And the *Afghan first policy* could do little to change the fact that a profit based industry would buy IT services from neighbouring countries for a lower price and better quality (P. O. :01:00:02) (for the full quote see appendix A.16).

He attested to the country is a "tremendous talent base" but the quality of education at the universities in Afghanistan was, in his eyes, insufficient, while minor ICT skills already sufficed to get a well paid job with one of the NGOs. The aid money created an insulated bubble, in his view, and there was no real competition yet (P. O. :01:10:43). He could, he explained, run the NGO much more effectively with less people, or by outsourcing some of the work, but "the idea is for them to learn" (ibid. [01:09:17]).
Peter said he did not see a bright future in terms of the ICT industry for Afghanistan, "probably something buggy and unacceptable like Pakistan but - that's it. That's what it will be.". The best experiences he had were with his female IT staff, because, as he said, "they don't have the egos"(ibid. [01:15:12]).

Peter's attitude was certainly one of the more extreme ones, but it was far from being an exception. I had come across similarly patronising statements during many informal conversations. He was an exception insofar as he did not mind making such remarks during the interview and seemed to feel comfortable with it.

9.4 ICT capacity as a goal – innovation and knowledge production

By many of the IT professionals, the public institutions for ICT education were not seen as capable of meeting the demand, while most of the private ones were rated even lower. And though the quality of the graduates remained contested, the number of institutions offering computer science degrees has gone up considerably. In addition to the 30 public higher education institutes, there are now 81 private institutions of higher education in Afghanistan, of which 17 of the 38 in Kabul alone offer computer science as a field of study[1].

The situation at Kabul University in the first years after the Taliban regime has been briefly described in section 9.1. Much has changed since then, regarding infrastructure, premises, equipment and curriculum. Yet most interviewees, like Mr Fidai, complained about the insufficient developments, considering the time and money invested. In his view, the Afghan government has not yet realised the importance of IT education (T. F. :27:12) (for the full quote see appendix A.17).
The university did not provide enough attention and support to computer science as a subject and ICT facilities in general, he added, but he also accused the international community of not having done their part in addressing problems and were just implementing

1 Details are on the Website of the MoHE last checked August 2014

projects that mostly benefited themselves. In his view many of the internationals took advantage of the money that was easily available, and benefited financially themselves while achieving very little with their projects (T. F. :44:38).

Rabeha also acknowledged improvements but attributed them mostly to what they learned at the CCKU rather than to the computer science department (R. K. :05:13) (for the full quote see appendix A.18). Uzma saw few positive developments since the time she was a student several years before "I don't see much improvement in our faculty. Even it's degraded." (U. R. :26:41). The lecturers were better trained now, but the lectures were still too theoretical because there were no practical applications and only those with access to the CCKU could apply their knowledge (U. R. :28:15).
Khaled observed that the students' preparation for university and their expectations for the subject had changed and were much higher now than they had been when Khaled and Norzad were students.

> "[T]he students [...] that are coming are a little bit familiar with English, they know the importance of computer science and come of their own interest. But those times some people just wanted to have a certificate from any faculty and they were sitting with us in computer science [1]. [...] the students understand importance of computers and internet [...]. In 2003 people would have said that they want to learn Office."
>
> (N. & K. :17:59)

The job opportunities for computer scientists are considered much better than in other disciplines, as several interview partners confirmed. A lot of them started teaching computer courses or worked for one of the telecommunication companies, often before they had even graduated, as Rabeha mentioned "with a basic knowledge in IT they can get a job" (R. K. :28:09). But nonetheless changes at the university are going very slowly and it was described as difficult by the younger, better educated, generation with international master's degrees to get positions higher up in the hierarchy or the chance to influence developments at the computer science faculty (for more details see appendix A.19) .

The tensions between the different generations and the new influences from other educational systems entering Kabul University with the donor programs made it more

1 In the first few years computer science was little known and mostly attracted those that had not been accepted in their first choice. Today it is one of the most popular subjects.

difficult to offer training and lectures directly channelled through the public university system. Additionally, this higher level training needs to be done in small groups, often requires well equipped, reliable facilities and professional trainers. Therefore most specialised ICT training for the public sector is outsourced to international training institutions abroad and only lasts for a few weeks, as in the case of the university connectivity project. This often results in what Gevaert (2011) calls "too-many-donors-syndrome" with staff attending multiple training courses, dealing with hardware they do not have at their home-institutions and finally never learning to practically implement anything. Advanced training is not, typically, organised locally, but as in other higher education disciplines, mostly covered by scholarships for postgraduate-degrees or summer schools. A different approach was taken at the Computer Centre at Kabul University (CCKU), which developed local ICT capacity and organisational structures over a course of several years.

9.4.1 The Computer Centre at Kabul University (CCKU)

The Computer Centre at Kabul University (CCKU) was built in 2003 by a Technical University in Germany (TUG) in cooperation with Kabul University and financed by the German Academic Assistance (GAA). Its major goal was to develop " a sustainable IT concept for the academic structures of Afghanistan and especially for the University of Kabul" (ITCK: 2014). Like the ADLU, this included basic IT training for university staff and students, but also network administration training on different levels and preparing staff for providing IT services for the entire university. The centre established a structure that ensured continued training by the most senior and experienced members for new staff who replace those who graduate and leave for jobs outside the university. There are different positions with different responsibilities: junior administrators, senior administrators and management. The centre is offering IT help-desk services to the university and has a PC workshop for repairing broken hardware on campus (U. R. :17:52)

The centre closely cooperates with the TUG. In particular, in the first years, this meant frequent visits by a German team to develop technical solution based on the local conditions, build up the centre, select and import the hardware and train the local staff that had been recruited from among the computer science students. After the first generation graduated the staff became a mix of university lecturers working part-time and providing training there and students. Until 2008 the centre was also responsible for managing the internet connection provided by the first satellite dish of the university connectivity project.
Today the centre runs mostly independently, with less frequent training in Kabul but

with ongoing financial support by the GAA. The concept had also been exported to four more universities in Afghanistan where centres were opened between 2010 and 2014, with members of the CCKU like Khaled and Norzad, taking a leading role in their preparation and implementation (N. & K. :03:39).

> "[A]t first [...] we were busy before learning how to manage [CCKU] itself, because before that it was our German friends [...] these people came and they implemented the servers, they made some changes in the servers and then sometimes they had to teach us also and at that time we learned it by ourselves. Then we trained the new generation of [CCKU] and now they are working more independently. So not much trainings are needed for them by the German friends."
>
> (U. R. :26:41)

There had also been plans, according to Khaled and Noorzad, for the CCKU on how to become financially independent: developing software, act as an ISP to ensure ongoing free internet services or offering web development and design services. But also two years after the interviews none of this had been realised[1]. This almost certainly was to do with the fact that all university finances are managed centrally by the MoHE, making adaptations and individual solutions difficult. But it might also result from the ongoing difficulty to amalgamate efforts from different sides: technical, administrative and academic and the different donors involved in each of these areas.

Donors are in competition for the best results and contractors are in competition for project money. More than once I was warned before entering a meeting that participants from other projects might *"steal ideas"* or even worse *"claim results"*. Most projects are only funded for few years and to apply for continued funding the projects need to produce short-term results to prove the money was well spent. Training several thousand students in basic IT skills or equipping computer labs seems to be a more desirable outcome than training a dozen computer scientists in open source network security. Noorzad had the same experience with several donors asking what the faculty needs were and looking for quick solutions.

> "They have money, 2 million, 10 million, 20 million they say we have some million, we want to spend it in two years, three years, how can we do that?

1 This had been confirmed by several members of CCKU I either met in person at later visits or via Skype conversations

> They are happy if you say we need equipment, then you can get a lot of money. For training they only like if it is short, two weeks, maybe three weeks."

(N. & K. :56:04)

What the universities more urgently needed, in his view, was to send IT professionals to help develop local solutions. The CCKU is, in their view, a good example of how localised training and planning together with experts can lead to sustainable solutions (ibid. [53:58]). But the approach to send IT experts to the universities for longer periods is still being neglected by most donors. Khaled and Noorzad were convinced that bringing experts to Afghanistan helped localise the training and work and allow more people to participate (N. & K. :01:50:00). The lack of cooperation also concerned Rabeha Karim. Kabul University was in her view now well equipped with technical staff, but in other provinces there were very few technical staff and the universities still have very basic problems.

> " [W]e are in contact with some colleagues in other provinces because we were classmates, we went together to study, we know each other. But there is no other unified network of IT professionals who can talk with each other and we can solve problems. Who can somehow promote the IT situation. So we need to have something like that also."

(R. K. :01:02:43)

The demand for IT experts in different areas continues and the public sector faces increasingly strong competition, not only with NGOs and donors, but also with a fast growing Afghan IT industry. For many computer scientists, advanced training opportunities and job security with steady promotion were the greatest incentives for the public service, making a low salary more acceptable. If neither can be provided, as is still the case for many IT positions, it is likely to become hard for the universities to find appropriate people.

9.5 Capacity, authority and local conflicts

9.5.1 Change and context

Similar to what Fayeq described regarding the CDMH, Khaled and Norzad suggested the MoHE as the highest entity, together with the universities, needed to develop a strategy

on what role IT could play in enhancing the higher education system. They believed they should channel all efforts to one course of action that was closely monitored (ibid. [1:00:16]). Right now, they said, the MoHE did not know whether projects failed or were successful. The projects were islands. As described in the previous chapter, there were tensions between the CDMH and the government concerning institutional support. Simultaneously, there are tensions concerning decision making and responsibility between CDMH and the donors resulting from insufficient integration in previous years. And finally there is the hidden conflict between CDMH, as the leading entity in IT in higher education, and the younger generation of computer scientists now working as lecturers at the universities. Norzad and Khaled did not agree that the CDMH had the necessary capacity to fulfil its role as guiding body for technological planning. All the CDMH wanted in their view, was to have everything under their own control (ibid. [1:13:26]). They would need the support of those students that earned their master's degrees abroad. But the CDMH showed no interest in cooperating.

> " If you ask MoHE: *did you ask any of them?* Because we had some session, two, three times all the people [...] with them, with Deputy Minister. Ok there are masters here, you can ask them anything. For the servers, for the data center, ask them for the website, ask them for the concours system - anything. But till now I'm talking with you, they didn't talk with even one of these guys *please come to the Ministry, help us with the planning, help us with anything* nothing."
>
> (N. & K. :1:03:41)

There has been an IT board for higher education planned by the MoHE for years, but it was never put into action, partly because it could not be solved who should be on such a board. And the reasons for that, they were sure, again lay in the conflict between different generations, qualifications and authorities (D. N. : 2011:1:06:13).

At the university, the generations are divided into before and after the Taliban. Some of the older lecturers taught at the faculty at times when no computers or even electricity were available. And even those who graduated during the first years after the Taliban and then became lecturers are often considered as part of the 'older generation', as compared to the 'younger generation' lecturers who had much better resources and study conditions. The older generation was during several interviews accused of deliberately trying to slow down any progress.

The only thing Norzad and Khaled could do in their current position, they said, was wait for someone high enough up who understands the importance of IT and suggests a cooperation. Then the CDMH and the older generation would be afraid to be left

out and agree to cooperate (ibid. [2:03:45]). If they kept up the good work and made strong suggestions the others would have no choice, they were sure, but to follow (ibid. [2:07:45]).

> " Because I told you they cannot block the sun with two fingers (laughter)"
>
> (ibid. [2:08:21])

At the CDMH this disinterest in cooperation was never openly addressed. Fayeq would instead emphasise their own plans, the competence of his team and the general good relations with the universities. Norzad and Khaled received broad approval among many individuals at the university, the ministry and most of all, among donors. But their criticism and call for changes also touched a lot of sensitive areas like the Afghan scholarly system and the higher education ICT policies. They were (at the time) among a very small group of dedicated and experienced computer scientists in the public sector, calling for change to a system that consisted of many more unresolved issues than simply technological ones. Therefore the CCKU was not only highly respected in the university and the MoHE but also seen and described as a parallel world and isolated in some respects. Again to some extent because it was not an official part of the university structure and lacked institutional backing, rumours about salaries and certain privileges easily spread and raised scepticism and envy.

9.5.2 Cooperation and competition

Distinct from most internationally funded projects, the CCKU's salaries were only slightly above public service salaries. This was meant to assure its integration into university structures would not mean losing all its staff. Instead the slight correction to their salaries would be balanced by official government status that would last beyond project funding dependencies. Other projects like ADLU and the university connectivity project were known to pay significantly more, putting them in a much more difficult situation in terms of government integration and the coverage of costs. As mentioned above, the CCKU's attraction for students was the advanced practical training possibilities while for graduates it was often the summer/winter-schools in Germany.

The occasional job change from the CCKU to another donor funded IT project at the university, the ministry or, at times, even the active attempts of other projects to recruit from the CCKU, increased distrust and competition. CCKU would invest years of training and would build future projects on the increased expertise, but then

"lose" some of their staff to projects that made no such educational efforts, but offered better salaries. CCKU's frustration with this behaviour and their attempts to avoid it reinforced CCKU's image of being isolated and uncooperative. When asked about CCKU, a young Afghan woman who used to work for ADLU and now worked for one of the biggest higher education support programs in the ministry, described them as arrogant and difficult to work with (HES :28:41).

These tensions were often transfered from the project level to a personal level with a strong awareness where one "belonged", intensified by the above mentioned competitive environment of the projects regarding best results and continued funding. Mr Fidai worried that with the high salaries the NGOs were offering and the limited career possibilities, together with the low expectations at the universities, most people had a second occupation and did not take their government jobs seriously enough (T. F. :25:11) (for the full quote see appendix A.20).

Some additional comments on general conflicts based on ethnic affiliation are summarised in appendix B.

CHAPTER 10

Modernization, Manipulation, Determinism - long overcome?

50 years of scholarship in Communication for Development and development studies has not gone unnoticed by the international aid sector. More than once, radical changes have been demanded and announced, from top-down to bottom-up, from market-led to poverty-reduction, from structural adjustment to community-participation. Similarly, social constructivist views have influenced how science, technology and, also, development are viewed and discussed. In this chapter I will first look at how these old and new concepts have become part of argumentation and action, how "context" and "participation" are discussed within the three areas described in the previous chapters, and I will explore the roles New ICTs are given and how they are conceptualised by different actors.

As briefly explained in chapter 6.7, the broader institutional settings of international aid programs, in cooperation with government institutions, predefine certain goals and priorities. The concrete situations resulting from these arrangements were also visible in the projects in this study. Including local knowledge and requests was on occasion incompatible and, sometimes even in direct conflict, with the broader project structures. All local actors at School Four complained about what seemed to them arbitrary teacher arrests by the international forces, one of whom was the head of the now closed teacher training centre. Simultaneously, the international forces' civil-military cooperation section funded the laptops, whose intention it was to "minimise the role of teachers to some extent" (H. D. :09:39) and fill in for the current lack of well trained teachers.

Another obstacle to local participation is seen in the demand for more transparency and accountability of aid spending, which means less flexibility and stricter calculations. Most project funding requires strict book-keeping, regular detailed reporting and a clear definition of project deliverables. Unexpected costs are not easily covered and delays equal spending more time for the same amount of money and require yet another report

explaining the delay. "Project managers still face other pressures to get things done, and other measures of efficiency than those provided by measures of participation" (Mosse: 2001:24). Including local expertise is, therefore, rarely expected to bring any important additional input to the project but is rather treated as an act of goodwill and confirmation of what has already been decided. These limitations regarding flexibility and changes were sometimes criticised, but on most occasions, taken for granted. Frederic Tailler describes the fact that they have no funding for the salaries of network administrators at the universities as "our big handicap" (F. T. :00:38:08); he adds that this is part of official policy, so they will have to find a way around it locally. The policy itself it not questioned. These circumstances have led in many projects to a kind of game, where regulations and deadlines are guiding action, but there were always small workarounds for dealing with predictive planning in an unpredictable environment. This was used for personal benefit as much as for project benefit reasons. These strategies to gain some flexibility were, however, mostly used to comply with project regulations despite 'irregularities' where the local context did not 'function according to the plan'. They were used to maintain conformity instead of undermining the rules. That said, I want to explore how, within and beyond such project framing, involvement, interaction and participation among local and international actors takes place.

10.1 I don't mean to be patronizing, but

> *"I'm sure we will decrease the load of the work for MoHE and the universities to at least around 50%. And we will make at least 50% faster the working process. So nobody can do any corruption if we implement this."*
>
> (F. B. :01:15:11)

The view that Afghanistan needs to get rid of its "traditional" routines and catch up on values and technologies that are the basis of efficiency, accountability and transparency in the developed world widely persists among international and local actors and is strongly reflected in technology-centred project design. Where Lerner (1958) saw the transformational power in media use, it is now New ICT that bears the promise of modernizing Afghanistan. Especially it is those (mostly younger) Afghans who studied abroad, experienced the advantages of a technologised society and are now part of the international aid structures, who are the strongest supporters of ICT-based solutions. Like the "native intellectuals" described by Fanon (1959), the ministry employees Fayeq Bezhan, Ekram Sherzai and Hameed Daoud play a crucial role in introducing technologies and new structures to their ministries, embracing new technologies widely and

uncritically and are therefore welcome local partners for international organisations. When Hameed Daoud quotes the laptop producer on how technology is like food, it becomes most obvious how a 1:1 transfer of the positive image of the importance of new technologies collides with the local problems of missing school buildings and teachers that he is also very much aware of. Nonetheless, Hameed remains in his role as the defender of the project against the technology-hostile environment he sees at the MoE (H. D. :0:11:10). Their positions put Fayeq and Hameed in conflict with both sides, the 'older generation' of Afghans who in their view did not understand the importance of these new technologies, but also the international partners who have long overlooked them, and, do not treat them as equal partners but depend on their cooperation.

The relationship between Internationals and Afghans was often similarly unacceptable and, at the same time, commonplace to me, and similar to everyday sexism. Only when imagining the roles being reversed do I realise the absurdity this could cause. The natural superiority many internationals internalised was rarely challenged. The fact that "we" (the international community) are here to support "them" (the Afghans) seemed for many to imply a teacher-student relationship, or even a mother-child relationship in which the mother has to repeat her request thousands of times before the child internalises it, as the IDB consultant suggested, "it works exactly the same way in the developing world" (S.G. :18:47). Afghanistan's history, the country's continued resistance to the invasion of competing empires and its changing allies, reinforces the image of Afghans as unpredictable and gave rise to the frequently quoted saying "*you can rent Afghanistan, but you can't buy it*" (Burke: 2001). Fluri (2009) describes the tendency of "imperialist nations" to see Afghans as "uncivilised or traditional" and an unwillingness to work with them as equals (p. 987). This reinforces the above mentioned tendency to treat Afghans like children who need to be disciplined rather than as equal partners (for the full quote see appendix A.14), who are in charge of their own 'development'. Resistance against imported concepts and technological solutions is by their proponents on most occasions met by one of two reactions: a regret for the lack of understanding ascribed to age or limited knowledge, or anger about the narrow-mindedness, unwillingness to understand or egoistic reasons of those profiting from the "old system".

Local involvement in projects was described as functioning at best, but more often as causing problems, complications and slowing the whole process down. Teachers need to be motivated, network administrators need to be educated, university administration staff trained and ministries convinced to make the technology work the way it was intended. This often meant the technology functioning as a driver for change. As Florian

described it, "[Sonatec] happens to be the entity that can actually do it and the ministry happens to be the government body in control of that subject." (F. P. a :1:22:59). He knew the ministry's involvement was unavoidable to secure funding, even though he saw the MoE as sometimes "more of an obstacle to education" (ibid. [1:30:03]). Within project paperwork, official meetings or donor reports, *cooperation* took a prominent role, local partners were equals and could secure "sustainability". Like the 'workarounds' to comply with project schedules and rules that can be found in any project, this shows another unwritten rule of the game called development aid. Rottenburg (2002) describes this as *official script* (o-script) versus *unofficial script* (u-script): the o-script attests to the project partners' autonomy and responsibility, while the u-script talks of their incompetence and inability and makes them passive receivers. The laptop project gives a good example of the conflicts that arise from switching between these scripts. Sonatec depended on the MoE's cooperation and had to communicate that they could hand over project responsibility to the MoE while, at the same time, Florian was quite frank that he didn't think they were capable of it at all.

10.2 Adapting the user

> *"The acceptance of the system will come when they realise that's where the money comes from."*
>
> (P. O. :13:34)

All interviewed stakeholders were aware that New ICTs depend on certain conditions to work, certain resources, knowledge and institutional support. As a result, the dominant view was that an environment needed to be established that would make sure the technology of choice could fulfil its mission. The school laptops' mission was to relieve pressure on schools arising from the lack of teachers by promoting 'self-empowered learning'. According to its manufacturer, it is designed and constructed to meet the educational needs of developing countries. These needs, however, are predefined and not expected to be voiced by the schools or the children themselves. The educational concept utilised for the laptop is centred on the pupil, whose potential is to be "unlocked" by the device. Afghan schools, however, are presented as the opposite: as the teacher centred, creativity-hostile environment that the laptop is to break open. The laptop encourages certain behaviour and use, and allows very little flexibility, regarding the requests by the teachers. No other operating system is meant to be installed and no use other than the individual one-to-one is intended. The laptop tries to configure its users into a certain style of learning, which is also exactly its purpose in the Afghan laptop for

schools project. It will not only fill the teacher-gap, but compensate for "bad teaching", reorganise lectures and introduce new learning methodologies. Hameed Daoud suggests the laptop would therefore function not only as a learning tool for children, but also discipline the teachers and confront them with their mistakes. Again, this example shows how the instructional perception of technology is not only evident in the "Western-view", but even stronger or at least more openly communicated among "native intellectuals". Unlike most international development workers whose "professional empathy" requires them to demonstrate understanding for different needs and conditions, technophile young Afghans often request much faster and more radical changes.

The fundamental conflict within the laptop project is that the device excludes the teachers. It brings individualised learning to a teacher-centred learning environment. The measures taken to make it robust and stable, also make it inflexible for adaptations. The laptop seeks to define its use and instruct its users, but its deterministic concept can still be dismissed by the users who refuse to accept the role proposed for them (Akrich: 1992). This can mean, as at School One, a complete rejection by the teachers, or, like School Two and Three, a welcome and accepted existence of the machine that has no part in classes or teaching, but, by simply being *a computer*, holds a high symbolic value. The laptop may have been designed to be less dependent on the physical infrastructure and environment of the developed world – though whether this was achieved is also debatable – but it was certainly not designed to be less dependent on a specific use-culture.

The technology – and therefore the technology designer and producer – tries to dictate which adaptations it expects from the users, with very little flexibility regarding different use practices. The laptop's flexibility focuses instead entirely on spatial and material aspects: it is robust, small, portable and children can even work "together under a tree" (SLAP: 2014b). A blackboxed system, that needs as little human interference as possible, is under these conditions, seen as ideal. If the solution is "foolproof" (Akrich: 1992) and no alterations are possible, no "mistakes" can be made by the user. The users then need to be trained how to make use of it. It is upon their understanding and using the technology "correctly" that the success of the projects depends. From Sonatec's perspective, the MoE's role within the laptop project was to facilitate this process of adapting to the technology. Sonatec initially acted as the direct extension of the producer, making the necessary physical preparations and localising the software. In the second phase, after the expected behaviour did not appear, Sonatec tried to react and incorporate different needs into the device within the limited adaptability the device would allow, but the goal remained successfully supporting and training the teachers in how to include the new functions in their lectures. The MoE remained excluded from

technical tasks, it was not seen as capable and technical training for the ministry was not part of the project as it was not seen as necessary. “It is not my job – they will not learn for five years to do this stuff” (F. P. a :1:14:38) as Florian explained. This again emphasises how the laptops were communicated as something that would just work, while the MoE was better not trusted with complex technical work. The laptop project shows the perception of adapting the users on different levels: both the schools and the MoE were not included in the planning and design, but instead expected to accept their roles within the setting to make the project work.

Frederic Tailler was not involved in decisions about technical requirements. His task was to prepare the local partners for the “top-down approach to cover all needs at a single blow” (F. T. :00:23:44). He is the only one who is in regular contact and directly interacts with the partners in Afghanistan. Again it is not the technology that is discussed for adaptation. The success of the project relies on local partners and conditions that are ready to receive the project, following the project design – supported by godfathers “making sure that reports are written the way they should be written” (F. T. :01:02:14) – and finding and training network administrators.

In the university connectivity project it is not so much the user being configured, but a setting is attempted to be reconstructed at the universities, based on similar projects in neighbouring countries. Each of the human and non-human elements is required to function according to their role to make the complex system work. The introduction of the campus network to the universities is further aggravated by the lack of a concept as to what exactly the technology is aimed to be used for. Reconfigurable technologies, as Orlikowski (2000) observed, provide a wide range of possibilities of how their practice is shaped by different conditions and intentions. The use-concept for the universities is an artificial one with no real attachment to the context of the universities. Neither the number of users, nor the prioritised or blocked traffic, security measures, experience of the administrators and many other factors sufficiently shape the current network-configurations. This seems to change in Kabul, where Darya has increasingly gained control and understanding of the possibilities the technology provides, while the other universities are struggling with very basic problems (D. N. : 2011:41:57).
Similarly, the provincial communication networks run by the MCIT were only guided by connectivity, as Mr Qadir observed, “they were just concerned about connecting the two rooms. Now what these two rooms are doing with this connection was never in the plan.” (H. Q. :2:04:25). Access remains the goal; access is equated with information, and information with knowing about the world, leading to empowerment and freedom. *Showing the children the world out there over the internet*, in order to bring a new

mindset to the provinces, was also a suggestion made by Ms Chaudhary of the IDB (IDB). This focus on structure and devices instead of use-concepts has caused the technology to remain a foreign body within the local context.

Fayeq Bezhan from the MoHE supports this technology-centred approach. They initially did not have enough staff, he admits, to run the project. But now he sees his department as being well prepared to take over, or, indeed, he sees them as already in charge. Similar to Mr Tailler's responsibilities, it is not technical planning and decisions that need to be made by the CDMH but the delegation of tasks to different nodes, following the pre-defined top-down procedures. "The concept of [the connectivity for] Afghanistan project is to provide network and structure for universities, the electricity, support of electricity and the internet connection. So this is the concept of the Afghanistan [connectivity] project." (F. B. :00:22:16). Fayeq never mentions any adaptations or changes to the original plan and does not seem to see them as required. His department wilfully supports suggestions like IP telephones and video conferencing systems and requested no changes in network planning, server configurations or training and support, as Khaled and Noorzad did. The only thing he is worried about, as he repeatedly mentions, is the continued funding to pay for staff, electricity and bandwidth.

10.2.1 Alignment and Empowerment

> *"[The Afghan Digital Leaning Union (ADLU)] project was designed to build the capacity of faculty members and higher education administrators to enable them to support the provision of quality education and enlightened public policy for the Afghan people."*
>
> (USAID: 2011)

Paolo Freire (1970) emphasises the need for humans to be 'beings for themselves', suggesting that when people are alienated from their their own decision-making they are made into objects (p. 84f). Development means to free people of oppression and dehumanising circumstances, the 'struggle to be more fully human' (ibid. p. 47). What he described in his book *Pedagogy of the Oppressed* is that the poor and marginalized can, and should, be enabled to conduct their own analysis of their own reality. But participation needs practice and positive experience with getting involved and expressing one's view of things. This is especially so in countries with strong hierarchical structures and the often unquestioned acceptance of 'higher rank' decisions. This conception of facilitating empowerment seems hard to grasp when dealing with interconnected technological systems whose inner workings and configurations are, even in developed

countries, only understood by a few. The possibility of participation in ICT related decisions is often conceptualised to be entirely dependent on "experts" who are to decide for those in need of IT access and literacy. As described above, the focus is on *making the technology work* instead of *making the technology work for the users*.

Most of the technical capacity building efforts target training people in ready-made imported systems to reproduce a certain way of organising, researching and working that is seen as exemplary. This technology literacy approach, also described in Chapter 9, trains technology use, introduces new forms of learning and working and adapts the user's previously analogue routines to new digital ones. The computer's role as a tool for learning is in the computer literacy approach entirely separate from the necessary support system which the devices depend on. In a context with stable infrastructure and an IT help-desk that can be called if the device doesn't work as expected, and functions that are developed for use in such a context, users can concentrate on the content. In fact one might be an expert in programming, routinely use an integrated development environment (IDE), and still ignore any issues concerning the operating system or hardware. The actor-network has stabilised and does not show its individual parts that contribute to its stability. The attempt to reproduce this stability at the Kabul University learning centres, however, depended on too many unstable elements and regularly broke down. And as they were the ones responsible for the campus network at the time, CCKU were asked for help "every day we were receiving calls that it's down.[...] And if someone is not helping, then the chancellor is complaining." (N. & K. :00:31:03).

There is an increasing awareness of the crucial role and importance of the maintenance structures that these systems depend on and both international and local partners agree on the importance of capacity building for being less dependent on international support. However, the process of developing and configuring the systems, and even their installation, remains separate from the training endeavours as the university connectivity example and a number of projects at the MCIT show. The technical side is "outsourced" to contractors who in most cases know the local circumstances only marginally and who again subcontract the installation of the equipment to another entity. They only become visible to the local partners as configurations — like bandwidth and server settings – and are treated like an inherent part of the hardware. For the training an entirely different contractor is booked, as Fred explains: "this year for the second time we bought a whole course as it were to send a group of 14 Afghans for three weeks to this training" (F. T. :00:41:34). To make sense of this division of tasks, there must be an agreement beforehand about the state and function of the technical

system, that is in the centre of all these efforts. If each group could make suggestions for adaptations they would need to interact directly, but this is not part of the project design.

ICT capacity building can, consequently, have the opposite effect of empowerment, by preparing the local partners for the introduction of external, pre-defined solutions, instead of enabling them to conduct their own analyses of needs. Or as Dichter (1989) observed "when asked what it is they need, they will feed back what they have in effect been taught to need" (cited in Bailur: 2007). Ratan & Bailur (2007) criticise how 'welfare-based' initiatives undermine local agency. There is surprisingly little attention drawn to the question of whether part of the lack of sustainability of many these 'welfare-based' ICT initiatives is indeed the absence of adapting technologies to local technical capabilities. Technological training that empowers the users to continuously change and adapt the systems according to changing capabilities and requirements could provide the flexibility needed in an unstable and quickly changing environment, instead of confronting the learner with a perfect but vulnerable reality that is not prepared for any variations. Good technologies, de Laet and Mol (2000) suggest, incorporate the possibility of their own break-down.

10.3 Locally owned dependencies

> *" It's like taking some people who don't know swimming by ship in the middle of the sea and then throwing them in the sea and taking the ship away (laughs). Everyone will die."*
>
> (N. & K. :1:52:40)

The lack of adaptation becomes obvious when one element the system depends upon fails and cannot be compensated for or new elements interrupt and change the settings. A charger is an essential accessory for a laptop, but can easily be replaced. However, if this information, that a replacement can be purchased at the bazaar, is missing, the broken charger disables the entire setting. Unless it is compensated by another child's charger becoming a – less reliable – actor, allowing a limited functionality. A broken mobile-phone screen may be a minor nuisance in Europe, followed by costs for its repair and the absence of the phone for some days. Repairs of the school laptop depended entirely on service, or at least knowledge, that could only be reached through the MoE, who proved unwilling or unable to help. In most cases, the supportive structure that helped stabilise the network for some time, disappears with the end of a project and successfully imitating the same conditions as in other contexts, where the system might

have worked, is the exception. Besides, making one's own position redundant is not always in the interest of the international project partners, who in many cases would favour continued involvement to keep themselves funded (Harr: 2009).

Both Hameed Daoud from the MoE and Fayeq Bezhan from MoHE are active, supportive and welcome local partners for international technology projects. They represent their institutions and function as intermediaries with the schools and universities, respectively. They ensure official institutional embedding and, therefore, continued and clearly assigned responsibility. Both adopted the concepts handed to them and accepted taking responsibility during the implementation. The self-confidence regarding the management and implementation of highly complex technical projects, is the result, I suggest, of a lack of actual involvement in technological aspects of the projects. Hameed had been deliberately excluded from technical aspects, Sonatec saw the CCME as incompetent and their own role within the project was justified by their technical expertise. The university connectivity project had by design separated interaction between the 'End-User' (the ministries and universities) and the 'Customer' (the MPD, represented by Mr Tailler) from interaction between the 'Service Provider' (the technical implementation and support) and the Customer (MPD: 2008). Mr Tailler, who has himself no background or experience in the computer science field, was the only one Fayeq interacted with directly.

The ministry computer directorates are surrounded by consultants: hiring contractors, installing pre-selected hardware, preconfigured systems and following clear implementation schedules. The conception of technologies as mechanical rule-following devices that simply needed to be embedded and used "correctly" was adopted by Hameed and Fayeq from the external project designs. Their limited involvement in the technical aspects did not confront them with the need for appropriation as directly as experienced, for instance, by Rabeha, Noorzad and Khaled, who had been providing technical support for the university for several years. As a result both projects depend highly on external support – if they are expected to continue according to their initial design. The connectivity project offers some flexibility and could follow a different path through people like Darya, Uzma, Rabeha, Noorzad or Khaled. Yet tensions arising for the same reasons – technical expertise and influence – have shown to make this cooperation unlikely.

10.4 Hard-earned partnerships

> *" We have experienced many funders coming and going back, so we have experience of working with them, and from that experience now we have reached to the point that we have our own plans, and if someone comes, a*

> *funder comes to help, then we propose them the project we have and they can help in implementing it."*
>
> (D. N. : 2011:37:22)

The strong intention to take responsibility and implement plans independent of external decision-making was obvious, though not uniform, in many interviews with Afghan stakeholders. The initial trust in complying with the propositions of the modern and educated West was often followed by a disappointment regarding the poor results and a confrontation with the complaints of the 'end-users', in whose eyes the public institutions as official partners were responsible for ongoing support. Thus, the question emerged, why highly paid external contractors, who abandoned the projects after their contracts ended, would be necessary in the first place if the result was a loss of control by the local government partners and unsatisfactory results on site (H. D. :43:18)?

The previously docile local partners became stubborn, requested changes and caused increasing headaches to the international actors. Those at the essential intersections between ministries and international projects, like Fayeq and Hameed, now insist on implementing their own suggestions and taking over the lead for major projects. They have gained increasing confidence in their positions and describe these developments as a process of learning the rules of international project procedures, like proposal writing and building the necessary (technical) capacity.

The university connectivity project can be run with deviations from its original conception – though it comes at the cost of delays, outages and security risks. To keep the network running in a different environment than the one it was conceptualised for requires some understanding of the supporting structure, the dependencies and the hard- and software. But once the network administrators have familiarised themselves to some extent, like Darya has, they are able to reset configurations, work around problems or make adaptations. The project also receives ongoing attention and support as its role in *providing access to the internet* is deemed important enough to tolerate high costs and ongoing external support.

The laptop project, on the other hand, could neither be appropriated sufficiently to run independently, nor did it receive ongoing further investment to continue efforts to accustom and adapt the users. It benefited only a small group and promised neither political stability nor economic advantages quickly enough to keep up the intensive supervision Florian had mentioned it would need. Hameed Daoud would continue on the same course and sees his department in good shape to do so, but also sees it as unlikely

that the project will be funded in the future. The MoE clearly stated that technology is not among their highest priorities, but the only option for him and his department is currently to attract similar projects with a prominent role and sufficient resources for the CDME. If he cannot acquire any technical projects with externally paid salaries, he will lose his staff because no one works in IT for a public service salary "nobody, even someone who knows bits and pieces related to IT" (H. D. :36:23).

Several of the CCKU members, who also belong to the first generation of international master's graduates, are prominent figures in ICT related projects and working groups for several universities, and now have plans of their own regarding how to best develop the universities' technical infrastructure, "at the moment no university has any plan for the next year [...] for anything." (N. & K. :39:40). Most of them blame both the international partners, who should know better about requirements and what works and what does not, and those local partners, who blindly accept anything. They are also critical towards the university connectivity project, and despite being described as the best qualified IT professionals at the universities by Mr Tailler, they are not directly involved. Fayeq Bezhan, though only a few years their senior, belongs to the "old generation" who received the main part of their education during the troubled post-Taliban years and are now struggling to compete with much better prepared generations – indeed every other year there seems to be a "new" generation starting their studies under better condition than the previous one. CCKU blamed the CDMH for ignoring their offer to help with the connectivity project, but the tension between the two entities made this unsurprising. Despite – or because of – the CCKU's often praised excellence, the centre has the reputation of being reluctant and difficult in cooperating with others and always insisting on getting control over everything. "[CCKU] always fights with all the other projects" (HES :28:41) as one ministry employee observed. There was a fear of being exploited, having one's ideas stolen and staff enticed away. Though this might have been for good reason, as in the case of Darya, it also isolated the CCKU from partnerships other than the long lasting one with the Technical University in Germany.

10.5 Relevant groups, opinion leaders and champions

> *" [W]e are in contact with some colleagues in other provinces because we were classmates, we went together to study, we know each other. But there is no other unified network of IT professionals who can talk with each other and we can solve problems."*
>
> (R. K. :01:02:43)

The literature makes various suggestions concerning which actors might be most influential in promoting and shaping new technologies. Quarry and Ramirez talk about a *champion* who is well acquainted with the local context, promotes the project idea in a Freirean sense and stays for a long time. These can be "individuals or organisations with a sincere respect for the views of the people with whom they work and with people's ability to solve many of their own problems." (2009:62).
Pinch and Bijker (1984) talk about *relevant social groups* with different expectations and interpretations of a new innovation, which influence, during the technology development process, the direction in which the artefact evolves until it reaches "closure" and remains relatively unambiguous. Among these competing relevant groups are most prominently the designers and users, but they could also be institutions or civil society groups. Carroll (2004) describes the mutual adaptation of the technology's features and the user's practices as completing the design process, or "Technology in Use". Like Pinch and Bijker, Carroll emphasises the choices that are involved in technology use. "Closure", however, is not negotiated between designer and users, but instead the users appropriate the technology within their current use-context to achieve temporary stability. 'Technology as Designed' only provides a theory as to how it should be used, while the technology remains malleable to some extent, to be shaped and appropriated by and within the relevant groups.

Most influential in the adoption of innovations are, according to Rogers (1995), members of a society that function as *opinion leaders*, those who are able to influence other individuals' attitudes. This leadership is in most cases not an individual's formal position or status. Opinion leadership is earned and maintained by individuals' technical competence, social accessibility and conformity to the systems' norms. Other than change agents who are usually professionals who represent external change agencies, opinion leaders are members of the social system.

Although each of these analytical concepts has its shortcomings (for which they have been criticised, see Klein & Kleinman (2002), Beltrán (1976)) I also find each of the approaches useful when focusing on local agency within ICT4D project preparation, implementation and aftermath. Though not as the sole determinant, I argue, these champions, relevant groups and opinion leaders can each – singularly or combined – play a vital role in technology appropriation, shaping and mediation of the overall project course. I will return to these concepts when discussing different forms of participation in chapter 11.1.

The idea of a technology that 'just works' and has only one correct way to do so

is still much more persistent in ICT4D than alternative views which suggest that a technology 'in action' cannot be seen separately from the context where it is used, like Orlikowski's notion of 'technologies-in-practice' or similarly Carroll's notion of 'Technology in Use'. Their examples concentrate on technologies that are introduced into stable structures that provide guidelines for, or against, the adaptation of certain functionalities, with managers, mentors and a technical support playing crucial roles during the appropriation process. I would argue, in the Afghan education sector context, a similar supportive environment could not only encourage and support appropriation depending on capabilities, social practice and institutional context but could also play a crucial role in 'completing the design in use' by helping to adapt a technical system to the unstable physical and technical conditions. The school laptop project has shown how the blackbox-view affects both the users and the supportive system of the device. A more open operating system and a video port might have given the teachers and parents increased accessibility, but repairs and software updates would still have remained blackboxed issues if the MoE – or an engineer like at School Three – are not enabled to gain better control over the device. To view technology in ICT4D projects as something that is defined by the users' understanding of the properties and functionality of the technology (Orlikowski: 2000), draws the attention to how these properties and functionalities are communicated to the users.

10.6 Conclusion

The examples in chapters 7 - 9 show how a technology that lacks the ability to be adapted, appropriated or reconfigured to the context and the users' needs, most likely will not or cannot be taken up. This certainly depends on the efforts taken to introduce a new technology, as the university connectivity project's ongoing operation shows, and the adaptations the users are willing, or can be convinced, to make. Local participation has been shown to be necessary not only to understand and include expectations and needs, but also to enable the local partners to take control over the new technical systems. Yet, the question as to *who* participates in representing the users, the technical managers and the government adequately has shown to be a challenging one. Norzad and Khaled might be *opinion leaders* but are lacking the social power to influence decisions on the ministry level. The provincial education director Dr. Sangin Zadran is certainly a *champion*, but is far removed from decisions on technical configuration. And the *relevant social groups* in ICT project in Afghanistan are far too divided, spatially as well as by different levels of influence and power, to negotiate the necessary adaptations.

If technology is not seen as a firm product, but as a fluid, constantly changing process,

that is defined by its use rather than design, we must turn our attention to two issues: the question of how decisions are formed regarding the technology and project design (and how malleable both are), as well as the question of who is involved in the 'getting-used' process (and who might have been mostly invisible). We must dissociate from a production – consumption and practitioner – beneficiaries dichotomy and take a closer look at the "relevant groups" within ICT4D projects to open the participation arena. In the following chapter I want to explore how participation is interpreted with regard to technology and how this influences project dynamics. I will scrutinise the discredited concepts of "participation" and "empowerment" and see how they are linked to context and technology appropriation.

CHAPTER 11

Participation in ICT projects

Upon a closer examination of what 'participation' means within the different projects, it turns out to be a complex issue with varying interpretations and different implications deriving from each project. The intention or necessity of including different stakeholders in certain areas of projects was repeatedly stated by virtually all interviewees and could in most cases be observed taking place. "Cooperation" turned out to be a term no one wanted to miss mentioning, whether the person wanted to emphasise his/her own active role or the fact that others were also included in the process. Talking with different stakeholders involved in the same project, however, helped reveal the many faces of 'participation', and the thin line between empowerment and paternalism, between socio-cultural sensitivity and reinforcing unequal power structures, between supporting local agency and overestimating local capacities.

Participation in the design and implementation of ICT4D projects can occur at various levels. As Pretty's typology (see also chapter 2.2.4) suggests, participation can range from information sharing, to information gathering, participation in selected decision-making up to participation in project design, systems design, and project implementation. Equally, in most cases, various roles can be assigned to the pre-defined stakeholders, from being a source of information, to an active contributor or one of the decision makers. On the basis of the empirical examples I will discuss various aspects of participation that are of particular relevance in the ICT field and, moreover, address some less common perspectives on participation that are characteristic of dealing with complex technological systems in a developing country context.

As described in chapter 3.2.2, Heeks (2009) differentiates between three levels that the target group – he refers to them as "the poor" – can be involved in during the innovation process in ICT4D. These levels also describe to some extent the level of participation:

1. **Pro-poor** projects are designed for the target group, but geographically outside the target area and without direct participation of the target group. Participation only takes places in what Arnstein calls Tokenism: consultation and information sharing at a stage when most project details have been decided by the implementing organisation and been approved by a funding body.

2. **Para-poor** projects engage the target groups in the design process in the same way as has been done with clients in the software industry for decades; by conducting interviews and collaboratively describing the problem and the proposed solution. This approach is usually the most difficult and costly one as it combines often conflicting expectations and preferences. It is also harder to estimate the costs and submit a proposal with a clearly defined agenda for funding, as outcomes are ideally not determined in advance but are developed in a collaborative process.

3. **Per-poor** projects are driven and steered directly by the target group. External IT experts are consulted whenever they are seen as needed by the target group. This 'self-mobilised' approach usually starts with small scale local projects that can help mobilise similar initiatives by passing on innovative ideas with a low barrier for participation.

As for *participation*, these approaches are not mutually exclusive. Depending on the project, each of the above can make sense to a certain degree on the various project levels; one can be generated by another or reinvented by different groups of stakeholders. Using ICTs to reach a certain development goal often involves the participation of users other than the target group or makes additional training necessary for maintenance and support. Failing to consider the necessary supporting environment for a technological system, as in the case of the laptop project, still seems a common mistake.

How to minimise or ideally eliminate long-term dependence from external support? How to adapt technical systems to local conditions, when local technical capabilities are (still) low? And how to configure systems to remain malleable for the users yet still deliver stable services? Accepting that without the support of the 'local elite' ICT4D projects risk a very short life-span, is as important as the fact that participation is necessary on more than simply a technical and institutional level to ensure there is demand and acceptance of the service.
Additionally, target-group participation in ICT project design includes critical attention to the 'who participates' – the invisibility of women and girls at School Four did not mean they are excluded from education but, instead, meant they could not be reached as directly. Participation needs to bridge multiple divides here: techie versus non-techie;

rich versus poor; often a Western versus non-Western mindset; urban versus rural and men versus women, all need to be considered (Heeks: 2008).

11.1 Dimensions of participation in the three cases

Participation is still almost exclusively defined from a donor perspective. How can those offering their help and resources enable participation by those receiving the support? Although I have shown how inadequate these dichotomies are with regard to ICT4D, I have chosen to take the "project management" perspective, which mostly represents the donor, to describe different forms of participation.

From a project management point of view, participation can be seen within two main dimensions (following Uphoff (1985) and Cornwall (2008)), see figure 11.1:

- The degree of participation, meaning the number of project-related areas an actor is involved in, as well as the number of relevant groups an actor interacts with directly
- The stage at which the participation is happening, from its design, to its implementation up until the handover to the local partners.

Within these dimensions, local partners (in light blue) and technology design and configuration (hatched) are often kept entirely separate. Projects are often designed in such a way that they take one dimension of participation to the extreme while neglecting the other, leading to unwanted but, as will be shown, not necessarily unexpected results.

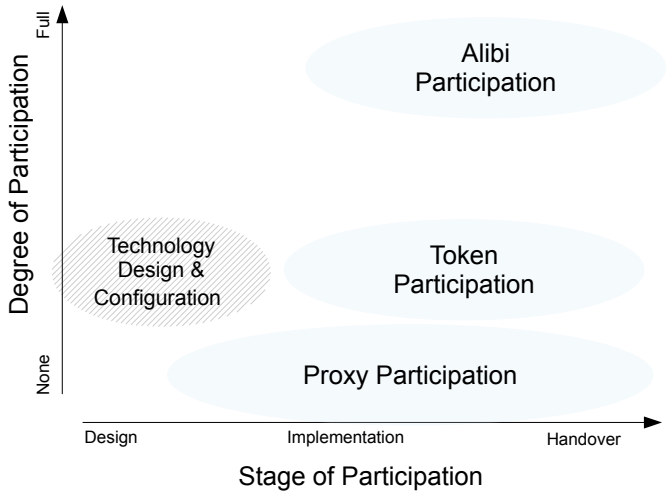

Figure 11.1: Dimensions of Participation in ICT projects in developing countries

11.2 Token Participation

> *"We will literally take tablets and drop them out of helicopters (...) and go back a year later and see if the kids can read"*
>
> (Negroponte: 2011)

What is described by Arnstein as Tokenism, by Pretty as consultation or functional participation and by White as Nominal will here be called 'token participation'. This approach is probably the most common one in development aid, especially within technology centred initiatives, and could also be observed with regard to the schools during the laptop project. Participation is facilitated only in the implementation stage to display inclusion, while all decisions are made elsewhere. Taking Heeks' definition, this would be a clear pro-poor approach where a project is being designed in a top-down manner and then imposed upon the target group. ICT4D projects that would fall into the category of token participation are at no stage up for discussion on the target-group level. Participation is interpreted as showing how a given IT tool is used, not if it is the right tool in the first place. Cooperation with the parents and teachers started in a mostly campaigning way, an instrumental use of participation to gain consensus.

Formal approval by parents and teachers was obtained before the technology was introduced, but in such a way that no resistance or criticism was to be expected. Stronger involvement would have been necessary, as Florian later admitted, to make sure people actually understand what it is they are getting and what can or cannot be done with it. To actually involve people in the project design level, however, would have required an entirely different approach. The implementation was scheduled, contracts were signed and schools selected before any interaction with the pupils, parents and teachers could take place.

Another example of token participation is drawn from the interview with Peter, who described the introduction of a new government administration system as an important corrective to current procedures. His case shows a manner of self-perception as an international expert that I encountered frequently. Participation is less something that needs to be facilitated, but rather seen as an act of persuasion. The international community has the role of a parent that needs to lead the way for the child – in this case Afghanistan – and it has the means to enforce its conditions in the inexperienced child's best interest, with a technology supporting the introduction of "specific organisational features" (Avgerou: 2001). And those who are supposedly the centre of attention become

the weak point in an otherwise smoothly running operation.

One justification for this manner of proceeding in the area of ICTs, which was given during several of the interviews, was the technical complexity of the projects and the lack of local expertise. Several stakeholders expressed the need to educate and convince the local population in terms of ICTs. The belief that people needed to be taught about the benefits that ICTs could bring to their lives, education and work seemed considerably stronger than the willingness to listen to what might be reasonable doubts or concerns.

Another often cited reason for limited participation was unreliable partners and a lack of trust. According to international stakeholders, it was corrupt or biased local partners, particularly in the government, that were responsible for many failures. This was an aspect that would not be mentioned during official meetings (o-script) with donor agencies – as a strong partnership with local institutions has become the first precondition for funding – but was widely discussed among international aid workers (u-script).

Local stakeholders mentioned both a lack of trust of other Afghans, often for one of the reasons described in chapter 9.5 (see also appendix B), and also a growing frustration with the broken promises of international partners and unaccomplished expectations regarding project outcomes. Distrust was one of the strongest obstacles for collaboration in most projects. The reasons were, as mentioned, sometimes obvious and sometimes hidden in personal or cultural conflicts. The disappointment with this lack of participation is one of the reasons for self-exclusion and what Cornwall (2008) calls 'participation fatigue': a complete refusal to take part in external project suggestions.

11.3 Proxy Participation

> *"One mistake we made with the original plan is there was not a single carrot in it for the ministry[1] "*

Proxy participation is another common form in ICT4D projects that is mostly combined with token participation but can also be a means for alibi participation (see below). It often includes 'functional participation' (Pretty: 1995) where local government or community representatives are included in some minor aspects of the project, while major goals are pre-defined by external agents. These proxy participants may be chosen

1 Comment made at the IDB meeting regarding how to secure support by the MoE

for different reasons: they might be the most accessible ones, they might function as gate keepers to the necessary official approval or they might just be chosen out of an insufficient understanding of local procedures or the technical complexities that are involved.

This low level participation usually starts with a government/official entity being approached for a joint application for project-funding. An institution appears as original project-partner, though design and application are mostly pre-defined. The official local partner has generally little or no experience with ICT and claims no say in technical matters. Young, well educated computer scientists at public institutions often encounter the frustrating experience that ICTs are either given a very low priority or that crucial decisions are made by superiors who lack the understanding and experience to judge what is necessary and appropriate. Almost identical projects are implemented twice at one university while fundamental requirements are ignored. But not only divergent priorities or personal benefits explain why the young professionals are excluded from project planning and negotiations between the institutions, donors and IT consultants, they also seem to represent a threat to some in higher positions, as described in chapter 9.5.

In most cases proxy participation is the result of a technology-deterministic project planning, with local participation seen as the agreement by the local partner to fulfil his/her part of the job. The school laptop project shows how, with a concentration on the device, local expertise is only marginally included or not at all in the planning and implementation of the project. The MoE was perceived more as a potential disturbance than as an active participant. It had been assigned a clear role: to select the schools and prepare them for the delivery. Any additional involvement was unwanted. Hardware is treated in a 'ready to use' manner with those on the ground being confronted with unfamiliar use concepts and 'unexpected failures'. The technology is expected to dictate its best use and adapt the user to a new and improved behaviour.
Mr. Daoud initially accepted his role as local partner of this invited participation. When the problems at the schools ithbecame apparent, however, and proved his colleagues scepticism right, he refused any future cooperation with Sonatec and started looking for new partners w his own conditions. The limited influence he had on the project's outcomes contributed to the tendency mentioned in chapter 10.4 to develop his own solutions and an increasing unwillingness to agree to any cooperation outside his own control.

11.4 Alibi Participation

> *"[They] made it themselves most of the work. Just they come with one idea. You can bring a server here, that's not a problem, they have money, they can bring. But here in this side there was nobody to maintain the server, to work with that, to administrate the system."*
>
> (N. & K. :28:29)

The opposite extreme of assigning minor tasks to local stakeholders to demonstrate their role as 'project partners' as described above, is to use the participatory approach as an exit strategy to escape unresolved issues. This is a rarely criticised approach as it looks very 'participatory' from the outside and has a lot of similarities with a partnership on equal terms. The local project partners tend to be approached at a time when the 'what' has been decided by the implementing organisation and approved (or set on the agenda) by the donor while the 'how' is open to some discussion. ICT projects with alibi participation usually depend on long-term qualified personnel on the ground or ongoing costs that can only be covered for a limited period of time. ICT4D projects in general seem to attract this kind of exit strategy, as sufficient adaptation and financial and professional support remain unresolved issues for many cases and passing the buck to the local partners ensures a "successful project completion".

Furthermore, ICT projects are not necessarily managed by technologically experienced personnel. As described in the previous chapter, technologies are often treated as neutral, reliable, rule-following tools, technical decisions and implementations are outsourced to external 'experts' and project management and coordination mainly consists of communicating the project planning to the local partners. Alibi participation offers strong involvement to the local partners and can even to lead to self-mobilisation. Decisions are discussed, applications for further funding filed by partnering institutions on-site and responsibility gradually shifts to the local partner. But, especially when dealing with complex technical systems, room for manoeuvre is usually limited and the consequences of technical and financial dependencies only become fully evident after external support ends. The 'self-mobilisation' of the CDMH within the university-connectivity project is based on simplified assumptions about how the project can be continued and maintained and by the unquestioned acceptance of the ready-made project design.
The introduction of a campus network into the Afghan university context is not trivialized by the international partners. However, the challenges are mainly seen in establishing the structures the technology needs for its smooth operation, including power supply, campus wiring, getting the hardware shipped and installed, and booking training courses

for the university administrators, which are held in Europe but which Mr Tailler would "for logistic reasons" prefer to take place in Kabul. Mr Tailler admitted the top-down character of their approach, even mentioning it explicitly as a positive aspect during the interview. The alternative, and thus main difference, is described as "waiting until someone would come with an application" from within Afghanistan, which might have taken too much time, instead they decided to "cover all needs at a single blow." (F. T. :00:23:44).

Fayeq Bezhan, the project's main local cooperation partner, revealed during the interviews his marginal involvement in the technical implications of the project. But emphasising his role as a relevant partner in this prestigious, extensive undertaking seemed also to be an act of self-affirmation. He had fully accepted his role as 'head of the responsible entity' and also presented the project to the interviewer as both planned and managed by his department. At the same time, Mr Tailler willingly accepted claims that everything could be handled locally, as well as other requests by ministry officials like the choice of universities, despite revealing his awareness of the various problems. The responsibility for network planning and system administration was handed over to the universities, while none of the local partners could show sufficient experience in any of these areas. Everyone is aware of the lack of experienced computer scientists in Afghanistan, an informed participation with sustainable planning can hardly take place, yet thinking beyond the official end of funding of the project in 2013 and beyond clearly defined areas of responsibility that do not include long-term maintenance, seems to be ignored. Everything that is running for now is presented as success, while neither the salaries, nor the urgently needed extended training are secured. Kabul University, with by far the best trained ICT staff, is struggling to keep the network up and running. It is hard to imagine how less privileged universities in other provinces will cope with it. So when asking on-site staff about the project the answers were, as one would expect, less optimistic.

This is another example that shows participation only applied – and in this case 'over-applied' – at the implementation stage without giving enough thought at the design stage as to "who defines what the initial community needs are" (Bailur: 2007). The reasons for such an approach derive, again, from technology-centred planning. One strong element is certainly an optimistic determinism regarding the power of a technology that just works. Another one is overestimating the ability of the target community to comply with the roles and tasks assigned to them as part of the project structure. Thirdly involves a lack of technical understanding within the project management, who divide technology design, configuration, implementation and training into separate entities.

This view is closely linked with the above mentioned technological determinism and the notion of the technological sublime. And finally alibi participation can also result from the awareness that an extensive participation, adaptation and preparation cannot be justified within the given project framework and similar constraints associated with international development policies.

11.5 Participation and Technology Appropriation

> *"They didn't spend a lot on gathering the requirements. Somebody is just seeing the surface 'ok this is the problem, I have this solution for it. Just let's implement it' "*
>
> (N. & K. :58:12)

As shown in Chapter 10, the target-groups are still widely treated as passive receivers that need to understand, learn and adapt to new technologies. Champions like school principals or young IT professionals seemed present in all projects, but were often not included as such. Relevant groups were mostly ignored during the initial technology configuration process and opinion leaders, like village elders or the CCKU staff, were supportive of technology in general, but did not necessarily represent an opinion that corresponded with the project framework. Participatory elements, as shown above, were readily taken up by local partners and often led to a demand for a stronger involvement, but mostly at a stage when decisions about the technology itself had widely been closed, and adaptation and appropriation needed a much higher level of understanding of the functionalities or it resulted in a break-down.

There are several examples suggesting how looking at ICT4D projects as actor-networks and considering their individual pieces could help in appropriating the technology instead of the user and collaboratively develop a local solution that remains fluid and "may well prove to be stronger than one which is firm" (de Laet & Mol: 2000). This participatory appropriation cannot be seen as a strategy to reach an anticipated solution but to develop a setting that stabilises and might even be treated as a blackbox temporarily but remains in constant motion in as quickly a changing context as Afghanistan.

The interviews at the schools revealed the central role of the teachers in the Afghan education system. Testing and self-assessment are barely known by the pupils, resulting in little direct competition among them. Instead respect towards Islam, the teachers

and elders define their positions in class and society. The failure to identify the teachers as important actors, involving them in the laptop project and allowing them to benefit and influence the project also blocked the access to the pupils. In the case of the laptop project an early teacher-participation might have brought the unwelcome finding that the laptop in its current version was unsuitable for Afghan classrooms. A demographic worth assessing for self-learning, however, is the situation of girls and women in the insecure provinces, who were reported not to be kept away from learning per se but simply kept away from appearing in (the potentially dangerous) public.

Other systems, like computer networks or software development are not only more open to adaptations, but actually require manipulating their "inner workings". In this regard the Management Platform for Higher Education (MPHE) might seem like a perfect local solution. It was conceptualised and programmed based on an in-depth analysis of higher education administration. Yet the software itself was developed in a different environment than the one it was intended for and by leaving the safe IDE it was developed in, it encountered the instability, vulnerabilities and dependencies of the server it was installed to run on. This, however, was not understood by those who had only seen a local demonstration of the software in the office PC. Norzad explains: "he talks only from the database perspective. He knows the processes of the MoHE very well, he is very strong in this. He is a good requirements engineer. But it's not only programming if you want to deploy [MPHE]. It has database part, it has programming part, it has network part, it has IT part, there is hosting and these things." (N. & K. :01:18:18). Translating a technological system into a certain context depends as much on knowing the local structures as on knowing the technology's requirements and adaptability. This example shows how the participation of different technical mediators, that can be both local or external, can be as essential as cultural mediators as relevant groups that take part in shaping and appropriating a technology and its use.

Applying Carroll's notion of 'completing design in use' to ICT4D projects, suggests a new and extended role for trainers and technicians as supportive element in the development and introduction of a new technology and by accompanying the gradual extension of functionalities while the users explore and gain control over the system. The MPHE was modelled after the current university administration, to make sure it covered all areas and the 'old system' could be integrated into the new, digital one. What it was lacking was the necessary technical support to help integrate the system into a secure and reliable webserver and equip it with an easy to use interface. As in the laptop project, there are two levels of appropriation: reaching a point where the MPHE becomes integrated into a the local (server-) context, runs stably and securely and can

be maintained locally; and introducing it to university staff, who will also need time and support to understand and explore the system step by step, might request changes, or ignore certain functions or ask for extensions after some time.

Similarly, the connectivity project would, from a material perspective, have offered some flexibility, but that seems not to have been open for discussion. As its value was not questioned, and access to the internet was in itself seen as crucial, it received general support and acceptance. The network planning was done without the direct involvement of the universities or assessing their requirements, and the systems were not built based on local capacities and needs. Concerns concentrated on operational aspects and how power, internet and network administration could be secured. Yet even with a running system there was no conception of how the universities could make use of it or expand its digital services, as Khaled remarked: "we have solved all the problems with the fibre project, we have centralised servers, we have local servers at faculties, we have divided the bandwidth according to needs of faculties – but what do they want to do with it? They don't know this." (N. & K. :1:30:51). The whole project was led by the idea that access in itself would bring the *Information Society*. This example shows again the dominance of techno-centric ideas and how an interaction between those configuring the systems and the universities' IT personnel later adapting and maintaining them would have helped appropriate the technology to the different contexts where it runs, with regard to the considerably different circumstances at the various universities. Secondly, the participation of lecturers and educators could have led towards the conceptualization of a more needs based system.

When Kabul University's Computer Centre (CCKU) was built, the project took a high risk in its long-term approach, relying on yearly funding cycles to be renewed and initially were only able to offer short-term contracts for tasks that were planned as a continuous efforts. While the systems were installed and configured by the staff of the TUG, regular trainings over the course of several years were held both in Kabul and Germany to train the configuration and adaptation of open source software, to expand the services to KU and to hand over responsibility for the system step by step, as Uzma described "at first [...] we were busy before learning how to manage [CCKU] itself, [...]. Then we trained the new generation of [CCKU] and now they are working more independently" (U. R. :26:41). Today CCKU is the IT service provider at Kabul University and its employees, together with TUG, help build computer centres at other universities. The capacity building was not only based on learning how to use a ready-made system, but rather how to empower the local IT professionals to make their own decisions on configurations and adaptations within the network, to conduct their

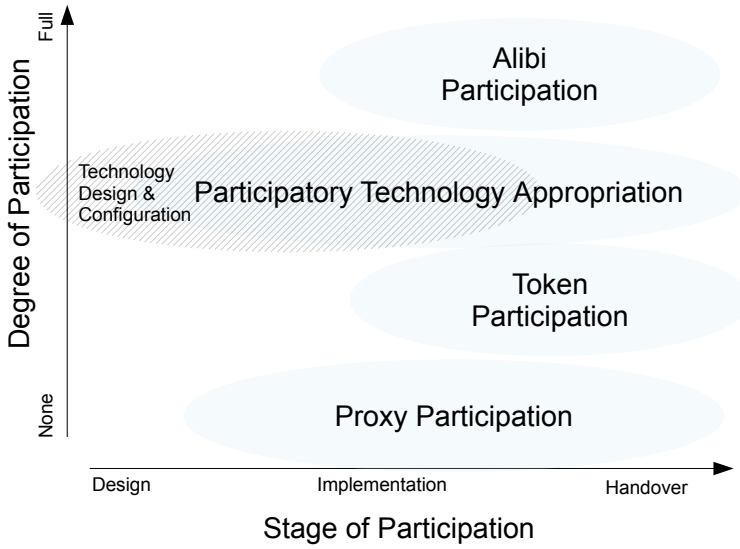

Figure 11.2: Participatory Technology Appropriation in ICT projects in developing countries

own analysis of the situation and suggest new functionalities for the systems that could then, if required, be developed with external support. Many of these young computer scientists can be described as champions in negotiating cooperations and attracting new projects at their universities, they are among the relevant groups, shaping the digital services the universities offer through the computer centres and they are opinion leaders as trainers and lecturers, promoting adaptable technologies and open source solutions instead of closed proprietary systems.

11.6 Conclusion

Participatory technology appropriation (see figure 11.2) adapts the 'Technology in Use' view, and advocates an early involvement of champions, opinion leaders and the relevant groups – including technical consultants and trainers – into the project planning. Not all stakeholders can be expected to – or need to – understand technical details and implications, nor is it necessary for the developers and technologists to be aware of details about the social and cultural context in certain provinces. Not all actors need to be present and active elements at all times, but all bring relevant and necessary experiences and information into the process that shapes the project design and evolution and contributes to a project's success or failure. Participatory technology appropriation is neither an easy fix, nor can it offer a technological shortcut to international development

dilemmas. Project policies and local conflicts might not always make it a valid option, as some of the examples described in this thesis also suggest. Nor does the ability of local partners to conduct their own analysis mean they also possess their own decision-making power. Nonetheless, as argued here, an STS view on ICT4D projects, treating technology as malleable, open and defined by its users, can reveal fundamental insights for participatory approaches with a special consideration for champions, opinion leaders and relevant social groups.

CHAPTER 12

Conclusion and Outlook

12.1 Main findings

I have looked at different approaches from different fields regarding technology and development and have concluded only an inter-disciplinary approach can in my view, cover all the important issues involved. Development studies show the overall framework that influences development politics and project regulations. How development was, and is, defined, what areas are prioritised for investments and how the 'development aid architecture' functions frame which projects are implemented on the ground. I have shown how these settings promote technology-driven approaches in Afghanistan, where goals and costs are pre-defined by the international stakeholders and participation is just treated as one small aspect during implementation.

The Communication for Development field offered a good starting-point for looking at where and how communication technologies have been used for international development since the late 1950s and it continues, as I have shown, to influence how New ICTs are utilised for development today. While C4D as a field has moved towards more participatory approaches, the dominant paradigm seems far from "passed". My research reveals how ICT continues to be treated as a symbol for (access to) knowledge, modernity and development. The diffusion of innovations framework has shown to be useful with regard to the role of local actors, like the early adopters and opinion leaders. At Kabul University, the first generation of computer science students that started working in the Computer Centre and were confronted with Open Source technologies, became influential multipliers not only for their later students, but also by providing support to universities and colleagues all over the country. The framework has, however, also clear limitations for this study. For one, it doesn't explain the role the international organisations play during the diffusion process. The campus network is perceived as

beneficial by the universities, but its complexity and questions of compatibility are mostly hidden and solved externally. The laptop project failed for a number of reasons, but as the device is not freely available its success never depended on its diffusion. The involvement of international organisations therefore can be said to have a distorting effect on the diffusion of innovations and can make their actual diffusion difficult to judge. The other limit of the diffusion framework is its view on 'an innovation' as something (initially) stable that can be transferred and diffused. The possibility of re-invention is briefly mentioned by Rogers, but only at later stages of the diffusion. Whereas I argue in this study that flexibility and the possibility of appropriation of technical innovations, can be an important prerequisite for their diffusion.

While the participatory communication approaches and the inclusion of local capacity are a fundamental aspect of my research, I was also interested in technical implications. What role did the choice of hard- and software for a laptop project play? What technical problems occurred in the university connectivity project? What different system configuration or additional training might have changed or influenced these outcomes? I was interested in whether technical training was part of the project and what that meant for sustainability – questions that are of a more technical and practical nature. These technical details and specifications were mostly absent in C4D publications, technology was hardly ever detailed beyond a general description of the media category or the device being used.

The field of ICT4D with its stronger consideration of the technical aspects was therefore an important supplement for the development of my theoretical approach. Its concentration on how technologies are designed, configured and implemented to best function in a certain context raises awareness for technical implications that are an important prerequisite for a technological system to work in an unstable environment. The approach also shows, however, as in the case of the laptop project, how a strong focus on the technical is often linked with a deterministic view of a technology that just 'needs to work', ignoring the fact that how a technology is used is not universal.

Historic, social and cultural circumstances form and influence the actors involved in ICT projects in Afghanistan and shape their perceptions of technology and development. With insufficient local participation and concepts for applications, as could be observed, ICTs provide few advantages and opportunities for the users. Technology is part of a setting that depends on infrastructure and services, but also implies certain use-concepts that need to be translated (and adapted) for their use in a different context.

Science and Technology studies 'open up the blackbox', and the story and context behind a device come into focus. STS looks at how a technology is intended to be used – and therefore what limitations this might bring – but also how it can be (re)interpreted, adapted and appropriated for a particular praxis. Technology is shaped by the social, in its design but also in its use, and it can play a role in shaping behaviour in return. These mutual influences have also shown to be crucial in understanding and explaining technology-use in a the Afghan context.
A social constructivist view, as proposed by the SCOT framework, was crucial to set the social in context with what is often attributed to mere technical aspects. In the setting described here, neither the laptop nor the campus network reached (temporary) closure because (the most) relevant groups (the users) were not involved in negotiating changes. The problems identified by those groups were not addressed sufficiently, or, as in the case of the laptop, often not addressed at all. As described in the study, the campus network allows some interpretative flexibility and it can be expected that the problems experienced by the users will over time lead to changes in the system. The laptop, however, was already mostly "closed to alternative interpretations".
The 'anti-social constructivist' view of Actor-Network Theory turned out to be crucial for shifting the focus away from the social to some of the non-social background conditions and often invisible elements, such as configurations and technical dependencies, that are also part of the network. With regard to unstable actor-networks as the ones presented here, however, embedded in unstable societal and physical structures, ANT offers less means to explore why a network fails to reach stability.

Therefore, while my approach has been inter-disciplinary and I have considered a number of theoretical perspectives for both the methodological approach as well as the analysis, I have also shown where the limitations of each of these approaches lie with regard to this study. I have highlighted the shortcomings of the diffusion of innovations paradigm, the neglect of technical implications I see in most participatory communication approaches and I critique the difficulty to extract 'constructive criticism' out of (anti-)social constructivist approaches like SCOT and ANT. Though new to the area of ICT4D, I suggest the Technology-in-Use and Technology-in-Practice perspectives by Carroll (2004) and Orlikowski (2000) are the most promising frameworks to analyse current procedures in education-technology projects in developing countries and to make suggestions based on elements of participation and empowerment as well as capacity building and technology appropriation.

With regard to the empirical data, the theoretical approach led to a focus on the adaption, appropriation and re-configuration of technology. The latter two, making

a technology relevant for the users and enabling them to gain control over it, have been shown to be rarely the case in ICT projects in Afghanistan. Digital technologies have only in the past decade disseminated in Afghanistan and computer scientists with profound knowledge about their workings are still rare. For a re-configuration of complex digital technology, as I argue, this profound knowledge is a pre-requisite but with 'black-boxed technologies' often ignored. Efforts are made by the users to make a technology work and the limits are in most cases not set by satisfaction or rejection, but by a limited flexibility and resilience of the technology that impedes further appropriation and re-configuration or by lack of (access to) information how to overcome these barriers.

Currently, as also demonstrated by Eglash (2004) (see figure 4.1), technological products are transferred to Afghanistan primarily by international producers and organisations. Other than Eglash and Pisani *et al.* (2007), however, I argue that the 'high social power' is not exclusively represented by the producers, but in the case of ICT projects in international development also by those designing the project and deciding about the technology and its configuration. Similarly to Odumosu (2009) I have shown that production and consumption can in this context not be seen as two opposing poles, but must be seen as a continuum. Or as as Orlikowski (2000) and Carroll (2004) describe it, that a technology in use must be treated differently from the technology as artefact. Technology appropriation in ICT projects, as has been shown, is a combined effort of all stakeholders where multiple elements influence the outcome. This participatory appropriation, as observed in the field, not only depends on the participation of local stakeholders, but also on those in control of designing and configuring the devices. Technology introduction, therefore, is a process that is less about the technological system and more about the ensemble of users and technology that remains, sometimes more, sometimes less, in constant motion and development. And even if currently adaptation describes best how the context and technologies are modified in ICT projects in the Afghan education sector, while appropriation and 're-configuration' of technologies are still rare, once a growing number of users have gained control, a growing number of re-configurations and new technological inventions, that fill gaps in Afghan user demands, will follow.

The biggest challenges for participatory appropriation are the aforementioned policies and regulations of the development aid architecture; the persistent deterministic view on technology and the belief in its transformative power to change a 'traditional society' into an 'Information Society'; and a dominant attitude among those working with technology in the development aid sector, that the technology experienced 'West'

needs to teach those in need of development how to follow their example. This attitude of superiority many international consultants demonstrate in relation to the Afghans and the persisting binary opposition of 'us' and 'them' that was observed in many interviews, reflect some of the central criticisms first addressed by postcolonial theorists almost 40 years ago. The uncontested promotion of Western concepts, knowledge and technologies as representations for development and progress simultaneously suppress any efforts of true empowerment in a Freirean sense that would shift the emphasis to local abilities, perspectives and solutions. In the examples given in this study, control over the technical systems remained with the international actors and local initiative was more often described as problematic than welcome.

ICT projects in international development continue to be driven by this deterministic view on how technologies are used, localisation mostly concerns only the language and adaptations by the users are seen as a side-effect at best.

I suggest in this thesis that the awareness that technological capabilities are often marginal in developing countries should lead to a setting where technical expertise and local expertise are combined in participatory technology appropriation to make a technological system work in its use-context. The goal, therefore, needs to shift from "making a technology work" to "making a technology work for the users" with empowerment of the local partners to gain control over the system to be able make their own choices as a central element. The perspective that the design of a technological system is completed by its users Carroll (2004) offers a useful concept to analyse the project framework and its dependencies and to help developing a participatory solution for technology appropriation.

12.2 Looking back...

I heard from several friends and colleagues that *'if I had known how hard it was going to be, I'm not sure I would have started this PhD'* – and I agree that there were things I would have liked to avoid and issues I did not expect to be so hard. But I was, and still am, grateful for the opportunity to look in-depth into things that I could previously, while working as a technology consultant in Afghanistan, only observe on the surface. This research certainly changed the way I will continue to work in this area and I hope it can also contribute to how others see it and plan ICT4D projects.

Knowing the field, I was prepared for data collection to pose a challenge. What I had not sufficiently taken into consideration when I started my research were the challenges posed by my interdisciplinary approach. Reading and understanding approaches to my central themes – technology, development, context and participation – from very

different disciplines took considerable time and caused many doubts. I felt unable to understand the history and evolution of each field as thoroughly as I would have liked, read all relevant authors and keep an eye on recent developments. Most conferences I attended belonged to one of the above mentioned fields of research and I repeatedly felt I did not 'fit in' properly or was not, as one colleague described it jokingly, part of their religion.

In addition to the theoretical triangle, my data is based on action research and practical work and in several cases on me being part of the scenario I researched. I was surprised to find few other scholars with ongoing practical experience and involvement in how to use media and communication technologies for social development beyond occasional research projects. I am aware that it is not without risk to venture the balancing act of being academically neutral whilst personally involved, but it also offered many advantages. I would certainly have found it useful to discuss and share the pros and cons with more people who find themselves in a similar position.

One of the limiting aspects of my research was the fact that I could not freely decide when and where I would conduct my research but first of all I depended on applying for a job in the field that would allow me access to all important sites, but also provide the safe environment that is needed when doing research in a conflict zone. The period I spent in Afghanistan to conduct my research was at an earlier time than I would have chosen and the preparation was difficult and time consuming. The research itself was at a time when attacks were more frequent and I was regularly confronted with the choice to follow the official 'white city' security status (that in fact imposed a strict curfew for those working for the UN and other international organisations) or attend an appointment that I was never sure could be rescheduled. I took risks during data collection, like the unaccompanied trip back from School Three, where I also put the driver in an uncomfortable situation; and I had to cancel a visit to Mazar-e- Sharif, where I had intended to visit the university and talk to university network administrators, because of a riot where several UN employees had been killed. I knew I had those three months and I could not easily interrupt my stay or return a year later and I had to make the best use of it.

12.3 Scholars and practitioners

Development Communication and ICT for Development have always had a strong practical focus and an applied side to them. Working in both areas, however, I have repeatedly wondered why there is no stronger link between research and project implementation. "We have no real evidence of a specific impact" was a statement I have heard repeatedly together with the claim for more impact analyses. If millions are spent on technology

pilots, I keep wondering, why is more money not invested in independent research on technology in development aid programs? This would allow us to build future projects based on more than the 'anecdotal evidence' mentioned in the introduction. I have experienced myself how tricky it can be to gain access to the sensitive issues of a project and how difficult it can be for project initiators, on the other hand, to apply for funding of impact analyses – beyond the obligatory M&E report. If governments and big donor organisations would invest more in research cooperation with universities and research institutions (also those in the 'developing world'), practitioners and scholars could benefit from the results and research would become a more natural aspect of international development.

As an academic, as well as a practitioner, I would also like to see more conferences, workshops or other forms of gatherings where practitioners and researchers exchange ideas. I have experienced both sides accusing the other of their limitations. Practitioners often feel new approaches coming from academia are not applicable to the field, while academia finds it hard to communicate research findings to a crowd outside the journal-reading scholars. This may, however, be an issue that most disciplines see themselves confronted with.

12.4 Outlook

As already indicated above, I call for more and stronger cooperation between those working and researching in the same area but approaching it from different disciplines. In particular in the area of communication technologies and development I see very little cooperation and exchange between computer scientists, communication scholars and the social scientists. Not despite, but because of, fundamental differences in approaching the field, am I convinced interdisciplinary research-teams could make important contributions, for theory as well as for development practice.

Future research that could build on this thesis might also look at different strategies regarding how a stronger participation in all stages of ICT projects in developing countries could be enabled and organised. The field of user-centred-design could provide some promising approaches together with the already mentioned field of Information Systems. The introduction of a technological system into an organisation and its adaptation and appropriation by the users as described by Orlikowski (2000) and Carroll (2004) provide an interesting perspective that could be explored and tested further for research in developing countries; including the question of how the local partners could be involved more strongly in project evaluation to communicate their views regarding results and project continuation.

And finally I would welcome seeing empirical research on the 'institutional settings'

that I have criticised and made responsible for some of the limitations described in this study. In my research I looked at concrete examples in a particular context. Several anthropologists have suggested to 'study up' and to look at those in power in international development instead of researching only those at the 'receiving end' (Nader (1972), Mosse (2013)). Though my research focus included technology designers, international development aid professionals and representatives of some of the donor organisations, looking at the broader institutional settings of international development and decisions regarding technology could, in my opinion, add considerable value to this area of research. Some of the questions might include: what dominant views on technology and their role for international development prevail in big donor organisations, what roles are given to 'experts' with regard to complex technological systems, as well as, if, and how, a participatory technology appropriation approach might be feasible for large development programs.

12.5 Concluding statement

I was repeatedly asked during my research if I would also add some positive examples that could function as role models. I had two different replies for that question, the short one was "yes, but...", the long one was "no, because...". There *are* positive examples, as also described in this study, but they are confronted with the same structural problems as other projects, only they tend to take the risk of deviating from the standard procedures. And secondly, the idea of ICT4D role models that can be followed, is one of the central problems of technology in international development, as I hope to have clearly illustrated here.

There are some fundamental problems with how technology projects in international development are conceptualised and expected to be organised and, as a consequence, continue to be managed and implemented. The fact that technologies become ever more complex and remain a mystery to the vast majority of users while, at the same time, an increasing number of people depend on them, gives those in control of the technical systems a lot of power and responsibility. This imbalance between the 'experts' and the 'users' has, as I have shown, also a reinforcing effect on the existing power-imbalance that divides the 'technology experienced West' from the 'technology inexperienced Developing Country'. The findings of this study suggest that the perception of technology and development, as well as the perception of technology *in* development need to be reconsidered in order to address this imbalance in the long run.

I hope the findings presented in this study encourage those working and researching in the area of ICT and social development to think out of the blackbox, leave the 'standard procedures' and reconsider empowerment and participation with regard to

ICT. And I hope it can contribute to a rethinking of the role and meaning of technology in international development, not as a fixed product that can be imported, but as a structure that needs to be built in collaboration with, and between those, who are currently predominantly only involved as distant contractors and 'invited participants': the technical experts as well as the local users.

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Interview References

A. S. . Abdul Rahim Sharif, Interview on May 21st 2011 in Kabul, Afghanistan. Mr Sharif works for the Ministry of Education as an advisor to the Minister. He was a critical voive in the laptop-for-schools project. The interview took place in his office in the Ministry of Education, the windows were open and the traffic noise made the transcription of the recording sometimes dificult.

B. M. O. . Baseer Mohammed Omar, Interview on April 19th 2011 in Kabul, Afghanistan. Mr. Omar worked for the Ministry of Higher Education in the Computer Department (CDMH) as a system developer. He was the main developed of the Management Platform for Higher Education (MPHE).

C. O. . Christine Olson, Interview on April 10th 2011 in Kabul, Afghanistan. Christine works as an education specialist and project manager in Afghanistan. She speaks Dari and has first worked in Afghanistan in the 1960s.

D. K. . David Kemp, Interview on May 1st 2011 in Kabul, Afghanistan. David Kemp works as part of an international technology consultant team for several Afghan ministries, financed by the US and international military funds.

D. N. . Darya Nazri, Interview on April 11th 2011 in Kabul, Afghanistan. Darya Nazri is the manager of the network administration centre at Kabul University, as part of the university connectivity project. He is a graduate from computer science at Kabul University., 2011.

E. S. . Ekram Sherzai, Interview on April 4th 2011 in Kabul, Afghanistan. Mr Sherzai works for the Ministry of Communication and Information Technonogy in the Computer Directorate (CDMC). His department is responsible for a number of ICT policy regulations.

F. B. . Fayeq Bezhan, Interview on April 18th 2011 in Kabul, Afghanistan. Mr Bezhan works for the Ministry of Higher Education in the Computer Department (CDMH). His department is the primary partner for the university connectivity project.

F. P. a . Florian Peukert, Interview on April 17th 2011 in Kabul, Afghanistan. Florian is CEO of the Afghan-European IT company Sonatec, implementing projects all over Afghanistan.

F. P. b . Florian Peukert, short follow-up to the previous Interview on April 19th 2011 in Kabul, Afghanistan.

F. T. . Frederic Tailler, Interview on April 1st 2011 in Kabul, Afghanistan. Fred is the coordinator of a multi-stakeholder infrastructure project with the aim to connect all Afghan universities to broadband internet. He has been working in Afghanistan since 2003. The interview was conducted in German, the quoted passages were translated into English by the author.

H. D. . Hameed Daoud, Interview on May 17th 2011 in Kabul, Afghanistan. Mr Daoud is the head of the Computer Directorate of the Ministry of Education (CDME). He was main responsible person in the MoE for the laptop-for-schools project.

H. Q. . Hamidullah Qadir, Interview on October 29th 2011 in Kabul, Afghanistan. Hamidullah Qadir works for the Afghan Computer Science Association (ACSA) and has strong ties with several ministries.

HES . Employee of HES, Interview on May 16th, 2011. Short, informal interview with one of the young female computer science graduates, working for the Higher Education Support (HES) program at the MoHE.

I. M. . Iqbal Muhammad, Interview on April 27th 2011 in Kabul. Mr Iqbal Muhammad works for an Afghan ICT company specialized on software development and administration software. He holds a master's degree in computer science from the US.

IDB. Notes from a meeting at the International Development Bank (IDB) in March 2011 . Notes taken during a meeting at the IDB with Amrita Chaudhary, director of IDB's education section and Mr Ahmadzai, consultant at the Ministry of Education, to discuss potential cooperation and funding prospects for ICT projects. (Cited on page 183).

M. F. . Muhammad Fahim, Interview on May 4th 2011, East Afghanistan. Muhammad Fahim is the head of School Three in an eastern province of Afghanistan. The conversation is accompanied and translated by Abdul Aziz who works for the Sheik Mohammad Foundation (SMF).

N. & K. . Norzad & Khaled, Interview on April 26th 2011 in Kabul, Afghanistan. Noorzad and Khaled are lecturers at the Computer Science Department at Kabul University and try to establish an official IT directorate at the university.

P. O. . Peter O'Neill, Interview on April 16th 2011 in Kabul, Afghanistan. Peter O'Neill is the CEO of a locally registered NGO, offering technology consultancy and system development for the Afghan government, mainly funded my internationa donor money.

P. R. . Paul Roberts, Interview on April 14th 2011 in Kabul, Afghanistan. Paul works as a international technology consultant and researcher in Afghanistan, employed by the US government, with more than 20 years experience in the area.

PG1 . Groupinterview with parents from School Four, May 9th 2011 in a southern Afghan province. About 10 parents (fathers) from School Four accepted the invitation to talk about the planned laptop project at their school. The interview was translated by Sami. (Cited on page 129).

R. K. . Rabeha Karim, Interview on April 10th 2011 in Kabul, Afghanistan. Rabeha Karim holds a master's degree in computer science from Europe and is a lecturer at the Computer Science Department at Kabul University and also works at t,he CCKU.

S. Z. . Sangin Zadran, Interview on May 8th 2011 in an Afghan province bordering Pakistan. Sangin Zadran is the education director in a conservative southern province of Afghanistan. He holds a degree in education, islamic studies and political science from Arab universities. The interview was translated by Samie.

Samie. Interpreter. Samie is a young Afghan-American who works for the US military as a translator for patrols and negotiations. He speaks Dari, Pashto and English but he is not a trained interpreter. Though he has been living in the US most of his live he seems to have trouble expressing himself in English, which might also be due to the different context and vocabulary he is confronted with working with us.

School Two. Notes taken during the visit of School Two. Notes from the unannounced visit of School Two in May 2011 together with Florian from Sonatec, where we were able to talk to the school principle and got a tour around the classrooms.

S.G. . Soumitra Gopal, Interview on April 28th 202011 at the International Development Bank in Kabul. Soumitra Gopal is an IT consultant to the International Development Bank. He has more than 28 years of experience in implementing IT systems in developing countries.

SG1 . Groupinterview with pupils from School Four, May 10th 2011 in a Southern Afghan province. About 15 boys from School Four (grades 4 - 6) were interviewed with one of their teachers present. The interview was translated by Samie.

T. 3. . Recorded conversations with teachers at School Three on May 4th 2011, East Afghanistan. School Three is based in an eastern province of Afghanistan. The conversations are accompanied and translated by Abdul Aziz who works for the Sheik Mohammad Foundation (SMF).

T. F. . Toryalai Fidai, Interview on April 11th 2011 in Kabul, Afghanistan. Dr. Fidai has grown up in Afghaistan but left the country after the Soviet invasion with a post-graduate scholarship to Europe where he still lives and works. He came back in 2003 and got involved in different projects since.

TG1 . Groupinterview with teachers from School Four, May 10th 2011 in a southern Afghan province. About 10 (male) teachers from School Four (teaching grades 1 - 6) covering science, pashto, dari, geography, history, maths and english accepted the invitation to talk about the planned laptop project at their school. The interview was translated by Samie.

U. R. . Uzma Rezai, Interview on April 25th 2011 in Kabul, Afghanistan. Uzma Rezai is a lecturer at the Computer Science Department at Kabul University and also teaches basic IT training at other faculties.

APPENDIX A

Quotes

A.1 .

At a time when I was researching technology use among young Afghans, I had an informal conversation with Mahmood, one of my colleagues at Kabul University. He had at the time just graduated, a young Afghan man who was excited about the Internet and its possibilities and loved chatting with strangers from all over the world. I could sometimes catch sight of his Yahoo-messenger, which I knew included more than 200 contacts, and was regularly flashing with hearts and hugging teddy bears. He kept asking me for some Romanian phrases as he, he then explained, had a Romanian girlfriend now and was chatting with her. He then told me how the Internet made it possible to get in contact even with young Afghan women without their families finding out and causing them trouble. Some girls, he went on, had become reluctant to give out their phone numbers as they were afraid of threats or obscene calls, but chatting was by most seen as safe. Months later, when I interviewed him and specifically asked about the benefits he saw in the Internet and new technologies he could not think of any other than education, information and news. He had never seemed embarrassed telling me about his latest chat girlfriends, or being seen by me spending hours chatting to strangers, but it just did not occur to him that this might be of any interest to me during the interview.

A.2 .

> "A couple of years ago it happened, when Taliban come to the school and they saw the books and they said no, this is wrong book, stop, close all the schools. [...] because the books are not good, the way it was written, the way it has pictures on them, it's not good, we are against it. So they say close! So there were all those teachers, all the men in districts, the education

director, they were confused 'why should we close the school?' So they went to all the elders and they said you are the elders of this province or village or district so go to the Taliban and tell them why should we close the school? For what reason? So they went to the Taliban and they said why? They said we are against the books, the books are not in a proper way. So the teachers, all the teachers agreed and said ok, we are going to throw these books away, so we need you guys to bring us the book. So they tell the elders, they went back to the Taliban, they say like 'ok, they stopped teaching them on the same book, so they are going to throw away the books. So they need you guys to bring them the books'. So the Taliban said 'no no, it's ok. Let them just study on the same books'. (laughter)"

(S. Z. :01:03:17)

A.3 .

"Then I started googleing around ['time on task'], then I started googleing around 'what does an effective education mean' anyway? And I found these UNESCO reports and the education for equality imperative report and you know the importance of feedback, instruction, blabla. So then I thought ok well, if this is what is accepted as an effective education, that should have these ingredients – which makes sense, you have to have some sort of defined curriculum, you have to have the time to learn that curriculum, you have to have feedback on learning outcomes, if you are missing any of these - it's not effective education. This doesn't seem like rocket science. And so I thought ok well, lets look at where is it right now and where could we use this laptop to fill the gaps? [...] and that's how we got to the problem. This is a huge problem. And the more we asked, everybody would say yes this is the problem."

(ibid. [57:24])

A.4 .

"I don't blame politicians and the minister and so on. Because 50% of the schools doesn't have a building. And it's really really hard to push this message. They will say that, come on, we don't have a building, we don't have chairs to sit, and you are coming with this luxurious computers? But,

I totally disagree with them. Because as [...] the founder of these laptop, he said something very good and it really touched me. He said that these computers are like someone who needs food, you can not just say that no, food is not important for you. These computers are something like food. It's not something luxurious. If you cannot provide these laptops to every kid, but to the amount that you can provide, let them provide. It's like, food, you can not just stop someone from eating."

(H. D. :11:10)

A.5 .

"They had a project called government communication network. And then they started another one called district communication network, and another one, village communication network, DCN, GCN and VCN, right? The GCN was connecting the government ministries and institutions together. It was successful because there were some activities in ministries, just like still they did not have some really good projects on what sort of services they should be doing. Or what sort of communications they would be doing and what are the standards and all these, right? But still it was effective. And GCN was connecting the provincial governor offices, headquarters, but all it was used for was the telephone. You know, you take your telephone, call me in Kabul or your relevant line ministry, oral communication that was all they did. [...] when it came to the DCN it was completely a failure and VCN was the same. Not sure what sort of a plan they had for the services, what sort of data...[...] the reason was the lack of expertise and then not having a holistic approach, right? They were just concerned about connecting the two rooms. Now what these two rooms are doing with this connection was never in the plan. The service side of it."

(H. Q. :2:04:25)

A.6 .

"Now we have four official sub-departments: education, technical, online support and websites and database. We are working in four section. For the networking structure we work for 24 universities to provide networking structure for them. We computerize the work of MoHE and the university

as well and now we have a database with a higher education management information system (MPHE). We completed this project and implemented it. At four Kabul based universities it's now running. Now we work to extend it to other universities of provinces as well. Another project that we have, some capacity building projects. We have CISCO academies here, we have eight CISCO academy running by this department now. So we have the ICDL (International Computer Driving License) program as well. Also we have 24 website for our university and website of ministry, that is also run by this department now. We have some digital libraries, we have some portals. Such things going on here."

(F. B. :00:12: 07)

A.7 .

"When it comes to routing problems and someone who is sitting at UCL in London and has never been there is concerned with the routing in Nangahar where we have three different internet sources, then that is pretty far away. At the same time, locally there is no one capable to offer a solution for the routing problem either. That's something we really have to struggle with and try to find local companies like [X] to rely on their technical know-how and include them. Because the universities have nothing useful to offer. Despite the people from Berlin[1] a lot of questions remain unanswered. Despite the master."

(F. T. :01:10:17)

A.8 .

"Actually in 2008, the first time it was a request from president Karzai to provide internet connection and IT facility for Afghanistan's universities. It was the first starting. After that we requested from them. Now we are requesting - they have money, we are requesting from the [military] and they are providing the facility of that. [...] the projects are running by this department, so we are working closely with the universities. We have in every year, an inventory from the universities, we know the requirements of

1 There is a computer science master program in Berlin especially for Afghans coming from Afghan universities across the country. He is referring to the graduates that returned to their universities

the universities, then in coordination with universities, we propose to the [military alliance] and [the military alliance] is providing the IT facilities."

(F. B. :00:27:37)

A.9 .

"Because it was troubling to me A that there was no consistency as a dean you think about consistency and stuff. No consistency in the course content, the qualifications of the teachers or the amount of instructional time or the outcomes. Nothing. I mean it was just like they finished - ok fine. What do they know? We had no competency based outcomes. So I was really in ICDL and that's what we are using now. That takes care of all of it, because the teachers have to be certified so I know they had to go through ICDL themselves, they have to pass the test for a trainer, they can't be trainers if they aren't. So they all have the same credentials at least the same base-credentials, the stuff that we are teaching is consistent and that it's internationally recognized which is a service to those who finish and they want to get a job they know what they've got."

(C. O. :50:29)

A.10 .

"We were there with him in a meeting. He started to say he bought a license for $60000 or something for a windows server. First question was *who told you to use Microsoft platform?* Ok, it's done. He said *'I will give the super user to the dean of university'*. All the data will be, he has to enable, disable the lecturer accounts, the dean accounts, the data entry. If someone compromises his account - what will happen? If there is simple key logger on his system. Or if he doesn't know, he might give it to his assistant. He is playing with the whole university data. He can modify anything. And the other thing is, what supporting IT infrastructure you have for that in the MoHE? All the universities are accessing thing at the same time, cause registration and everything is at the same time. It will be overloaded. You need system planning there, system will go down. He said no. He has no reason, but he didn't listen. I calculated it for them. But he said no, because he talks only from the database perspective. He knows the processes of

the MoHE very well, he is very strong in this. He is a good requirements engineer. But it's not only programming if you want to deploy [MPHE]. It has database part, it has programming part, it has network part, it has IT part, there is hosting and these things. And you should estimate the load."

(N. & K. :01:18:18)

A.11 .

" And that is because their staff, the staff working over there they feel that *"if a private firm is doing our job then why should we be here?"*. Rather the ministry needs to convey this message to them that ok, the private firm will do their job for you but you are going to maintain it. Because we can't allow any private firm to come here and have access to the information. This is a message that needs to be conveyed to them that these private companies are not replacing you. They will give you a solution and get the burden from your shoulders. And then you just need to maintain the system. If there is any problem in the system, you will not be accountable, the company is accountable for it. They will come here and fix it for you. Only thing is you just give your services."

(I. M. :22:16)

A.12 .

The key distinction in my view to make, an IT manager, basically is just you could say an installer and maintainer. Right. Making a system, putting a system in place, making sure the electricity and the backup and you know the wiring and they help-desk, because frequently things break down. Versus a CIO. The CIO is more about how does the ICT infrastructure that one might have support the mission and enhance the mission, make it more effective and efficient and so forth. It's the role of that person to know what is the responsibility. [...] I'm sure there's technical definitions for CIO but I mean the key emphasis, the thing I'm trying to emphasize is information as opposed to IT

(D. K. :01:01:11)

A.13 .

"I went down to visit [the IT guy at the Ministry of Foreign Affairs] when he was still in that job and he took me around, showed me all the servers and all the computers and everything, and as we were walking around I kept seeing all these manual processes going on, xeroxing something, put in a three-ring binder, putting the binder together, putting it in a cabinet. So at the end of the day I said "I'm following that this is all kind of interesting but what do you do here?". And he goes, *"well we get all these reports from our embassies around the world, we xerox all the copies of the report, we package them up and send them back to the embassy"*. I say why don't you do that electronically, why do you? Cause I say you have the information network here. *"Oh no we can't do that because then these people will be out of their job"*. [...] so there is nothing like *how do you retrain people, how do you train them to fill in some of the IT jobs.* It' just not part of the culture."

(P. R. :01:16:04)

A.14 .

"I had to write an implementation plan, for the entire country. Which again I just completed about three weeks ago. And it went through [U.S. aid policy]. And it's going as a package to the president Karzai [...]. It's a three year plan, it involves all ministries,[...] So it's about a 70 million enterprise for three years to create a program management system in the country, so that all the investments can be followed through and people can see, when they're investing money in the central treasury, they can see the money flowing through the projects that they are interested in.[...] if we consider ourselves as children and we consider the constraints that our parents put on us, we did not wake up in the morning and say: I want to be told when I have to go to bed. Did we? We didn't jump up in the morning and say: I want to be told when to do my homework. And I want the constraints that my parents put on my life. We didn't do that. We thought we do best, in fact, frankly we couldn't understand how come our parents were still alive they were so stupid. Right? Point is, that we're old enough to be parents we recognize that the child has its own agenda, which is not always, in fact most of the time not at its best interest, (laugh) especially in terms of survival. So there is, like it or not, a degree of parochialism required in this situation.

Secretary Rice used to say there was a dark side to the Afghanistan compact. And that it was time we started to realize that and to impose it. So this goes down to those nasty words like conditionality. The acceptance of the system will come when they realize that's where the money comes from. No acceptance no money. And that way, our tax payers in our home countries have some degree of assurance that this does not become a great gaping moor in which we continue to pour money so that the poor people can become poorer and others can become rich on their backs. So it's really a question, it is a question of conditionality and the condition is: here is the system through which the money flows. If you don't like it, then you don't get the money."

(P. O. :13:34)

A.15 .

"So, where I'm getting at is this system deals with effects. It's effects based management. Why are you going to built a school is the first question. So it creates an information environment which can fee to the deciders to decide whether a school is needed to begin with. If a school is the intervention that's needed then it has the complete set of planning tools for developing the school and then it has all the controls where we get into the traditional sense of quality control and financial control for a project. So you can seize it, you know, the $100 000 is actually going to built a school not going off to Ahmed's back pocket. And then it has a measurement tool in the end of it, set of measurement tools in the end of it, which allow you to assess at the appropriate amount, the appropriate distance from the project did you get the effect you wanted. So the money is tertiary to this. It's deciding what's needed, planning it properly, executing it properly and then figuring out if you got the result you wanted and the money is simply a tool, that comes in in a third or forth instance."

(P. O. :18:32)

A.16 .

"India and Pakistan have gone through 20, 30 years of this [...] so they haven't got to the end of the path yet but they're on the path. And also their

economies have never really been infected by the aid bug and the aid virus. So they don't have the USAIDs and the GTZs and the other hiring people for lets say massive salaries for mediocre capabilities. And consequently they can come here and deliver a better looking product for a much lower price. And they will do that. So a confusing factor in the market place is the Indian and Pakistani influence. [...] Now there is the Afghan first policy here which is, if you want the thing to grow you got to support it, so you're required to go Afghan first. But I'll tell you the people most guilty of not doing that are the Westerners who wrote the policy. (laugh) So I understand why they wouldn't, cause why would you pay, if you are a profit based development industry player and you can buy it for 10 Rs outside the country, you can buy it for 100 Rs inside the country, you're gonna buy the 10 Rs export, right? Same product. You know, either it works or it doesn't."

(P. O. :01:00:02)

A.17 .

"The Afghan government has not realized, so far has not realized the importance of science and engineering and technology education. I have been telling in every meeting, informing, telling them that the rest of the world, especially the developed world, have been developed because of the developments in science and technologies. And we have to follow that. So I had a meeting with the chancellor of Kabul Polytechnic University yesterday morning and I mentioned this to him. And he agreed with me, and he mentioned to me that sadly there are people in the country that they do not agree with this, they can not realize the importance of this. [...] The government is not very professional. The people, for instance the people at the top of the ministry at higher education, [. . .] he's graduated from a madrassa in Iran. How he would realize the importance of science and engineering education?"

(T. F. :27:12)

A.18 .

" [A]t the beginning [we] did not have any laboratory for all students and our class was quite a big class, we were 120 students in the same class. But

> because I was working in [CCKU] so I had more chances to do some practical work and learn more. At that time we were building a PC lab for the faculty, so I was also working there and building the network there and installing PCs, servers and so. I was more in the practical also, I could learn more, but the people who did not have this chance, were not learning so much because of the practical work. Now also this year we will have a PC lab but for the past two or three years there were also no PC labs, so I think students had a difficult time learning practical."
>
> (R. K. :05:13)

A.19 .

Positions are not primarily based on merit or qualification. The dean of the computer science faculty is a mathematician with no academic background in IT and little experience with it. He had served at the science faculty for several decades, and when the computer science department became an independent faculty in 2009 the main reason for his nomination was "he was older than every one" (U. R. :23:25). There are six levels, every three years the lecturers can apply to step up one level, from *Pohyalai, Phanyar, Pohanmal, Pohandoi, Pohanwal* and finally *Pohand*, which is the full professorship (ibid. [25:09]). When the faculty and its departments were established the younger lecturers were not involved.

A.20 .

> "And one of the sad things that I have experienced is that unfortunately the academics at most institutions, these institutions that I have been visiting, KU, KPU and ICTI[1] - they are not committed to their jobs. Their jobs at the universities are primarily a secondary job. The main job is somewhere at an NGO or an international organization and this is one of the major reasons that why there has been a lack of say major progress. And I hope the Afghan government will realize this and will rectify this. Because they just come and do their bare minimum and then run away and work in another organization for the rest of the day. This is sad."
>
> (T. F. :25:11)

1 Kabul University, Kabul Polytechnic University and Information and Communication Technology Institute

APPENDIX B

Conflicts

B.1 Ethnic and political conflicts

In Afghan everyday life I have experienced many conflicts and discussions regarding ethnicity, political affiliations and discrimination, and tried to address the issue during the interviews in different ways. However, the topic was avoided by most if asked directly, leading to answers like *"we are all Afghans"* or *"we have no such problems here"*. Only some of the younger generation interviewees openly gave their opinion on policies based on politics or ethnicity, while at the same time telling me it was not an issue they would discuss with their parents. One member of the CCKU's parents worked for the communist government during the 1980s and he often, half jokingly, half seriously, defended how everything was better during the Soviet occupation. His colleagues were teasing him and I asked if they ever discussed these issues with their parents, which they denied. There seemed to be no critical reflection of personal family history – or at least no desire to talk about it – but an urge to look ahead and not become part of these conflicts. Another reason might be that they were not part of any government or project structure. They neither had to defend themselves nor the system they were part of. Possibly this position also made it easier to criticise the status quo.

When I asked how one of the ministry employees, who was often described as incompetent, got his position, Norzad explained,

> "you know there are different ethnics here, they said from this ethnic we need one guy from this faculty [...]. It doesn't matter who. Because unfortunately the ministers, and the big positions are divided by these ethnics, Pashtun, Hazara and Tajik. [...] Each ministry, one deputy should be from the other one. So if the Hazara is the minister, Pashtun should come for one Deputy

> and Tajik the other. [...] This is the politics part. So the situation is difficult, they also have fights with each other and different groups supporting them."
>
> (N. & K. :1:37:00)

But at university these ethnic differences played much less of a role and in particular at the CCKU, they emphasised, people were not chosen according to ethnic affiliation.

> "If they are all Pashtun it's fine. If they are all Hazara it's fine. If they are mixed it's fine. Fortunately we have most of them anyway. But we focus only on the work. And all want to give their best."
>
> (N. & K. :1:38:57)

Though I remember conversations when new students were hired at the CCKU, it was taken into consideration to have a balance between different ethnic groups. In most governmental institutions there is at least a strong awareness of ethnic identity, often closely monitored by outsiders as well. Even if there were currently no disagreements, as Baseer Omar described his situation at the MoHE, issues of authority and unfair behaviour regularly come up.

> "[M]aybe you know we have also this ethnic group problem as well, because he belong from another group I'm belonging. Right now we don't have misunderstandings between the ethnic group and he believes me on my work. At that time he didn't believe me. All the time he told me ok, they pay you a lot of money and I know there will be no result from your work [...]. However he wasn't my supervisor, my supervisor is [the vice minister], but I have to coordinate with him, you know."
>
> (B. M. O. :01:03:11)

Ethnic affiliation is still something people are very much aware of, in particular for Pashtuns belonging to certain families or clans. Marriages outside one's own ethnic group are still the exception, as are marriages between Sunni and Shia Muslims. Political positions also seem to be something people are aware of, which department or university was pro-Iran or pro-communist, or supported which presidential candidate, and this was often linked to ethnicity and origin. However these were – at least in conversations I was involved in – much less discussed in public, particularly anything after the Soviet invasion in 1979, if linked to personal or family history. One interview participant asked me at the end of our interview to turn off the recording, since then he could tell me some

of the positive aspects of his life during the Taliban time. He said he was sure I could not understand, but he would tell me nonetheless. In his memory women were safe back then, because they stayed at home and since they were not allowed to learn, they also did not aspire to becoming anything but a wife and mother. The presence of a young, European woman doing research for her Ph.D. might thus also have avoided the topic, expecting I would neither understand anything about the Soviet era, or about traditional Islam. What many others liked to recollect were the peaceful and prosperous 1960s and 70s, *"back then the female students at Kabul University were wearing mini-skirts"* seemed to be one of the favourite memories, at least to tell a Western visitor.

APPENDIX C

History

C.1 Afghan history 1919 - 1978

1919 - 1929

Afghanistan entered the twentieth century with little difference as to how it entered 1800 in terms of transportation, communication, industry or education (Barfield: 2010:165). Political power was, until 1978, monopolized by the Durrani, a Pashtun tribal dynasty, and concentrated on Kabul, which led to an ever widening gap between the political and intellectual elite in Kabul and the vast majority of widely illiterate regionally organised tribes. Afghanistan became independent in 1919, after the third Anglo-Afghan war initiated by king Amanullah. He established, in the following years, diplomatic relations with first the Soviet Union and then Europe which raised the status of Afghanistan across the Muslim world (Barfield: 2010:182). He tried to quickly implement a number of democratization and industrialization measures, the most significant one being the constitution of 1923, including the promotion of equal rights and the expansion of the educational system, including formal education for woman. His attempt to extend government power, the newly established taxation laws and the perceived interference with family life, however, led tribal elders, farmers and religious leaders to join a rebellion against these changes and finally forced Amanullah into exile in 1929 (Jäkel: 1972:124).

1929 - 1978

His successor Habibullah, one of the leaders of the revolt and also the first non-Pashtun to rule the country, abolished all reforms, but his reign remained short and only nine months later he was killed by allies of the former king. He was followed by Nadir Shah, a member of the ruling dynasty and distant cousin of Amanullah, who called himself “not

the king but the servant of the tribes and the country" (Gregorian, 1969 in (Barfield: 2010:195)). Though related, Nadir Shah did not belong to a line of family that had ever before been considered for amirship. His regime was recognized and financially supported by the British but faced persistent opposition in Afghanistan by Amanullah's supporters. Shortly after he had assembled a loya jirga[1] who approved his request of formally suspending the royal rights of Amanullah and his heirs, he was killed in a revenge attack in 1933. Based on the loya jirga's declaration, his son Zahir Shah immediately followed his reign, and would remain king for the following 40 years in relative peace and internal stability.

Under Zahir Shahs reign, which was dominated by his uncle's premiership until the 1960s, Afghanistan underwent cautious social and economic changes, first implemented in Kabul and then slowly moving into the provinces. Internal stability became the highest priority, taxes on rural production were gradually eliminated in return for political subservience (Barfield: 2010:198) and the tension between Kabul and the countryside subsided. From the 1950s onwards, under the increasing attention of the rivals Soviet Union and the United States, a modern army and police force was built up, education was expanded and a basic infrastructure of roads, bridges, dams, and power lines was built (Islamic Republic of Afghanistan: 2006:30), mainly through foreign aid and loans.

The retreat of the British and Pakistan's independence in 1947 led to ongoing (and still not fully resolved) conflicts between the two countries about the affiliation of the border region. Pakistan repeatedly blocked off border traffic, which had serious economic consequences for Afghanistan's already limited export market. By 1973 two-thirds of its annual revenue was derived from foreign grants and loans (Fry, 1974 in (Barfield: 2010:205)). Zahir Shah finally took the reins of power in 1964 and established a limited parliamentary system, however no political parties were permitted, and power remained largely within the existing extended family. He was replaced in 1973 by his cousin Daud, who had also been prime-minister during the 1960s, in a largely bloodless coup, while Zahir Shah was abroad. Daud declared the end of the monarchy and made himself the president of the republic of Afghanistan. The changes in government structures and the expansion of the educational system had by then led to an increasing number of educated young people in the bigger cities, with rising expectations in terms of public service, infrastructure and the standard of living (Barfield: 2010:212), which the government widely failed to meet. Simultaneously the rural areas received little attention from the

1 A "grand assembly", gathering elders and community leaders from across the country to discuss matters of major national importance

central government officials, 95% of the population were still illiterate and concerned with feeding their families, rather than political ideologies (Brechna: 2005:261). This caused a strong mutual mistrust on both sides. Radical political views gained popularity, communist and Islamist groups fought on the streets of Kabul. A communist coup by the People's Democratic Party of Afghanistan (PDPA) and the Afghan Army in 1978 ended Daud's life and his republic, and terminated 230 years of Durrani rule.

APPENDIX D

Master Thesis

Summary of main findings of Stilz (2009)

I could make out three groups of actors within the local actors that I described as 'Young Experts', 'Exile Afghans' and 'Senior Officials' who took prominent roles in donor-funded public sector ICT projects. The first group was mainly the younger generation Afghans who had been living, and had often gone to school, abroad and had access to ICT before returning to Afghanistan. For them computers and the internet offered many possibilities, on a personal level as well as career-wise, and helped them to stay in touch with the world outside Afghanistan, with family and friends, but also with information and entertainment.

The group I called "Exile Afghans" are Afghans who had lived abroad for several decades, often studied in Europe or the US and who now held key positions in government institutions. They had lived and worked in recent years in environments where the technical infrastructure and high-speed internet were taken for granted, and also belonged to the large group within the Afghan government that is regularly referred to as "technocrats".

What I summarised as "Senior Officials" comprises members of university or ministerial staff, who had not lived abroad and whose first personal experiences with communication technologies usually took place in recent years. Among this group are university professors, government officials and advisers.