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TELEMEDICINE IN PAKISTAN

On and under the Surface

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WATER FOOD ***DIABETES*** AYURVEDA ***GENETICS*** POVERTY ***YOGA*** STDS ***HISTORY*** SEX ***SOCIETY*** FAMILY PLANNING ***CASTE*** GENDER ***RIOTS*** RELIGION ***HEALTH*** DEMOCRACY ***FLOODING*** WASTE-MANAGEMENT ***UNANI*** PSYCHOLOGY ***FOLK MEDICINE*** AFFIRMATIVE ACTION ***GLOBALISATION*** BIOCHEMISTRY ***OLD AGE*** REPRODUCTIVE HEALTH ***MALARIA*** POLICY ***HIV AIDS*** WHO ***MEDICOSCAPES*** COLONIALISM ***PHARMACY*** RELIGION ***LEPROSY*** BOTOX ***DEHYDRATION*** NGOs ***AYUSH…***

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1. Introduction

This study is about anthropological and philosophical ways of analysing technology-based medical practices. Specifically, the focus lies on human interactions and relationships through and with technological means.

Working as a medical doctor, I often experienced how technology alters human experience, practices, and communication, by creating new categories, hopes, and dangers. During my very first night shift in a large psychiatric hospital in Switzerland, I received a telephone call. The woman at the other end did not want to tell me her name, but repeatedly stated that she wanted to kill herself. I was very worried and unsure of what I could do at a distance. So, I decided to keep her on the phone for as long as possible, rationalizing that she would not be able to harm herself whilst talking to me. We talked for over an hour. Finally, the woman said she was quite tired and would like to go to bed. However, she would be very happy to call me again soon, seeing that I had so much to talk about. This call (and many other situations during the following years) left me wondering. What kind of human connection is possible via technology? How does technology alter human ways of perceiving and being perceived?

The fact that our everyday lives in general, and areas connected to health and illness in particular are increasingly entangled with technology, makes it important to think about these questions. Especially in countries with low income and geographical challenges, technology is seen as a solution to many problems. Having studied Urdu at university, I decided to make Pakistan the regional focus for this research project.

According to Khan and Hayee, about a third of the population in Pakistan lives beneath the poverty line (Khan and Hayee 2009). Agriculture being the main source of income, most people live in rural areas and have a limited access to basic medical care. Especially children and women suffer if they cannot consult specialist doctors near their homes. Often, there are no doctors working in rural health centres which results in an increased mortality and morbidity (ibid). This makes it important to devise new ways of sufficient provision of healthcare.

A relatively new development in medical care is called telemedicine. Using technology, healthcare professionals and patients can communicate despite a physical distance. There is not one singular kind of telemedicine, but multiple and sometimes incompatible ways in which telemedicine can be practiced. Inherent to all practices is the aspect of spreading healthcare more widely.

Numerous studies focus on different aspects of telemedicine, such as discussing its historical development (e.g. Craig and Patterson 2005), providing an overview of medical areas in which telemedicine can be applied (e.g. DiCerbo 2015), depicting how telemedicine is used in specific medical areas (e.g. telepathology (Chai Ling and Krishnappa 2012), teledermatology (Whited 2006)), discussing specific telemedical settings (e.g. Oudshoorn 2012) and projects (e.g. Duclos et al. 2017), or examining the equipment used in telemedicine (e.g. Baker and Stanley 2018)).

In my study, however, another approach is taken in order to analyse telemedicine and its implications: I draw on Nordmann, who in his book "Technikphilosophie zur Einführung" argues that in order to understand how technology impacts our being in the world, we do not have to analyse how technology functions, i.e. regulations, legislation, or production of devices. Rather, we should examine the obvious and more subtle ways in which technology transforms our everyday lives (Nordmann 2008, 18). This, Nordmann contends, can be done by focusing on narratives of day to day situations and looking at the role that technology plays therein. As technology and its application are not 'neutral', human-technology relationships tell us something about who we are (ibid, 30).

My research question is: How do telemedicine and inherent practices shape interactions between doctors and patients? I open the field of discussion by placing one specific aspect of telemedicine at the centre of my analysis: surfaces. Surfaces have the ability to separate or to merge, to give a clear boundary, or to enable transgressions. They act as interfaces and contact zones. They have different textures which may take the analysis to a more intuitive level. Surfaces define objects, they make visible and hide. Inherent to surfaces, there may be permanence. Or they could function according to other temporalities. Overall, I argue, surfaces are connected to notions of being in, shaping, perceiving, and interacting with the world, as well as having an impact on knowledge and knowledge generation. Surfaces have the ability to make us aware of certain aspects because they

"[…] become a means by which particular ideas, relations, aspirations may be visualized and materialized, and […] surfaces may themselves visualize, that is be a spatiotemporal site through which relations and materialities become visible, or not" (Coleman and Oakley-Brown 2017, 6).

This quote gives several relevant angles: Firstly, it is not only important what becomes visible, but also what 'materializes'. Thus, surfaces open up a haptic space in which to think. In the medical area all human senses are important - both for patients when experiencing illness, and for physicians when trying to 'make sense' of the patients' ailments. Secondly, surfaces can be regarded as techniques to make something appear while also being places of activity

themselves. This point becomes clear in my discussion of telemedicine through philosophical and anthropological concepts: Telemedicine both *is* a surface in itself and *creates* surfaces. Thirdly, surfaces have the ability to reveal and to hide. Both sides are equally important, and in my study, I show different ways of looking at or beyond the surface. Interestingly, the common notion in some areas of medical practice is that the truth lies underneath the surface and doctors ought to probe, dig deep, look inside, or open up bodies in order to find it.[1] I challenge this view by depicting multiple other characteristics of surfaces and their impact on human practices.

My research project is based on one month of fieldwork in Pakistan, where I stayed together with my husband. Most of the time was spent in Islamabad and I conducted unstructured interviews with healthcare professionals and people working with telemedicine. For one week, I travelled to Gilgit and Karimabad in order to get a sense of the physical distance which is bridged by telemedical practices. The interviewees' narratives are analysed by using different perspectives on surfaces to think with.

The study is divided into two parts. In the first part (chapters 2-4), I start by giving a description of the fieldwork setting, the sample, and the applied methods (chapter 2). In order to provide a framework of current topics within the realm of telemedicine, a general overview of literature on telemedicine is presented (chapter 3). Next, I describe first findings on telemedicine from my fieldwork in Pakistan and discuss how these findings can be connected to each other (chapter 4). In the second part of my study, I discuss my fieldwork findings in more detail by introducing four different philosophical or anthropological concepts of surfaces and using them to focus on some specific aspects of telemedicine (chapters 5-8).

[1] This alludes to what Foucault discusses in his book "The Birth of the Clinic" (Foucault 1994[1973]).

2. Research and Methods

In three subchapters I give a detailed account on how I established personal contacts in Pakistan (2.1) and describe the research fields and the sample (2.2). My way of collecting, saving, and analysing data is portrayed and I provide reasons why I chose these particular research methods (2.3).

2.1 Finding connections

In order to gain access to the field, I had to create new connections. As I had not been to Pakistan before and did not know anyone currently living in Pakistan, it was quite challenging at first to find people who were able and willing to help me with my research. I started writing and talking to different people in German academia connected either to Pakistan, to research involving technology in general, or telemedicine in particular. It was through a professor of anthropology at a university in Germany that I came into contact with a professor of anthropology in Pakistan, Hassan Shah[2]. He, then, provided me with the contact details for people who were in some way associated with telemedicine. Further, he invited me to visit his department and promised to help me find more contacts once I was in the field. Through this connection, I got to know Khalid Asif, working in the IT department of a large private hospital in Islamabad. We wrote emails and talked on the phone and I was able to set up a kind of 'internship'. It was agreed that I could meet and interview people in the hospital who were active in the field of telemedicine.

My second main connection to the field came through a fellow student in Heidelberg, who herself had done her fieldwork in a governmental hospital in Islamabad and gave me the contact details of a doctor there, Ayesha Khan. I was able to send some messages via WhatsApp to the doctor, telling her about my research project. She disclosed that telemedicine was very common throughout Pakistan and was also practiced at her hospital.

I travelled to Islamabad by plane on the 1st of April 2019 with my husband following one day later. We stayed together throughout the period of my fieldwork and returned to Heidelberg on the 30th of April 2019.

After arriving in Pakistan, I was told that Khalid Asif, my contact at the private hospital, had had to leave quite suddenly due to private reasons. He sent me the phone numbers of two of his colleagues, and I went to meet them the next day. However, because I had been communicating

[2] All names in this study are fictitious. For a more detailed list, see below, chapter 2.2.

only with Khalid Asif, it seemed as if people were at a loss as to what they should do with me. I decided to wait until he had returned to Islamabad and follow other connections in the meanwhile.

I visited Ayesha Khan in her office at the governmental hospital several times, attended her hours in the outpatient department and her 'Vibration Therapy' (see below, 8.2). She also took me and my husband on some outings and I was able to see her way of practicing telemedicine various times.

As arranged via email, I visited Hassan Shah in his office at the university in Islamabad and he invited me to give a talk about my research in front of students and different staff members at his other department at the university in Rawalpindi. Here, I got feedback on my current research project and was able to have discussions about telemedicine with various people, inter alia, the vice chancellor. I established other contacts during my stay in Pakistan by chance and once I had become more settled. I visited the headquarters of an online clinic, looked at a family clinic in Gilgit, and talked to people about illness and health at a wedding in Karimabad. Khaled Asif was back in Islamabad in the last week of my stay and brought me into contact with several people who had been or were currently working in the area of telemedicine.

Overall, I noticed that a crucial part of fieldwork was to have at least one person who would help me, as an outsider, to find contacts and gather information. It felt a bit as if I was unravelling a piece of cloth, holding onto one thread which then led me to more threads, until I had a bundle of loose threads in my hand. Despite meeting more and more people and establishing additional contacts, I was not able to follow all the 'loose' connections and invitations due to the brevity of my stay.

In general, I was treated warm-heartedly and made very welcome during the interviews, the university visits, and personal discussions. From the beginning of my research project, I was aware that I had a special position due to my double role both as a university student in a master's programme and as a medical doctor. I noticed that being a doctor especially helped me in the medical context: One, other doctors seemed to relate to this common ground and spoke openly about their practices and difficulties. Two, as a result of having worked as a doctor for five years myself, I had a deeper understanding of possible challenges which doctors face on a daily basis. Three, having done several medical internships in various countries (e.g. Nepal and India), I felt comfortable in the hospital surroundings despite there being a huge difference to what I was used to from working in Europe. I told all of my interviewees about my training but realized that my double role was confusing. Most of my informants concentrated on one

aspect and introduced me accordingly: I was either a medical doctor, or a technical researcher, or a medical student, or a doctor of anthropology. In the beginning, I tried to set things right. However, I soon noticed that my exact role did not seem so important to others, so I let matters rest. By and large, being a medical doctor seemed to open doors and give me a deeper insight, though I was also aware of possible limitations. Sometimes I felt as if people were presenting themselves or their work in a particular light, possibly due to my being a doctor *and* a woman from a western background. Also, I thought about whether I might be 'blind' to some medical practices or situations because they were 'normal' for me.

2.2 Setting the field(s) and introducing the sample

In a narrow sense, the fields consisted of different hospitals in Islamabad (a governmental hospital, a private hospital, the headquarters of an online clinic), a doctor's surgery in Islamabad, two universities (one in Islamabad and one in Rawalpindi) and a family hospital in Gilgit. In a broader sense, everything that gave me a feeling for Pakistan as a country and inherent cultures, also contributed and shaped my research: travelling by public bus from Islamabad to Gilgit and Karimabad, visiting a wedding in Karimabad, talking to people in the square where we stayed in Islamabad (G8 markaz), going on outings with an interviewee, and being invited to have dinner at another interviewee's house.

The sample consisted of thirteen people with whom I conducted at least one interview. To guarantee anonymity, I have used fictitious names throughout my study. The names are put into the sequence in which I met someone in person (or, in one case, conducted the interview via phone):

- Harris Ahmed, working at the IT department in a private hospital in Islamabad
- Noor Hussain, working at the IT department in a private hospital in Islamabad
- Ayesha Khan, a surgeon at a governmental hospital in Islamabad
- Hassan Shah, a professor of anthropology, currently working at two different universities (Islamabad and Rawalpindi)
- Aamir Malik, the founder of an online clinic in Islamabad
- Sania Talha, a doctor working as general practitioner in an online clinic in Islamabad
- Umar Zohair, a doctor at a family planning hospital in Gilgit
- Khalid Asif, a doctor working at the IT department in a private hospital in Islamabad
- Sarmad Javed, working on the board of a private healthcare foundation

- Riaz Shaheer, a doctor working in the emergency department of a private hospital in Islamabad
- Shahzad Hadi, former member of the army (phone interview)
- Jalal Asad, a doctor working in a private practice, involved in the e-health society Pakistan
- Jibraan Choudhary, a doctor working in psychiatry in a private hospital in Islamabad

2.3 Research techniques

I had prepared the main questions I was interested in according to the kind of contacts established in advance, intending to use them as guidelines for my interviews and not as questionnaires (see Appendix). Before entering the field, I had only been able to establish contact with 'professional' people who were working or had been working with telemedicine and I hoped to find a way to meet patients who had been treated via telemedicine, once I was in Pakistan. The incentive was not to construct a representative sample of various categories of interviewees (i.e. doctors and patients). Rather, my aim was to collect as much information as possible from people connected to telemedicine. However, it proved impossible to talk to patients because of several reasons: mainly the lack of accessibility and the fact that it would have needed a longer timespan to establish a trusting relationship – obstacles which could have been overcome, had the fieldwork been longer.

Originally, I had planned to record the interviews on my phone. However, I found that most of the interviews seemed more like conversations, and I did not want to change the atmosphere by switching on my phone. So, in the field, I resorted to taking extensive notes during the interviews (after asking the interviewee for permission, which was always granted). Whenever there was a sentence that seemed especially important, I wrote it down as a quote. After each interview, I noted down the interviews in a more detailed way, adding thoughts and impressions of the interview, the surroundings etc. All participants were interviewed in person, except for the interview with Shahzad Hadi, a former army member, whom I talked to on the phone; during three interviews (with Aamir Malik, the founder of an online clinic in Islamabad, Sania Talha, a doctor working as a general practitioner in an online clinic in Islamabad, and Umar Zohair, a doctor at a family planning hospital in Gilgit), my husband was present (though not actively participating). Except for the interview with Harris Ahmed, which was conducted in Urdu, all interviews were held in English. I had studied Urdu beforehand and had intended to use the language as a way to establish contact. Further, I had planned to find an interpreter once in the field, but the necessity never arose because my interviewees were fluent in English. Mostly, I

would visit the interviewee in their office, we would have tea or coffee, and I would describe my research interest and ask some questions. Normally, the interviewees also had some questions (i.e. my family status, my stay in Pakistan etc.) and often the conversation would drift into other directions (I discuss this aspect in more detail below, see 4.2). The interviews lasted from 15 minutes to several hours. I met some of my contacts more than once and gained a deeper insight into their way of working with and looking at aspects connected to telemedicine. Also, I was able to see some of my contacts in a non-professional context, i.e. on outings, which provided me with additional examples to illustrate my fieldwork findings throughout my study.

After returning home from Pakistan, I printed out my field notes. I analysed the data by coding, meaning that I assigned different utterances to thematic categories. These categories were based on topics I had defined before and during my fieldwork, derived from my experiences as well as the literature review.

3. Telemedicine

When writing about telemedicine, the first question is, of course, *what is telemedicine?* It seems especially important to give a clear-cut definition as there are several terms that are used for this kind of practice and related practices - either interchangeably, or with differing definitions: telehealth, telecare, eHealth, mobile health, telemedicine etc. The focus may lie on *what kind of device* is used (e.g. mobile health in which mobile phones are used), *who administers the service* (e.g. telenursing which is used to describe the contact between nurses and the patient), or *which service* is given (e.g. telemonitoring in which patients are monitored by physicians and nurses in their homes).

In this chapter, I start by giving the definition of telemedicine as used throughout my study (3.1). Additionally, an overview of current research literature on telemedicine is presented, focusing on the aspects relevant for my project, i.e. human relationships, interaction, perception, etc. (3.2). Even though the focus lies on the interaction between doctors and patients, literature concerning other constellations, such as nurses and patients, is also included.

3.1 Definition

In the "Report of the third global survey on eHealth", the World Health Organization (WHO) describes telemedicine (the term used interchangeably with *telehealth*) as

> "the delivery of health care services, where patients and providers are separated by distance. Telehealth uses ICT [information and communication technology] for the exchange of information for the diagnosis and treatment of diseases and injuries, research and evaluation, and for the continuing education of health professionals. Telehealth can contribute to achieving universal health coverage by improving access for patients to quality, cost-effective, health services wherever they may be. It is particularly valuable for those in remote areas, vulnerable groups and ageing populations" (WHO 2016, 56; A.K.).

This could entail consultations via phone or email and teleconferencing, but also keeping medical records and processing data (Di Cerbo et al. 2015). On a more specific level, telemedicine could refer to patients being monitored at home, their medical data being sent to physicians and nurses with whom they are connected via information and communication technology (ICT). For my research project, I would like to apply a more focused definition of telemedicine: "[T]elemedicine is understood as that part of e-health in which *communication* takes place between *physicians and patients* so as to *replicate actual clinical consultations* by distance" (Ahlin 2011, 167; emphasis by A.K.). I conceptualize telemedicine as an umbrella term which comprises many of the names given above, provided that it includes communication between physicians and patients. Telemedicine as such is not a technology, but it *relies on*

technology. In my study, the terms *telemedicine* and *telemedical practice* are used interchangeably. Interactions taking place via the internet or via phone are referred to as being *digital* or taking place in *digital space.* To describe people meeting face to face, the terms *physical* or *physical space* are applied.

My aim is to find out how doctors and patients interact and establish a relationship digitally. This can cover direct and indirect doctor-patient interactions, via email or online chat, by phone or video call, or when the patient is examined by or comes into contact with a third party (e.g. a nurse in a healthcare centre) and the information then is transmitted to the physician.

According to Kleinman, healthcare can be divided into three sectors which are connected to each other and may share some aspects: "the popular, professional, and folk sectors" (Kleinman 1980, 50). My study is focused on what would mainly belong to the professional sector, defined as "organized, legally sanctioned healing professions, such as modern Western scientific medicine […] (Helman 2007, 94). Throughout my study, I refer to this specific area of healthcare as *biomedicine* which Helman describes as

> "[…] the ethnomedicine of the Western, industrialized world [which] expresses (and constantly helps recreate) some of its basic cultural premises, including its ways of looking at the world, its social hierarchies and organization, gender roles, and attitudes towards illness and suffering" (ibid; A.K.).

This view is important for my study because one should keep in mind the cultural and social context from which telemedicine has developed.

3.2 Overview

People have always tried to find ways of overcoming physical distance to make use of expert advice and medical care. Craig and Patterson (2005) give an overview on how telemedicine has developed from conveying messages concerning medical issues: in the Middle ages, people lit bonfires to communicate the outbreak of contagious illnesses; later, telegraphy and telephones were invented and people devised ways to use radios for communication; then, the invention of television presented even more opportunities for people to interact over a distance (e.g. through a "two-way closed-circuit television system", allowing for "interactive consultations between specialists and general practitioners" (ibid; 5)). The authors state that two developments have made today's telemedicine possible: massive advancements in the possibilities and ways of application of ICT, as well as research carried out by institutions and individuals interested in optimizing these services for use in healthcare (e.g. the National Aeronautics and Space Administration, NASA; ibid, 5).

Today, many areas of medical specialization make use of telemedicine (for an overview, cf. Di Cerbo et al. 2015) and an increasing number of countries implement healthcare services based on this technology. The often-stated benefits are that healthcare can be distributed more widely, chronically ill people can be treated at home, patients are empowered, and it has advantages for education. In general, telemedicine seems to be an opportunity to facilitate access to basic medical care. This is especially important in countries where medical services are distributed unevenly, such as Pakistan, as reported by Khan and Hayee (Khan and Hayee 2009).

According to my literature and online research, there are different approaches on how telemedicine is practiced in Pakistan: there are several online-clinics, where patients can book video consultations with specialist doctors (e.g. Sehatyab.com[3], DoctHERS.com), or doctors from Pakistan can book discussions with specialist doctors from the USA (Appna.org); psychotherapists offer sessions via Skype additionally to face-to-face consultations in their surgeries[4]; there are individual (local and temporary) projects, such as in 2005 when telemedical care was set up in Skardu, Gilgit Baltistan (Khan and Hayee 2009), or in 2011 after a heavy flooding in Sindh when mobile telemedical units were provided to transfer patient data to specialist facilities (NDMA 2011, 33). During my fieldwork, I was able to find out more about some of these approaches, as well as other ways of practicing telemedicine (see below, 4.1).

Already, it becomes evident that telemedicine, as a relatively new development in healthcare has manifold facets which can be critically discussed. Often, different telemedical practices are compared to a 'normal' physical encounter of doctors and patients. In one article, practical tips are given for physicians to perform a good consultation via telemedicine: The authors advise doctors to "[…] position the image of the patient end [sic] as close to the webcam as possible so that it appears [they] are making eye contact with the patient" (Sabesan et al. 2014, 102). Further, they suggest that doctors "[m]aintain eye contact with the patient by effectively using the camera and zoom in and out to pick up any non-verbal cues" (ibid). Additional concerns are aspects that would also be taken into account in a face-to-face consultation, such as building rapport by asking after family or work and making information more comprehensible by showing images or drawing diagrams (ibid). All these pieces of advice rest upon the assumption that telemedicine should be *as similar as possible* to a physical interaction between doctors and patients.

[3] This website does not offer video consultations anymore and now mainly consists on a blog offering "[p]ractical advice on mental health and preventive medicine" (Sehatyab 2020).

[4] I was told this by a PhD student with connections to Pakistan.

4. Telemedicine in Pakistan

In the following chapter, I give an account of what I discovered about telemedicine during my fieldwork in Pakistan. First (4.1), I portray narratives from three different perspectives on telemedicine: A doctor practicing what I call 'Personal telemedicine', telemedicine as a business model represented by the co-founder of an online clinic, and different people describing short-term 'Project-based telemedicine'. Next (4.2), I discuss how these (and other) kinds of telemedicine are mutually exclusive on the one hand, and connected to each other on the other hand.

4.1 Three narratives

'Personal telemedicine': A doctor's story

"What it has done to us doctors? It has messed up our lives!" (Ayesha Khan)

One kind of telemedical practice I encountered in Pakistan is what I will refer to as 'Personal telemedicine'. This consists of doctors who work in hospitals or surgeries giving their private mobile numbers to patients and other physicians. These doctors are mainly contacted in emergencies, when someone needs an expert or second opinion, or when patients want to get to know them prior to arranging a physical consultation. Patients and their doctors can contact these doctors via phone call, video call, WhatsApp (message or voice mail), or face time. I was able to witness these interactions through Ayesha Khan, a female heart surgeon in a large hospital in Islamabad. Her mobile phone was always present during our interviews, her consultations in the outpatient clinic, or the outings on which she took me and my husband. While tending to patients who were physically in the same room, Ayesha Khan would answer some messages or take a phone call whilst writing a prescription. Often, she would turn to me, smiling, stating proudly: *"So, now I have treated two to three patients in just a few minutes!"* Whenever her driver drove us somewhere in her private car, Ayesha Khan would be busy with her mobile phone, spending "*time with her patients in between*". She told me that once she was called in an emergency situation by a doctor tending to a patient of hers living in a remote area of Pakistan. Ayesha Khan was able to guide the doctor over the phone. Thus, Ayesha Khan concluded, telemedicine enabled them to save a human life.

The quote at the beginning of this section was what Ayesha Khan answered laughingly to my question how telemedicine has changed the interaction between doctors and patients. Ayesha Khan was aware that this new availability put a lot of pressure on doctors. She told me, that she

received 2-3,000 messages a day. Not only did this impact her private life, she also had to find a way to deal with these messages during normal working hours. Whenever she was operating in surgery, she would give the phone to one of her junior doctors, so they could attend to calls or messages. As soon as she had free time at work, she would check her phone to see what kind of messages or calls required her immediate attention. Ayesha Khan told me that doctors needed to learn not to get too emotionally attached to their patients. She herself had to learn the hard way and got very sick. Yet, overall Ayesha Khan was convinced that everything that improved telecommunication also improved the doctor-patient relationship. She stated that especially in Pakistan where there is no referral chain and the ambulance system is poor, personal relationships were important.

What seems important in this kind of telemedicine is that all contacts are based on some kind of pre-existing personal relationship – either a relationship between Ayesha Khan and a patient, or between Ayesha Khan and another doctor, or a relationship *through* others (i.e. a junior doctor contacting Ayesha Khan after getting her details from a friend). I would argue that inherent to this kind of relationship is the idea of continuity: Ayesha Khan is always and reliably available via mobile phone. Whenever she cannot be there, she organises someone else to take her role. Importantly, this kind of reliability is formed not from the outside by a contract, rules, or regulations, but from the inside. It seems to belong to the self-concept of some doctors I talked to in Pakistan to provide this kind of reliability and availability to their patients - without material gain and often at a loss of their own free time.

Online clinics: An entrepreneur's story

Secondly, I present telemedicine as practiced in an online clinic. In the sector of Islamabad in which I stayed for most of the time during my fieldwork, there were several pharmacies, private clinics, and surgeries. And, as I found out after doing some research, also the headquarters of an online clinic. I walked into their office together with my husband, introduced myself, and described my research interest. Immediately we were ushered to the office of one of the founders of the clinic, Aamir Malik. He was in his early thirties and had a background in IT. His founding partner was a medical doctor. Aamir Malik told me that their business idea was to use ICT to bridge a gap in healthcare which arose due to the fact that many doctors did not want to work in remote areas.

Basically, this online clinic is a mirror image of a physical clinic: Patients can 'walk into' the website and book a consultation with specialist doctors. Or they can consult one of the three general practitioners who are available 24 hours.

In total, 150 doctors work for the online clinic. In order to be registered, doctors have to list their personal and medical experience; these aspects are then checked by employees of the online clinic. To date, the online clinic has had over 1,000 registrations, but only 150 doctors were approved. As regards doctors, there are three different models for them to work for the online clinic: 1) The clinic employs three general practitioners who work eight-hour shifts at the headquarters; 2) there are doctors who are paid a retainer and work for 36 hours a week for the online clinic; 3) other doctors are paid per consultation.

For non-doctors, there is the possibility to register with the online clinic as administrators. In a remote area, this could be a grocery store owner who can provide patients with access to the online clinic via the internet. Administrators may also perform basic examinations on patients and upload the information on the app of the online clinic, so that a doctor can see the data.

Patients have access to information about the doctors registered at the online clinic: the doctors' experience and exams, languages spoken, specialization and current employment, consultation and home visit fee, patient rating. Overall, the fees for an online consultation range from 500 RS to over 1,000 RS[5], depending on experience and specialization of the respective doctor. The online clinic offers corporate packages, in which clients have a specific number of free calls per month. Aamir Malik explained that the platform of the online clinic is cloud-based and works with Amazon. Mostly, they market their online clinic via social media. This means that until now, only a specific group of patients is targeted: a largely urban clientele who visits the online clinic when they do not have time to consult a doctor 'physically', when they would like to have a second opinion from a different doctor, or whenever they would like to speak more 'privately'.

This kind of telemedicine transfers the model of a hospital to digital space. Inherent to this, there is the idea that healthcare is part of an economic system: Patients pay money for medical services. Especially the aspect of corporate packages with a specific number of free consultations in a period of time makes us think about a 'modern' way to regard illness and health. And yet, there is also the angle that patients gain power (in the form of information about which doctor to consult) and medical care is dispersed more widely. However, it seems that this model is used by more privileged, upper-middle class people who would have other

[5] 100 RP = 0.60 € (Umrechner Euro 2020). The average monthly income in Pakistan in 2018 was about 112 € (Laenderdaten.info 2020).

possibilities to seek medical care. As regards doctors, online clinics give female doctors the opportunity to work from home and, thus, may challenge extant gender inequalities.

‘Project based telemedicine’: Establishing digital connections to remote areas

“From nothing to provide a doctor, it is a big step” (Jalal Asad).

Another kind of telemedicine I learnt about during my fieldwork took the shape of different time-bound projects that either had been in practice but had stopped, or were yet to be implemented.

Sarmad Javed, the board member of a foundation linked to a private hospital, told me about a telemedical programme set up in Skardu: A paramedic was stationed at a health centre, connected via the internet to a general practitioner in a hospital in Islamabad. Together with the paramedic, patients were able to consult the doctor in Islamabad via the internet. The service was free of cost and in the summer a lot of patients came to the health centre. In winter, however, they were not as mobile and patient numbers went down. The project was discontinued due to problems with funding.

Riaz Shaheer, who had been a doctor within this project, told me that he had found this new assignment exciting and had voluntarily signed up. He discussed the quality of the equipment: His consultations were conducted via video call. The camera was quite good, so he had a clear picture of the patients and could also observe them entering the room. However, there were limitations when visual cues were the only way of diagnostics, e.g. when a rash had to be examined. Furthermore, they used a stethoscope for auscultation which was applied to the patient by the paramedic in Skardu, the sound being transmitted to Riaz Shaheer via speakers. The sound was not very good, so that the results could not be used for diagnoses. Finally, Riaz Shaheer expressed a limitation which was not linked to the quality of equipment: language. A lot of the patients in Skardu neither spoke Urdu nor English, which meant that they had to employ an interpreter to be present in the health centre. Riaz Shaheer took a lot of time to make sure that everything had been understood correctly. He would write instructions in Urdu and English and send them to the centre in Skardu to be printed out. According to him, telemedicine did not increase the danger of miscommunication though. Rather, it was something that occurred if people did not take enough time. Riaz Shaheer noticed that patients who went to the health centre in Skardu were a lot more grateful than patients he encountered at the private hospital in Islamabad. He thought that this was due to the fact that in Skardu there had not been any healthcare before – in Islamabad patients took everything for granted.

Shahzad Hadi described two projects that the army in Pakistan had implemented for members of the army: For emergency care they had a van with equipment in which patients could be treated. 55 kilometres further, specialist doctors in a hospital could view patient data and results. In another project, the army established four different call centres in Kashmir from where data was sent to a hospital in which doctors were stationed. Patients at the call centres were connected via video call with the doctor. There was equipment to undertake measurements, the results of which were transferred to the doctors. The doctors' instructions could be printed at the call centres. This was a project for every-day ailments. The problems they encountered were connectivity and that the medical instruments were not compatible, which meant they could only use the equipment provided by one firm. Furthermore, users on both sides were not very technology-affine and had to be trained continuously.

Another telemedical project I learnt about was a project in Badakhshan, focusing on de-stigmatization and raising awareness to provide patients with appropriate healthcare services. Jibraan Choudhary, a psychiatrist based in Islamabad, told me that his task had been to formulate text messages and send them to 'leaders', about 300 healthcare workers. These 'leaders' would receive about ten messages per week. Their task was to screen patients and organise focus groups. Patients with symptoms of mental illness were referred to psychologists and psychiatrists in the nearest town. Patients with more severe impairments were introduced to Jibraan Choudhary via video call. Jibraan Choudhary showed me some of the messages: mainly, they were brief psychoeducational explanations of mental illness (e.g. schizophrenia or depression), general symptoms, and treatment options.

These examples convey that there are manifold ways in which telemedicine can be used to treat patients who, due to different reasons, have no sufficient access to healthcare services. Importantly, similar limitations of these projects were mentioned: connectivity, quality of equipment, funding, and willingness to use technology. It seems that people are more willing to include novel equipment in their routines the easier its application. Furthermore, people were more inclined to use telemedical services in very specific situations, i.e. after a disaster such as flooding. Then, the motto applied: Any healthcare is better than no healthcare at all.

4.2 Differences and possible connections

I embarked on my fieldwork with ideas about what telemedicine entailed, according to what I had read about in current literature (see above, 3). My aim was to find out how telemedicine was practised in Pakistan. I was especially interested in human relationships within this practice, the main focus being doctor-patient interactions. However, once I was in the field, I got the impression that the more I talked to people, the less I understood what telemedicine *really is.* More and more topics came up that were in some way connected to telemedicine. I noticed that telemedicine was not *one* defined and closed 'object' with clear boundaries. Rather, it seemed elusive, evading my grasp and understanding. In most of my interviews it was difficult to talk about telemedicine and conversations tended to veer off in directions like electricity and connectivity, friendship between Pakistan and China, funding, general shortcomings in the Pakistani medical system, aspects of gender, privacy, different kinds of space, Pakistani culture and my personal experience, touristic topics such as my travel plans. I wondered whether I was asking the wrong questions – either because I was too fixed on my idea about what telemedicine would or should entail, or because I was too vague. Even though I changed my tactics, either asked questions that were more to the point, or waited and listened to what people would tell me on their own accord, I did not reach any clearer conclusions.

I realised that somehow all of this confusion was related to telemedicine. Rather than thinking of one singular telemedicine which could be seen from different perspectives, I would like to argue that there are *multiple* kinds of telemedicine which are enacted through practices, encounters, and situations. The different kinds of telemedicine as described in the section above (see 4.1) are some examples for the multiplicity of telemedicine. They are incommensurable with one another: The doctor's narrative of 'Personal telemedicine' is based on the idea that it is better to have any kind of medical care than no care at all; an online clinic is based on the aim to earn money while providing patients with the possibility of saving time, getting a second opinion, gaining privacy as well as challenging gender inequalities; finally, time-bound projects come into existence to solve very specific healthcare-related problems. All three kinds of telemedicine are exclusive: 'Personal telemedicine' relies on individuals being reliably and continuously available and cannot be implemented or stopped like time-bound projects. The online clinic has certain rules and regulations – both for doctors and for patients – and does not allow for the same freedom in practicing telemedicine as 'Personal telemedicine'. And 'Project based telemedicine' is not as concerned with ideas of privacy, space and patients' agency as

online clinics. Even if telemedicine is not one but multiple objects – is there a link between these different kinds of telemedicine?

In the following section, two concepts will be applied to explain how telemedicine can be seen: In the book "The Body Multiple", Annemarie Mol describes how a disease, or the 'object' atherosclerosis, is enacted as many different diseases in multiple bodies by the various practices that are connected to the disease and its treatment (Mol 2002). Likewise, the 'object' telemedicine is enacted differently in various situations, relations, and contexts. The problem is, how to relate these kinds of telemedicine to each other, how to hold them apart, and how to find connections. As shown above, some kinds of telemedicine become mutually exclusive.

Law and Singleton have constructed a similar approach to Mol in their article on another disease, alcoholic liver disease: they present a possibility of how to conceptualize objects that are multiple, mutually exclusive, and therefore hard to grasp. They state that "[…] we cannot understand objects unless we also think of them as sets of present dynamics generated in, and generative of, realities that are necessarily *absent*" (Law and Singleton 2005, 343; emphasis by A.K.). According to the authors, both what we perceive and what stays hidden is important. However, even multiple objects which are mutually exclusive are in some way related to each other, e.g. by being part of the same healthcare system (ibid, 347).

I did my fieldwork in Pakistan which makes the kinds of telemedicine that I encountered part of the same healthcare system. Furthermore, I conducted interviews with people who were all first and foremost part of the 'professional sector' of healthcare in Pakistan (Kleinman 1980). In addition, a general assumption inherent to telemedicine was that physical doctor-patient encounters can be substituted by digital encounters. However, my literature research as well as the philosophical and anthropological concepts I apply are not solely based on Pakistan. Thus, the problem arises that I discuss very specific telemedical practices which I encountered during my fieldwork and draw on some more general arguments. Where, then, could there be a connection?

My aim is to search for a link by analysing one specific aspect of telemedicine: *surfaces*. "It is through the bodily surface that I first engage the world. [...] The surface is where the self meets what is other than self" (Leder 1990, 11). This quote is taken from the book "The Absent Body" in which Leder discusses how the body, even though being the means with which we are in and perceive the world, seems to withdraw from this world. Thus, a practice like telemedicine, as a relatively 'modern' medical development with new components and also *new surfaces* (i.e.

computer screens, technological diagnostic equipment), will change the human encounter of doctors and patients by altering the basic conditions inherent to this encounter.

There are different ways of conceptualizing surfaces and I have grouped the following chapters accordingly: A surface as revealing something (chapter 5), while simultaneously hiding something (chapter 6). A surface as a barrier (chapter 7), and a surface as a space of merging (chapter 8). With these different backdrops in mind, I discuss specific examples derived from my fieldwork in Pakistan.

It will become clear that not all kinds of telemedicine fit each concept – and they should not. With my approach I aim to describe telemedical practices in a diverse and multi-layered way, leading to a more detailed understanding of what they may entail. Furthermore, topics and concepts overlap, showing many and "partial connections" (Strathern 1991), while also disclosing contradictions between different aspects of telemedicine. The aim is to show that for telemedicine Strathern's statement applies: "One is Too Few but Two are Too Many" (ibid, 36). With the help of surfaces, I introduce a way of discussing a complex topic like telemedicine in a heuristic way, using other tools than those commonly applied in debates on and within the natural sciences. The final picture, I hope, will be a multifaceted and multidimensional one.

5. Appearances

"Surfaces are important not in themselves but for what they potentially open up, and for what they disclose. But they are also important for what they hide, and for the deceit that they can practise on us" (Ingold 2017, 102).

This quote is taken from Ingold's paper "Surface visions" (2017), in which he discusses how surfaces may help change our perception from a primarily visual towards a haptic way of perceiving our environment. It becomes clear that surfaces have the quality of presenting and at the same time obscuring something. We could think about whether it is more important to focus on what is hidden, or on what is out in the open. Should we dig deep? Or should we remain at the surface? Will we "[…] be destroying precisely what we seek to find, […], convinced as we are that the truth can never be on the surface but somewhere deeper down" (Ingold 2018, 137)?

Based on this consideration, the next two chapters deal with telemedicine as a surface which simultaneously reveals (5) and veils (6) something. In the first sub-chapter (5.1), I draw on Hannah Arendt and discuss the importance of focusing on what is at the surface. The next sub-chapter is based on this assumption, namely that we should not look any further than the surface, and analyses what telemedicine *directly* presents (5.2). The third sub-chapter considers how telemedicine as a surface has the ability of creating new spaces, again focusing on what appears to be *tangible* (5.3).

5.1 A surface which (un)covers

In her book "Vom Leben des Geistes", Hannah Arendt develops an idea of surfaces (Arendt 2016[1971]). The philosopher states that people generally assume that appearances (*Erscheinungen*) hide something underneath and that the real essence, the 'reality' of things is to be found at the bottom (*Grund*) of things. In Arendt's opinion, the most common mistake is to equal this bottom with the cause (*Ursache*) of something. The author questions the hierarchical way of looking at what appears and what lies hidden underneath and asks whether it would, indeed, not be more logical to assume that these appearances are *necessary preconditions* to whatever lies underneath. This would mean that what is significant and meaningful can be found at the surface (ibid, 37). According to Arendt, appearances have a double function: they hide what lies underneath, and they create a surface which presents something else (e.g. to hide fear and show courage instead; ibid, 47). If the appearance disappears there is the possibility that it will turn out to have been nothing but an illusion.

If we think about telemedicine as a relatively new appearance in healthcare, we could think that it is the precondition for something we could call 'modern biomedical practice'. Telemedicine as an appearance *presents something*, i.e. that medicine can be practiced despite temporal and physical distance; or that trusting relationships can be created and upheld via technology. The practice of telemedicine exists due to specific cultural and historical developments, such as ideas about the human body, health and illness, the roles of doctors and patients in the process of healing. Now, in turn, the appearance of telemedicine is a precondition to these particular views. Furthermore, telemedical practice both relies on and determines ideas about technology in general, and how human life should include, be shaped, hampered, or enhanced by technological devices. Therefore, it is worth thinking about what exactly is presented through telemedicine.

5.2 What telemedicine reveals

Relating to telemedicine as a surface in Arendt's terms, then, would lead us to the notion that telemedicine does, indeed, cover something up, by revealing something else. For now, it is not important to dig deep and look underneath telemedicine. Rather, it is important to remain with the appearance of telemedicine in healthcare and think about what this entails. This will be examined in the following four examples from my fieldwork.

First, the aspect that seems most obvious when thinking about telemedicine is the inherent idea that *healthcare has to involve, is facilitated by, and relies on technology*. This, in turn, means that both patients and doctors need access to certain technical equipment as well as the ability to apply the devices.

My interviewees all had different ideas about what kind of technical equipment (either for doctors or for patients) was *necessary* in order to implement telemedical care: Some thought that doctors only needed their mobile phones and a mobile WIFI device to be able to be connected to the internet at all times; others thought that access to social media (facebook, Linkedin, twitter, Instagram) was crucial in order to gain awareness of and means of entry to online clinics; some informants thought that it was important to have good quality specialized technical equipment, such as a stethoscope for auscultation, a camera, and speakers. Consequently, some interviewees said that telemedicine and its spreading throughout Pakistan was failing due to lack of technical equipment, while others stated that in order to implement telemedicine you 'just' needed doctors, patients, two computers, and a stable internet connection. (However, I noticed during my fieldwork, that even in Islamabad the latter is not

something to take for granted.) Furthermore, I was told that there was a kind of resistance – both in doctors and in patients – to use technological equipment as part of the diagnostic process. Especially in remote areas, it was difficult to give access to and train people to use technology. In addition, I was informed that even the army had difficulties implementing telemedical care due to the fact that not every person has an affinity to technological devices and is willing to use them.

Second, telemedicine carries the idea that a *human connection is possible despite physical and sometimes temporal distance between doctors and patients*. Here, two aspects must be considered: Telemedicine changes the use and concept of different kinds of spaces (see below, 5.3); there needs to be some kind of connection enabling doctors and patients to communicate, namely via technology, perhaps with the help of a trained nurse as mediator, or someone else who supplies internet access. This implies *new actors and actants*[6] which shape interactions between doctors and patients (see below, 6.2). Thus, telemedicine relies on there being someone or something to bridge the gap between doctors and patients who have to make use of and interact in new medical spaces.

In my fieldwork, I encountered different examples of people mediating between doctors and patients: Aamir Malik told me about a project of the online clinic, in which a grocery store owner provided internet access and basic examinations for patients. Ayesha Khan often gave instructions or advice to doctors who were *physically* with her patients. And Jibraan Choudhary explained the role of 'leaders' in spreading psychoeducational information via text message and diagnosing patients for telemedical psychotherapy.

Third, telemedicine *prioritizes some sensory perceptions*: It heightens the importance of visual and auditory perception, while tuning out olfactory and haptic perception. Does telemedicine suggest that doctors perhaps do not need all the information they would normally receive of patients when meeting them face to face? And, vice versa, that patients do not need all the sensory attention while relating their worries and ailments? What does it mean for an encounter in which both parties, doctors and patients, are spatially apart and do not have access to all sensory information? I come back to this important aspect throughout my study, especially in sub-chapter 8.3.

[6] I use the terms 'actors' and 'actants' taken from Bruno Latour's actor-network theory (Latour 1996) to describe human and non-human entities which have the ability to act and enable actions.

During fieldwork, I often experienced feelings of disconnection when contacting informants via phone, having to deal with bad connection and not being able to acoustically understand everything, or trying to arrange meetings via text message in a friendly and polite manner. It was important to me to see all contacts face to face, rather than talk to them via phone or skype as proposed by some. I am aware that this personal impression and fear of misunderstandings can partly be attributed to the different cultural backgrounds and language barriers. Nevertheless, it is important to keep in mind that patients and doctors have to communicate important and possibly life-threatening matters while not being able to use all senses.

Fourth, telemedicine seems to entail some *universal notions about health and illness*. A medical practice that is based on the universality of technology transports the notion that human bodies are the same everywhere and therefore must be treated with the same remedies everywhere.

One example from my fieldwork is how I sat next to Ayesha Khan, a doctor practicing 'Personal telemedicine', in the back of her car, while her private driver took us on an outing. Via WhatsApp chat, the doctor was communicating with a general practitioner in a remote area in northern Pakistan, who was tending to one of her former patients. The patient had developed a critical situation and Ayesha Khan had advised that the patient be brought to a hospital so that further tests could be made. After it had been determined that the patient's condition had not developed due to the surgery which Ayesha Khan had performed, but resulted from a viral infection, Ayesha Khan gave instructions on how to change the medication. When I asked, how she knew what kind of medication the patient was currently on, she said that this was the medication that all patients were taking after a surgery like she had done. However, my question seemed to have caused doubt, because she wrote a message to the general practitioner, asking what kind of medication the patient was currently taking. This example could depict that it is challenging to treat patients without any kind of patient history to look things up. What is more, distance between doctors and patients could increase the difficulty of seeing patients and their individual, very particular situations instead of general 'cases' of illness. Although there are standard medications and dosages, many factors can influence this: other ailments, weight, height, gender, pregnancy etc. Because Ayesha Khan did not see the patient face to face, it was of course more difficult to determine these facts. So, she chose a universal way to treat the patient. Being based on a universal assumption about illness and health, telemedicine becomes applicable to all human beings around the world. This is part of the reason why telemedicine can increase efficiency and lower costs. However, in an article about the implementation of a mobile health project (in which mobile phones are used for health issues) in Burkina Faso, the

authors argue that knowledge related to issues of health and illness should be seen as situated: it is grounded in certain practices, situations, and specific to time and place (Duclos et al. 2017, 49). Duclos and colleagues thus reach the conclusion that when implementing mobile health (or telemedicine) in communities, *local specificities* should always be taken into account (ibid).

These are four aspects of what telemedical practices directly reveal. In discussing what telemedicine *appears* to be, also some of the *dis-appearing* facets of telemedicine become obvious: many people have neither access nor the inclination to apply technology for medical means; the extent and nature of new actors and actants is difficult to discern; most sensory perceptions stay hidden; while telemedicine highlights a universal (bio)medical approach, other ways of healing and treating the body stay invisible. Thus, this kind of surface shows us that both the apparent and the obscure features of telemedicine are out in the open – even though we have still resisted from digging deep.

5.3 New medical spaces

Telemedicine as a surface that (un)covers something creates two kinds of spaces: A space of *appearance*, where everything is *visible*. And a space of *obscurity*, including the *invisible details*. Continuing to follow Arendt in arguing that it is fruitful to concentrate on the apparent aspects rather than looking underneath, now the visible spaces created by telemedical practices will be discussed.

To practice some kinds of telemedicine, we need platforms where this is possible, such as online clinics, chatrooms, or a phone call. Instead of meeting in a physical space, a hospital or a doctor's practice, doctors and patients meet in a digital space. Their physical bodies remain apart. Thus, through telemedicine the dichotomy of physical and non-physical space becomes more pronounced. According to Classen, "[t]he sense of touch, like the body in general, has been positioned in opposition to the intellect […]" (Classen 2005, 5). A de-bodied encounter of two people is 'pure': without physical contact there is no danger of contamination. Consultations take place in digital space, whereas the physicality of an illness, i.e. pain, stays in another space. In Pakistan, two of my informants mentioned the aspect of reducing the risk of infection with the use of telemedicine. Furthermore, being treated at home can lead to positive experiences: An ethnographic review has shown that treating patients with a chronic lung disease via telemedicine deepened feelings of belonging due to an increase in transparency and presence of health workers (Barken, Söderhamn and Thygesen 2019). Nevertheless, treating patients from a distance might isolate them if the visit to the doctor is also seen as a

kind of social contact, which could be the case in chronically ill and elderly people in particular (Sinha 2000).

Opposed to diseases being kept isolated, technology (and, hence, telemedicine) allows medical care and education to be spread more widely and also faster. This is depicted by an example from my fieldwork: As described above (see 4.1), there was a telemedical project in which text messages, mostly with psychoeducational content, were sent to people who screened patients and organised focus groups. It struck me that one message on the cause of psychosis mentioned that *this illness was not caused by jinn, magic, possession, or witchcraft*. This shows how culturally ingrained knowledge is explained away by using technology as a means to disperse information more widely and perhaps place it in a reputable (because 'modern' and 'objective') context. In their article about the generation and application of 'universal' knowledge in an academic, transnational context with the example of clinical psychology, Geerlings and Lundberg argue that

> "[…] knowledge is considered more valid and valuable because it is based on science. This discourse of science […] justifies the application of Euro-American research findings across borders, and silences ([sometimes] by ridiculing) alternatives or adjustments to the instituted knowledge domain […]" (Geerlings and Lundberg 2019, 9; A.K.).

In Pakistan, there are many different approaches to illness and health (Sweetser 1993). Telemedicine, as a practice evolved from biomedical, supposedly more scientific approaches to healthcare matters, could undermine alternative ways of dealing with these issues.

In addition, telemedicine enables different categories of private and public spaces to be formed. This alludes to what Armstrong discusses in an article (Armstrong 1985): Formerly, doctors would visit patients at home, which meant that illness was kept in its 'natural' surroundings. Then, health centres and hospitals became the norm, where illness was treated in a 'neutral' environment (ibid, 660). This is comparable to what I was told by Aamir Malik, the head of a telemedical online clinic in Islamabad. He stated that he found a lot of people made use of the services they offered because they did not want to spend the time waiting in a physical clinic. Using telemedicine, they could be treated at home. Nevertheless, as shown in a study on chronically ill heart patients constantly monitored at home with telemedical equipment, not all patients appreciate the spreading of clinical space to their homes (Oudshoorn 2012, 133).

I was given another argument of how telemedicine changed private and public spaces by Sania Talha, a doctor working in an online clinic. Before starting to work there, she had been a doctor at a large governmental hospital, so that she could compare the two settings. She told me that

in telemedical conversations, a lot of patients would open up more and were able to address their intimate problems for the first time, i.e. discuss menstrual or sexual problems. Also, telemedicine generates private situations in which patients could reach out to doctors without other patients or family members listening in. Sania Talha told me that whenever she noticed that a patient became uncomfortable in an online video consultation, she would switch to an audio consultation, so that the patient felt *"more private"*. Quite an opposite observation was recounted by Riaz Shaheer, a doctor who had worked in a time-bound telemedical project conducted from a private hospital. He told me that patients felt they did not have enough privacy and were more sceptical to speak about certain problems because they were not sure, who else in the system was watching or listening in. These contrary observations depict that apart from there being multiple ways to enact telemedicine, there are also multiple ways to make sense of telemedical practices.

Apart from privacy, some kinds of telemedicine provide publicity, such as the rating system inherent to an online clinic where patients can make public their opinions about doctors or certain treatments.

Furthermore, doctors' private and professional spaces may become more entangled, as technology fosters the idea that doctors ought to be available constantly. Consultations with patients, then, may take place in the doctors' private space and time, e.g. in their homes or during a family outing.

Indeed, it is not only our surroundings that are re-organized by telemedicine. We can also think about how this practice arranges corporeal space differently: If both doctors and patients are *physically* in a different space than the space of their consultation, this will perhaps deepen the mind-body dualism already present in Western scientific discourse. Arendt states that many philosophers see the material body as an obstacle due to the fact that the process of thinking is an immaterial activity which is faster than any physical activity can be (Arendt 2016[1971], 54). To draw a parallel: Telemedicine allows biomedical diagnosis, interventions, and practices to be administered to patients quickly – much faster, than would be possible in an exclusively physical world. Thus, the material body with the ailment or disease is kept apart from the *immaterial* process of diagnosis, history taking etc. Below, aspects of telemedicine changing conceptions of the human body are discussed in more detail (see 7.2).

Not only is it important to address how the immediate consultation is protected against outsiders; it is also crucial to address the question of how patient data is treated. In his book "The Birth of the Clinic" (Foucault 1994[1973]), Foucault creates the picture of the "speaking

eye" (ibid, 114) which carefully watches over everything that goes on within the hospital and transforms its perceptions into a language which "states and teaches" (ibid, 114). If the medical space of a hospital comes with the notion of having to 'dig deep' in order to reach the root of a disease we could think about the kind of assumptions furthered by online clinics, 'virtual' examination rooms, and non-physical consultations. In telemedicine, the transformation into a language of words and numbers (medical data such as blood pressure or heart rate) could be emphasized because a doctor cannot engage all sensory perceptions for diagnosis. And if we think of Foucault's all-seeing, all-knowing eye in the hospital, then the idea of a similar eye in a digital clinic creates a certain unease. Aamir Malik, the head of the online clinic, told me proudly that the platform of the clinic was cloud-based and worked with Amazon, showing absolute confidence regarding the safety of this system.

6. Hidden connections

"It's simple! 1-2-3 voila [sic]. Speaking with a qualified, reliable doctor has never been easier" (Taken from the website of a Pakistan based online clinic. (Ring a doctor 2020)).

On the outside, telemedicine presents an obvious aspect: Doctors and patients are able to connect despite a spatial distance. Instead of a physical patient-body meeting a physical doctor-body, we have a relationship based on technology and digitalization. However, as Sibylle Krämer argues, when joining algorithms with technology, things become more obscure and uncontrollable because nobody understands the underlying processes anymore (Krämer 2019, 55); this leads to the existence of mechanisms which lie hidden underneath the surface of interaction and may proliferate in secret (ibid, 56).

The same can also be said for telemedicine: On the outside, there are smooth surfaces and seemingly easy processes – as depicted in the quote at the beginning of this section. Underneath, telemedicine hides a network with many new components which play a central role in enabling the interaction between doctors and patients. It is not always clear, who is involved and to what extent. 'Old' factors and practices become less important and are replaced by new aspects.

In the following sub-chapters, I delve more deeply underneath the smooth exterior of telemedicine to find out what lies hidden: the network (6.1), its individual components (6.2), and ways of communicating within (6.3).

6.1 Telemedicine and its network

To think about telemedicine, Callon and Law's (1997) concept of a heterogeneous network of human and non-human interactions and relationships can be applied: The authors argue that society is made up of "materially heterogeneous" components (ibid, 168). Individual entities therein can be conceptualized as networks, in which there is a "compromise between different concerns, considerations and actors" (ibid, 170). The networks change shape and consistency with and through interactions. Therefore, an individual part shapes the network and is, in turn, shaped by its network (ibid, 171).

Telemedicine, conceptualized as a network, emerges and changes in the course of inherent practices. Not only humans have the ability to act, i.e. if we imagine how the quality and way of communicating is influenced by the available camera or speakers, or how interaction is based on an internet connection. Callon and Law argue that sometimes networks of heterogenous

materials achieve a certain degree of stability. Then, this network will act as a single unit, clearly distinguishable from its surroundings, representing its network (ibid, 174).

Telemedicine is not (yet) a stable entity. Rather it changes shape, seeps into all kinds of topics and practices, which makes it difficult to grasp – an aspect that is reflected in my literature review, where terms like 'telemedicine' and 'e-health' are used with manifold definitions and in various contexts (see above, 3). Unsurprisingly, also the people I talked to (both people who had worked or were working in the field of e-health or lay-people) presented different definitions of telemedicine. For my interviewees, telemedicine could refer to the interaction of doctors and patients by phone, skype or chat. On a more general level, for some people it also meant that technology is used in healthcare (e.g. for monitoring patients on the wards, implementing digital patient files). Telemedicine could imply the existence of an online platform, built up like an actual clinic with different doctors you can book consultations with. At the same time, the term could indicate different time-bound projects in which doctors from the city were available via phone or skype to patients in remote areas. One doctor I met through Ayesha Khan, thought I was doing my research on 'telepathy' and suggested to take me on an outing to a professor working in this field. And finally, some people had never encountered the term before[7].

We should think what happens once telemedicine becomes a fixed entity, or a "black box" (ibid, 174). Telemedicine would stand for the whole network and the individual components would become more permanent. For example, this would mean that telemedicine represents medicine mixed up with technology as being something that 'normally' belongs together. Perhaps this would lead to 'modern' healthcare being inseparable from technology. What would that imply for medical practices that do not fit into the categories created by a telemedical network?

6.2 New actors and actants

Telemedicine can be seen as a network. Inherent to this network are individual components: human actors and non-human actants. Both shape and are shaped by the telemedical network. The following section will discuss, who and what plays a role in telemedicine.

[7] When I held a talk at a university in Rawalpindi, I was told by the attending students and staff members that they had never heard about telemedicine before. However, in the discussion after the talk, I noticed that nearly everyone had something to add that was in some way connected to my topic. This shows that telemedicine is more dispersed than we may think and already flows into many areas of our daily lives.

A novel feature of telemedical practices is that the encounter between doctors and patients requires *mediators*, such as other people, objects, and practices (see 5.2). New human actors can be largely obscure, but nonetheless play important roles to make the network function, i.e. IT experts, technicians, people working in power plants, salespersons of technical equipment etc.

More apparent new actors are the people, e.g. in healthcare centres, who perform examinations and send on the results to the doctors. These people serve as a kind of *extension* both for doctors and for patients: For doctors, this means that their perception and scope of action is broadened. As I was told, this often feels awkward. Riaz Shaheer mentioned that he feared ignoring or not noticing important aspects for diagnostics. Another doctor, Jibraan Choudhary, told me that he felt uncomfortable whenever he was not able to express his sympathy or *"manage the patients' emotions"* in an adequate, humane manner. Both doctors relied on being able to ask the assistant who was physically in the same room as the patient for their impression or to do something for them, e.g. offer a glass of water to a distraught patient or briefly touch their shoulder. Will this become more 'normal' for doctors? Perhaps it can be argued that this perceptual extension through other people may at some time seem natural if we think in terms of Merleau-Ponty's example of the blind man's cane: at first the cane seems like an external object, but after a while it becomes something that enables a person to gain a larger radius of perception. Merleau-Ponty states: "[…] the cane is no longer an object that the blind man would perceive, it has become an instrument *with* which he perceives. It is an appendage of the body […]" (Merleau-Ponty 2012[1945), 154; emphasis in original). So, perhaps doctors who are 'physically blind' will become so used to assistants acting as their 'canes' that they do not experience this as an impairment. Similarly, doctors in physical clinics also rely on information they get from nurses or other staff. Here, the difference is that distance does not prevent doctors from seeing, questioning, or examining the patient themselves.

For patients, these additional people in an interaction act as an extension for communication and translation. Perhaps this is more similar to what patients are used to in a health-related context: In a hospital, often nurses will take measurements, such as the blood pressure or the heart rate. Now, the difference is that sometimes the person taking these measurements has no training in healthcare, as described above (4.1).

Novel non-human actants are introduced in the shape of equipment, e.g. mobile phones and computers, power to charge the instruments, and internet access. Telemedical practices rely on this equipment, which is why the network could not exist without.

During one interview, I was told about a project where a doctor tried to implement electronic patient files in a larger hospital. Jalal Asad described the difficulties they faced: doctors and nurses not willing to type the information into the computer system, patients having different names or no known birth date etc. This caused more confusion than it was useful, which is why the project was finally stopped. In all the physical hospitals and surgeries I visited, information was written on paper and kept in files or plastic bags. There was no central filing or digital data saving system as far as I could ascertain. Medical data was what patients brought with them into the consultation with the doctor: their own illness narrative, a plastic bag with medication inside, prescriptions by other doctors, or X-ray pictures. In the online clinic, however, data was saved on the Amazon cloud. Consequently, in telemedicine the actant 'medical data' is transformed from being something material – notes, prescriptions, and medication in plastic bags – into something digital, namely electronic data saved in a cloud.

Once I had started my fieldwork in Pakistan and had conducted a couple of interviews, I noticed how important it was for me to get a feeling for the distance that needed to be spanned by patients when seeking healthcare in a larger city when there was no other means of access (e.g. via telemedicine) near their homes. I wanted to find out the importance of bridging this distance via technology. Hence, together with my husband, I took the local bus from Islamabad to Gilgit; after spending a couple of days there, we continued our journey to Karimabad. A large part of the road was a major construction site belonging to the CPEK (China Pakistan Economic Corridor), a project between China and Pakistan that aims

> "[t]o improve the lives of people of Pakistan and China by building an economic corridor promoting bilateral connectivity, construction, explore potential bilateral investment, economic and trade, logistics and people to people contact for regional connectivity" (CPEK 2020).

Time and again, our bus had to stop to let huge trucks with stones or construction machines pass. I noted several signs, informing passers-by about the construction site. The entire trip was not very comfortable as the road was bumpy and we were shaken and thrown about in our seats. Especially as a woman, I felt constrained. Mostly, bathroom stops by the side of the road only accommodated the men's needs, because women did not have a secluded space where they could squat. I tried to imagine what it would be like to ride this bus as a sick person travelling to Islamabad to get medical help. And I thought about how this journey, once a necessary part of some types of illness and healing processes, would be rendered unimportant by telemedicine. Distance as an actant is a necessary facet of telemedicine. Instead of travelling by bus to larger cities, telemedicine enables patients to be treated at or near their homes. And yet: Telemedicine

not only swallows the distance that lies between patients and healthcare, but it also needs this distance. Otherwise, it would not exist.

The given examples depict that telemedicine alters the composition and structure of healthcare – on the one hand, by introducing new components to the network, e.g. electronic data, and on the other hand by changing impact and meaning of former components, e.g. rendering the bus ride to Islamabad less important.

6.3 Communicating by imitating and transforming

As we have seen, the network on which a doctor-patient interaction is based is altered when the entire connection is created through and due to telemedicine. Additional actors and actants play a role, implying new requirements to make possible communication within the network. For this, I argue, there are two strategies: *imitation and transformation* of perceptions, practices, and situations.

Different kinds of telemedicine have emerged from physical medical consultations as most of us will know them. Above, it was shown that it seems important that doctors engaging in telemedical practices *imitate* practices and situations usually found in direct doctor-patient encounters (see above, 3.2). This can be seen as a means to overcome the difficulty that telemedicine complicates doctor-patient interactions by adding new actors and actants to the network.

Borrowing from Göran Sörbom and his discussion about the way that the ancient Greeks thought about 'imitation'[8], one can think about how imitations are something made or enacted to evoke similar feelings as the original. But they are different from the original. "Thus, pictures and *mimemata* are man-made things intended to raise mental images of individual things with their contingent shapes and qualities in the minds of their listeners and spectators." (Sörbom 2002, 22; emphasis in original).

A telemedical consultation is something different from a physical consultation. Nevertheless, doctors practicing telemedicine have the same goal as when seeing patients face to face: recognizing symptoms and devising a treatment plan in order to help patients feel better. In telemedicine, the entire encounter between doctors and patients is changed and it can seem chaotic and far removed from what a medical encounter may usually be like. Thus, going through similar processes and situations could evoke similar "mental images" (ibid) and help

[8] The commonly applied English translation for the word 'mimema' (plural: 'mimemata'; Sörbom 2002).

doctors and patients to feel more comfortable. This would be easier for doctors and patients who have already experienced face-to-face consultations and, therefore, know what to expect.

Apart from imitating situations and behaviour, telemedicine takes situations or activities and *transforms* them. According to Don Ihde in his book "Technics and Praxis", machines (defined as anything from a telephone or computer to chalk or a dentist's probe) transform direct human experience by amplifying certain aspects and reducing other aspects (Ihde 1979, 9). The philosopher argues that the better a machine, the more dramatic the amplification of certain features (i.e. if we think of a telemedical stethoscope transferring clear auditory signals of the patient's heart which cannot be heard in the same way without this instrument). This increases the contrast to what is lost (ibid; i.e., the fact that it is not doctors themselves who place the stethoscope on the patient's skin).

In telemedicine, there are some obvious transformations: Actions such as chatting via WhatsApp or speaking on the phone are transformed into medical consultations; technical equipment, such as mobile phones or computers, is transformed into medical equipment; a physical human encounter is transformed into a digital interaction.

Looking closely, more subtle and sometimes hidden transformations can be found: One argument I often encountered in different facets during my fieldwork was that telemedicine was a good means to deliver healthcare when there was not much *time*: I was told that most of the patients currently being treated in the online clinic were middle- or upper-class urban people who did not want to spend time on travelling to a hospital or doctor's office, or waiting to be seen to by the doctor. The online service provided contact with doctors minus the travelling or waiting time. Also, different interviewees explained to me that if you were seen face to face by doctors, they would not have as much time for you as in an online consultation. So, it could be argued that telemedicine *transforms direct human contact into time*: patients get to spend more time in a consultation, while having to give up direct interaction. However, this could change the way that time is perceived in general, which, in turn, can have an impact on the healing-time that patients are granted or grant themselves. Furthermore, it remains to be seen whether telemedicine actually enables doctors to spend more time with their patients, as some kinds of telemedicine are practices entrenched in capitalist ideas of efficiency and costliness (as shown by the example of the online clinic).

Moreover, telemedicine enables patients who did not have any access to doctors before, to actively seek medical help – especially concerning specialized doctors. This means that the *physical distance* between patients and doctors is *transformed into digital contact*, relating to

the common opinion among my interviewees that telemedicine as a way of enabling consultations and treatment is ‘better than nothing’. Consequently, telemedicine highlights the aspect that any healthcare is better than nothing, while obscuring the issue that not everything actually helps.

Furthermore, I found that telemedicine could *transform a direct encounter* between doctors and patients into a *private encounter*. When I visited Ayesha Khan during her hours in the outpatient department, there were always at least ten people in the room. The patient whose turn it was, sat right next to Ayesha Khan. All patients were accompanied by at least one person. If the patient was female, often their male attendant would talk to Ayesha Khan and describe the problems. All the other people in the room could listen to whatever was discussed. I am aware, that this seems noteworthy perhaps mainly from a Western point of view, where visits to the doctor and consultations are something quiet and private. In addition, this is part of the development of what Helman calls “reductionism” (Helman 2007, 123): Diagnosis and treatment concentrate on the individual, rather than the family and wider social environment (ibid). And yet, telemedicine changes the way that medical conversations take place, who does the talking, who can listen in, or be present in the same room (as described above, 5.3). Accordingly, telemedicine emphasizes privacy while ignoring that other, invisible, and therefore uncontrollable actors and actants are threatening this privacy.

7. Separation

"In many societies the skin of the earth is thought to be replicated in the skins of the individuals who live on it. Just as the landscape may resemble a body, the body may seem like a landscape, with its own hills and valleys and rivers" (Howes 2005, 33).

In biomedicine, the skin is defined as providing a protective cover and demarcating the body from its environment (Fritsch and Kühnel 2003, 372). The skin's tasks are listed as giving protection, functioning as an immune organ, regulating body temperature and water balance, transforming pro-vitamin D, perceiving, and communicating (ibid). This means that the skin is seen as separation, whilst providing a means of connection with the outer world. In the following two subchapters, I conceptualize telemedicine as a surface similar to our skin: A surface of separation (7) and connection (8).

Alluding to the quote at the beginning of this section, the skin, as our outer surface, can be seen as being altered by forces which act upon our surroundings. On my trip from Islamabad to Gilgit and Karimabad, I could see massive construction sites changing the landscape. This construction was part of the CPEK project which also cropped up during many interviews as an aspect connected to telemedicine. The CPEK project includes "[i]ntegrated Transport & IT systems including Road, Rail, Port, Air and Data Communication Channels" (CPEK 2020). The general assumption among my interviewees was that CPEK would help promote telemedical practices on a more reliable scale. By providing other means of connection, the role of distance and remoteness as actants are being shifted. Telemedicine, as a set of medical practices, is linked to this profound transformation of the environment and, consequently, impacts the human body.

In the first sub-chapter, I focus on how telemedicine acts as a separating boundary and somewhat increases aspects of disconnection (7.1). I argue that this alters the way that human bodies are perceived and enacted (7.2), and promotes emotional detachment of doctors and patients (7.3).

7.1 A surface which disconnects

We could think of telemedicine providing a context in which doctors and patients keep each other and their environment at a distance. Howes writes: „If science seeks to peel back the skin of the earth, however, technology promises to provide a new skin" (Howes 2005, 33). His idea is that the network-like electronic connections running around the world create a new surface. This could also be applied to human beings if we think about how much we have come to rely

on technological devices in every-day life in general, and in healthcare in particular. Drawing on Howes, I argue that not only does technology (and consequently telemedicine) keep humans at a distance from their surroundings and from each other, but also from themselves.

The crucial point is that by placing something in between doctors and patients, telemedicine can make them feel distanced. This 'something' is technology. In telemedicine, interaction both relies on technology and is complicated by it. I argue that telemedicine simultaneously emphasizes a 'separating distance' and a 'connecting distance'.

Rather than dealing with messy, emotional, *human* bodies, both doctors and patients interact with smooth screens and hard surfaces. This is similar to what Ingold refers to as "surfacing" (Ingold 2010, S126): By creating a smooth surface you increase separation rather than interactive knowledge generation. The anthropologist gives two examples: one is the act of printing, instead of scratching letters onto parchment, and the second refers to paving the roads. Interestingly, two reasons given for roads being paved are public health concerns and the improvement of transport (Ingold 2018, 145, 146). During my field work, I discovered both explanations also can be applied for the pursuit of telemedical practices: My trip to Northern Pakistan by public bus showed me that this journey can be taxing, and distances are felt to be greater due to geographical conditions or bad roads. Consequently, by *surfacing*, namely creating a smooth partition between doctors and patients, telemedicine 'improves' their connection. Patients are able to 'travel' digitally to a doctor's office and, as some of my interviewees expressed, have a decreased risk of infection by remaining physically separated from other patients and from the doctor. Thus, *physical* separation or disconnection result in *digital* connection.

7.2 Fragmentation of bodies

"[W]hen we study conceptions of the body, we are examining constructions not just in the mind, but also in the senses" (Kuriyama 1999, 60).

Kuriyama very aptly discusses different ways of perceiving the body, using the examples of traditional Chinese and Greek medicine. An important finding is that disparate views of the body are "[…] not just [based on] the meanings that each ascribes to bodily signs, but more fundamentally in the changes and features that each recognizes *as* signs" (Kuriyama 1999, 272; emphasis in original; A.K.). With the example of pulse diagnostics, the author shows how Chinese and Greek doctors both measured and interpreted the pulse in very different ways and, by this, questions the hegemony of certain medical knowledge that is based on a very specific

way of perceiving the body. Kuriyama argues that this also works the other way around: our way of perceiving, namely our 'constructions in the mind and the senses' (ibid, 60), inform medical knowledge. Consequently, it is important to discuss how medical practices, such as telemedicine, change the way that we conceive of the human body, and how the altered concepts of human bodies, in turn, shape telemedicine and connected knowledge.

Due to the distance that keeps doctors and patients, as well as different practices apart, the human body becomes *fragmented*. In Western medical discourse, it is quite common to have a "technocratic" (Biesele and Davis-Floyd 1996, 293) concept of human life, in which the human body is regarded as a machine and "medical technicians" (ibid) are responsible for its "repair and maintenance" (ibid). As Sarmad Javed, who works on the implementation of telemedical projects, put it: *"Now [the doctor-patient relationship] is mechanized. And then [through telemedicine] it will be digitalized."* In telemedicine, practices rely on access and the ability to apply technological devices for communication, diagnostics, and therapy. This could deepen the conception that the body works like a machine with loose screws and broken or missing parts – all of which can be tightened, mended, or replaced. I argue that this is the one of many steps which highlight a bodily fragmentation.

So, quite commonly in biomedical discourse, the human body is thought of as consisting of separate parts which have to be treated by different specialists. However, perhaps the 'idea' of the human body as a whole is still mirrored by hospital *buildings*? In his book "The Absent Body", Drew Leder discusses the aspect that houses are like an enlargement of the human body (Leder 1990, 34). In analogy, hospitals can be thought of as a kind of frame in which the whole human being is treated – even though various body parts are seen to on different specialized medical wards. Therefore, online clinics may still carry the idea of the digitally placed hospital 'building' as an enlargement of the human body, contrary to 'Personal telemedicine' which lacks a concrete framework in which treatment takes place. However, as Howes and Classen point out, modern hospitals rarely provide a positive sensory environment for patients and increase the gap between "bodily well-being and sensory well-being" (Howes and Classen 2014, 58). Even though online clinics still set a frame for the whole human being to be treated, they are even less sensorially stimulating.

By transferring medical care from a specific clinical space to people's homes, patients are expected to take new roles. In an article about how telemedical practices shape and change places, Oudshoorn describes how chronically ill heart patients have to include medical devices into their homes and their daily routines (Oudshoorn 2012). These devices constantly remind

patients and their families of their illness and force them to take a role of "disciplined" medical assistants, who are expected to monitor and measure their own bodies (ibid, 129). Like this, patients are fragmented into persons *perceiving* their own bodies, and medical assistants dealing with 'objective' medical data *about* their bodies.

A similar trend can be seen in how doctors engage their senses: rather than trusting their own perceptions, doctors rely on what machines tell them (Kuriyama 1999, 65). The author sees "[t]he decline of diagnostic touching in the West […] almost an inevitable, natural consequence of the rise of modern technology" (ibid).

It can be postulated that telemedicine as a technological practice leads to a fragmentation between the sentient body and its inherent perceptions on the one hand, and how this body is translated into numbers, graphs, and images on the other hand. We can think of telemedicine creating a "virtual body" (Lupton and Maslen 2017, 1564) as the foundation for medical decision making (ibid).

7.3 Remaining apart

Telemedicine provides a new kind of skin for the human body as well as increasing the notion that the body can be fragmented into parts. Both aspects result in feelings of detachment.

Firstly, this can occur within a body. The online clinic, offering 'corporate packages' to patients with a certain amount of free calls per month (see above, 4.1) emphasizes a particular concept of the body and how to deal with health and illness. It is not important whether a doctor is needed due to a specific health problem which the patients perceive for themselves. Rather, it is assumed that people would like to contact doctors more often when they have a 'flat-rate'. (Similar to all-you-can-eat venues, where it is not hunger that makes people eat several helpings, but the fact, that they do not have to pay extra). It would be an important direction for future research to analyse how this approach changes health seeking behaviour among patients and healthcare provision by doctors.

Secondly, there are sides to telemedical practices that foster feelings of separateness between doctors and patients. Khalid Asif, currently working in IT at a large private hospital, told me that he had originally studied to become a doctor himself. However, during his first placement, he had noticed that he could not cope with the patients' stories and became too involved. He expressed that he thought that telemedical care would render this emotional involvement less burdening. Friends of mine, working as doctors in hospitals throughout Europe, tell me that it is easier for them to communicate 'bad news' to patients or relatives by phone rather than face

to face. Like this, personal feelings can be shut out. Consequently, even though there is the aspect that telemedicine creates a larger responsibility and makes doctors become *more* attached to patients (i.e. in the sense that in 'Personal telemedicine' doctors are constantly available), it also provides techniques to increase the emotional distance between doctors and patients. This distance can, for some patients, seem dangerous when they wonder who else is listening in on the consultation. This distance can also serve to open new spaces, in which patients feel more comfortable to talk about private problems or taboo topics.

Why does telemedicine emphasize feelings of distance? I propose that it has something to do with perception, or rather, the lack of certain styles of perceiving. Telemedicine as I encountered it during my fieldwork concentrates largely on visual cues. According to Ingold,

> "[i]t is the singular property of vision […], that it allows us to have the *world at a distance*, to obtain a knowledge of forms so *objectively detached* from the visceral conditions of existence as to be unsullied by the vagaries of sensory experience. Vision, understood in this light, sets up an *optical* [sic] relation between mind and world. In this relation both the seer and the seen, both the eye and the objects of its attention, are *fixed in place*, and the line of sight connects the two" (Ingold 2017, 101; emphasis by A.K.).

For my argument, several aspects of this quote are important: in visual perception, the surroundings remain separate and distanced. Knowledge derived from vision is objective because it is not gained from more 'messy' ways of perceiving. And as my descriptions from my fieldwork have shown, telemedicine predominantly relies on visual cues during direct interactions between doctors and patients (when we think of communication taking place via video calls, chat, or email; additionally, medical data consisting of numbers and words stresses the importance of visual rather than tactile or other forms of perception).

Thus, inherent to telemedicine, there is the risk of separating doctors and patients and increasing the view that visual knowledge equals objective knowledge.

8. Merging two sides

"[The skin] is a fluid boundary and a leaky interface. It is configured and reconfigured through affective relations, sensory transactions and social interactions. Far from a sealed off or seamless membrane, the skin is full of folds, pores and orifices that push it into the world and the world into it" (Lafrance 2018, 6; A.K.).

Our skin is a surface which combines our bodies with the environment by being 'fluid' and 'leaky'. Its sensory perception, touch, "[…] is felt on both the *inside and the outside* and is experienced by both the *subject and the object* […]" (ibid; emphasis by A.K.). Seen from this perspective, a surface like skin joins what is 'other' and what is 'self', blending two categories and creating common ground.

In the following chapter, the concept of telemedicine as a surface focuses on the aspects in which something is merged. This, I argue, enables new varieties and dissolves dichotomies (8.1). Therefore, seemingly unlikely life worlds can be brought together and become entangled (8.2), enabling doctors and patients to discover new ways of touching and feeling touched (8.3).

8.1 A surface without dichotomies

In his article "Surface visions", the anthropologist Tim Ingold considers the dichotomies which are created due to surfaces (inside vs. outside, visible vs. invisible etc.) - if we think of surfaces as hiding something underneath and acting as boundaries (Ingold 2017). However, as Ingold proposes, surfaces could also present to us everything there is to be perceived. Although at first glance this seems similar to Arendt's view (see above, 5), there is an important difference: According to Ingold, a surface is not something that lies between an inside and an outside; no connection is necessary because the surface is the object in itself. The anthropologist proposes to use the word "complexion" (ibid, 103):

"The surface, produced in this comingling of forces and movements, constitutively from the 'inside out' and erosively from the 'outside in', is itself of both inestimable depth and limitless in the extent of its outpouring into the surroundings" (ibid, 104).

The question is whether this concept of surface is applicable to the practice of telemedicine: the developments from the *inside out* can be thought of as the past advancements in medicine, whereas the 'erosive' movement from the *outside in* can be regarded as developments in technology. Along these lines, telemedicine would be a surface that combines medical and technological developments. This mixing of categories makes other, new combinations possible and with this could challenge the usual power-relations inherent to a lot of medical encounters.

During my fieldwork, I did indeed discover what Tanja Ahlin describes concerning e-health: Telemedicine empowers patients by giving them access to health-related information (Ahlin 2011), while also providing access to healthcare services in general, and specialist doctors in particular. A further, perhaps more subtle kind of empowerment is illustrated by the following example: *"[In telemedicine], you miss a major chunk of your assessment! For instance, when the patient is sitting in the waiting room and you hear him talk very loudly, or when you see him walking – the gait is especially useful for neurological diagnosis."* Jibraan Choudhary mentioned that these situations were absent when he saw and heard the patient only during an online consultation. As reported by the psychiatrist, telemedicine increases the likelihood of missing certain diagnoses, such as neurological symptoms. In addition, other perceptions are not available for diagnoses. In Psychiatry, for instance, olfactory perception can be important to assess whether patients take care of themselves, smoke or drink etc. – in short, to gain knowledge on the extent of symptoms or behaviour that is not (or cannot be) described by the patients themselves. This seems to be a clear disadvantage of telemedicine because doctors are lacking sensory information for a more detailed assessment which could lead to misinterpretation or a wrong diagnosis. Seen from a different perspective, however, it also gives control (and power) back to the patients because now they can decide what information to disclose to the doctors during a medical consultation.

Along these lines, there are aspects of telemedicine which disrupt the extant hierarchy of medical interactions. In hospitals, doctors are used to the surroundings whereas patients may feel intimidated by the sounds and smells. In telemedicine, both patients and doctors enter a new space, in which they may feel mutually (un)comfortable.

And yet: doctors still hold some kind of power over gaining information. When asked how he dealt with situations in which he felt he was missing something, Jibraan Choudhary explained that he would tell the assistant who was with the patient to position the camera so that he could observe the patient walking. This alludes to Foucault's "observing gaze" (Foucault 1994[1973], 107): "[It] refrains from intervening: it is silent and gestureless. Observation leaves things as they are […]" (ibid, 107). The gaze practiced in telemedicine is similarly mute and leaves the patient physically untouched – at least in the sense of touch as we know it.

8.2 Combining two ways of healing

Not only does telemedicine shift power relations inherent to medical encounters, it also helps to merge two seemingly unlikely areas of medicine: spiritual healing and technology.

Ayesha Khan works as a heart surgeon at a large governmental hospital in Islamabad. She is a cheerful and energetic woman who laughs a lot and is constantly typing or talking on her pink mobile phone. As I have described in detail above, Ayesha Khan practices what I call 'Personal telemedicine' by using her private phone to contact patients or receive their messages and calls (see 4.1). Apart from administering advice or consultations connected to biomedical knowledge, Ayesha Khan also practices a form of spiritual healing – in person and via phone. In the hospital, after working in the outpatient department, Ayesha Khan meets a few patients in a room in the basement of the hospital. When I attended for the first time, there were about ten patients sitting on chairs along the sides of a bare room. Ayesha Khan explained the procedure in Pashtu, Urdu, and English (for me), before starting the 'Vibration Therapy'. This consisted of playing a specific Quranic recitation, the Surah Ar-Rahman[9], over her phone speakers. Everyone was told to close their eyes. Afterwards, a woman handed around a cup of water. Ayesha Khan explained to me, that this water was administered because some people felt heat or had to cry during the recitation. Additionally, the water had absorbed the Quranic vibrations and would also have some healing qualities. Ayesha Khan pointed out that the main reason that the 'Vibration Therapy' worked was that the "patients' hearts became soft"; in order to heal, she explained, people had to forgive others and themselves. Ayesha Khan told me that she also sent the Surah Ar-Rahman to patients via WhatsApp, so that they could listen to the recitation at home. She would do this either to strengthen the effect of medication the patients were taking (she prescribed the Quranic recitation to patients whose health did not improve despite them taking more than six different types of medication), or to establish a relationship with patients who otherwise were sceptical of biomedicine - the Surah Ar-Rahman could motivate them to engage in biomedical forms of treatment, such as medication and surgery. During consultations in the outpatient department, Ayesha Khan prescribed listening to the Quranic recitation in the same way that she would prescribe medication, such as pills to lower the blood pressure, writing the 'dosage' (frequency of listening) on a piece of paper before handing it to the patients[10].

This example shows that technology enables Ayesha Khan and her patients to combine and mix biomedicine and spiritual healing – both when Ayesha Khan and her patients are in the same

[9] For an example, see https://www.youtube.com/watch?v=Lbcta_bVxP4

[10] On a side note, Ayesha Khan would also prescribe her phone number in a similar fashion, instructing patients when to use this 'medication' (in emergencies) and thus building one of the foundations of 'Personal telemedicine'. This turns the patients into 'medical assistants' when having to determine in what situations it is appropriate to use this 'medication'. Furthermore, both the Surah Ar-Rahman and the doctor's telephone number become important actants in telemedicine.

room, and when the doctor reaches out to patients across a *physical* as well as an *ideological distance*. Here, telemedicine bridges the gap of two unlikely worlds and understandings of the world.

Another connection between the spiritual world and technology is given if we think that in telemedicine doctors are expected to be always available. Technology, especially, provides this availability and telemedicine, i.e. practiced as 'Personal telemedicine', could make it even more difficult for doctors to have a break. In an article on the construction of a digital self in the online realm, Zhao coins the expression "telecopresence" as "an electronically mediated social context for human interaction [in which] individuals are electronically linked together while physically separate in different locations" (Zhao 2005, 390; A.K.). This 'telecopresence' can be symmetrical or asymmetrical, as depicted in another paper (Oudshoorn 2012): Here, the author describes a set-up of telemedical units for chronically ill patients with a heart disease. The patients are expected to monitor themselves every day at specific times. However, the healthcare personnel receiving the information was only present (online) during weekdays. This comprises an asymmetrical 'telecopresence' between healthcare professionals and patients. In my example from 'Personal telemedicine', however, the asymmetry lies in the opposite direction: doctors are expected to be constantly available to patients or other physicians requiring advice or assistance. In a conversation about this topic, Ayesha Khan said that she thought it was important for doctors to share responsibility among a network of other doctors as well as *giving responsibility back to God Himself*. According to her, this could be achieved by drawing individual boundaries and having faith.

So, by shifting boundaries, telemedicine establishes new spaces, in which 'believing' and 'knowing' can exist side by side. This goes in the opposite direction of what the German philosopher Max Weber termed the "disentchantment of the world" (*Entzauberung der Welt;* Weber 1994, 35).

8.3 A new style of touching

"*Ichi una*, 'skin knowledge', [as] the Cashinahua of Eastern Peru call it […], is the knowledge of the world one acquires through one's skin […]" (Howes 2005, 27; emphasis in original; A.K.).

Howes discusses how different people have conceptualized the sentient body as knowing and in constant contact with the environment. The author states that it is difficult to conceive of human bodies being knowledgeable in a 'modern' urban environment, in which people usually have little contact with their surroundings and spend most of their time inside (ibid, 29).

Additionally, technology promotes non-physical interactions between humans as well as humans and their environment. What happens to our "skin knowledge" (ibid, 27) and other forms of sensory knowledge if these senses are not stimulated anymore? We could think about the possibility that human beings develop new ways of sensing, knowing, and perceiving when their bodies change and adapt to the altered environment.

When I visited Ayesha Khan during her outpatient clinic, I noticed that she did not perform a lot of physical examinations. However, every patient who sat on the chair next to her desk was *physically touched*: She felt their pulse, often in a preoccupied manner, while writing a prescription or talking to the patients and their attendants. Nevertheless, for a brief moment, a physical connection between two human beings was established. Similarly, in some countries and settings, it is usual that there is a moment of physical touch when doctors and patients shake hands as welcoming or saying goodbye gestures - though it has been shown that due to hygienic reasons, patients would rather not shake hands with doctors (O'Connor et al. 2011), as touch is equalled with risk of infection.

In telemedicine, touching and feeling touched cannot be carried out in the same fashion, which leaves us with the question: Does telemedicine establish new styles of touching? I propose a detour via visual perception. Ingold (2017) distinguishes between 'optical vision' and 'haptic vision': the former is not concerned with the surface for itself, but what it presents or hides. When perceiving something with 'optical vision', we seem to see what is already there – instead of witnessing its formation (ibid). Then, there is 'haptic vision'. Rather than keeping the world at a distance, 'haptic vision'

> "[…] abides with surfaces, and dwells in them. Its interest is less in the conformation of the surfaces than it is in their *texture*. And this texture tells not of the form of things but of their substantive composition" (Ingold 2017, 102; emphasis in original).

'Haptic vision' aims to feel the characteristics that make up a certain surface as movements (ibid, 103): the wind that turns a flat surface into a wavy lake, the warm sun that is reflected in a puddle. Concerning this way of perceiving, Laura Marks clarifies: "[…] the eyes themselves function like organs of touch" (Marks 2000, 162). The film scholar argues that "[h]aptic cinema does not invite identification with a figure […] [but] encourages a bodily relationship between the viewer and the image" (ibid, 164; A.K.).

Some kinds of telemedicine could initiate a form of 'haptic vision'. Likewise to cinema, telemedicine uses screens to transport information between a sender and a receiver. Just as seeing a person drinking a cold drink in a movie and feeling the coolness running down our

throats, visual and auditory perceptions during a telemedical consultation could stimulate other sensory perceptions. This invites doctors and patients to engage on a physical level *despite* their physical distance. It requires experience in order to practice 'haptic vision': doctors need to know what a scab may feel like with their fingers so that they can perceive a similar sensation when merely looking at it (or reading about it). This means that to date, telemedicine is based on the notion that both sides – doctors and patients – have already experienced certain perceptions so that they can connect the telemedical impressions to what these former encounters evoked.

Therefore, telemedicine cannot and should not replace real-life encounters between doctors and patients. Both sides need to remember and constantly re-experience touching and being touched as they convey a unique humanness. Touch is an important part of the whole healing process (Peloquin 1989), partly because physical examinations stand for emotional engagement, attention, and care (Cocksedge et al. 2013; Maslen 2016). As Ayesha Khan declared: *"Do not take the human touch out of medicine!"*

In telemedicine, we have new equipment that also seeks our sensory attention. Ingold maintains that especially when dealing with "touch-sensitive electronic devices, […] everything depends on the precise point of contact at the fingertip, not on any feeling for the screen" (Ingold 2017, 101,102). If we think of touch as being felt by the object and the subject, this interrelationship is now altered: A subject using a smartphone feels the screen underneath his or her finger. The object, the smartphone, does not *feel* touch as such. It *reacts* to the touch according to its programmed algorithms. Nevertheless, it is the electronic device, which is touched, and not the patient or doctor. So, the necessity arises of creating *new forms* of perceiving that do not remain on the smooth surfaces of technological devices. There need to be ways to move beyond the equipment and be able to connect with more meaningful surfaces.

Ingold discusses how we can interact within a world – either physically, or mentally in a fictional world created for us in writing – which forces us to engage with smooth surfaces that seem to block us out (Ingold 2018). One way around this could be to involve more senses than just one. The anthropologist describes how reading a text aloud can create new perceptions that come from the sound of a word or its feeling while speaking it (ibid). Similarly, telemedicine could enable doctors and patients to engage on more levels, e.g. spiritual, biomedical, technical; not in order to *imitate* a physical doctor-patient encounter (even though there are aspects of telemedical interactions that strive to be as similar to physical interactions as possible; see 6.3), but rather to create a *new* kind of interaction.

The second piece of advice that Ingold gives relates to how we can be swept away by something that we encounter, e.g. while reading, when we let ourselves become involved emotionally. He argues that our emotions can dissolve the structures of syntax and enable the reader to reach beyond the page (ibid, 151). Telemedicine, despite consisting of smooth surfaces, can help to dissolve the structures of the doctor-patient relationship as it is commonly perceived: instead of performing on the stage of a hospital with white coats and 'props', doctors and patients meet on the same terms; both doctors and patients need to rely on other people to act as their 'extensions' concerning perception and action, both are humans who may grapple with technology.

As described above, it is challenging for doctors to find ways to reach out to patients and convey empathy despite the physical distance. This could be done by doctors asking someone physically present with the patient to carry out touch or touching gestures (see 6.2). Or, touch could be substituted by something else: Riaz Shaheer, a doctor in the emergency department, told me that the equipment he worked with during a time-bound telemedical project was not very good. Healthcare workers used to attach instruments, such as a stethoscope, to the patients, so that the doctors could listen to their heartbeat or their breathing via loudspeakers. However, the sound quality was so bad that it did not serve a reliable diagnosis. Nevertheless, Riaz Shaheer regularly used this equipment because "*the patients felt listened to*". So, this shows that it does not necessarily have to be *human touch* that is substituted for the doctor's touch. It can also be the activity of listening to someone's heart or lungs and showing care for what these organs sound like which makes the patient feel touched, albeit on a different level. Or, as Kuriyama states: "In seeking to understand people doctors in each tradition often felt with their fingers in much the same way that they listened with their ears" (Kuriyama 1999, 108). Thus, when one mode of perception, namely physical touch, is not possible, doctors can resort to *listening more intently.*

I encountered another example while participating in Ayesha Khan's 'Vibration Therapy': In a short conversation after the Quranic recitation had been played, a patient described that she had the sensation of being touched on her forehead each time she did the 'Vibration Therapy' at home. Ayesha Khan told her it could be the hand of God (or a thumb) touching her. So, here feeling touched is conveyed via (spiritual) sound.

These narratives illustrate that telemedicine forces doctors (and patients) to find ways around the constraints of physical distance and feelings of disconnection in order to build a 'new' kind of connection. One way to manage this could be to bear in mind how important it is that "[o]ur habitation […] of the earth, is not so much performative as affective" (Ingold 2018, 151).

9. Conclusion

"Perhaps telemedicine is just a doctors' utopia?" (Hassan Shah)

My research project gives an insight into what doctors, technicians, and lay-people in Pakistan know and think about telemedicine. I have found that there is not one singular realisation of telemedicine in Pakistan. Rather, there are multiple - sometimes overlapping, sometimes mutually exclusive - telemedical practices.

Surfaces conceptualized in different ways provide textures and areas to think about objects from new perspectives. On the one hand, they can link the manifold kinds of telemedicine to each other. On the other hand, surfaces show different angles of one or different kinds of telemedicine: aspects that are apparent or remain hidden, facets of telemedicine linked to new actors and actants, as well as new spaces or networks. I have conceptualized *telemedicine as a surface* while also showing that telemedical practices *create* surfaces. Inherent to telemedicine are both eerie and hopeful facets. With the help of surfaces as a tool, I have discussed this ambivalence. Apart from displaying different textures to think with, surfaces also introduce a new kind of temporality to the discussion: They are both permanent and transient, stable and changing shape.

The quote at the beginning of this section depicts a possible way to see telemedicine to date: a set of practices based on certain ideas about illness and health, enabling doctors to reach out to patients more widely. However, it remains necessary to investigate the patients' view on how telemedicine shapes and alters medical practices. How do patients deal with the way that telemedicine takes established practices, e.g. patients telling doctors about their ailments, patients being examined by doctors, and *turns them into something else*? The encounter between doctors and patients via telemedicine is something other than the 'real', physical encounter. By striving to imitate a physical doctor-patient encounter, telemedicine will always come up short because something is missing.

And yet: there is a side to telemedicine that opens up new possibilities of how boundaries and categories can be mixed and re-formed. Patients could have more power in choosing and rating their doctors, controlling information and, sometimes, having more privacy to discuss certain topics.

Another avenue that remains for future research is the question how other medical areas (e.g. Ayurveda or Unani medicine) deal with telemedicine. I have argued that telemedicine is based mainly on biomedical concepts of the body, health, and illness, and I have discussed the danger

of turning telemedical practices into ‘universal representatives’ of medical practice. This, however, is based on my research in a predominantly biomedical context. It is worth analysing whether telemedicine can provide a framework for other medical areas to be distributed more widely, as shown with the example of ‘Vibration Therapy’.

Finally, again drawing on Hassan Shah’s question at the beginning of this section, a further kind of surface can be discussed: a surface as an area for projection. What if, in analogy to Plato’s cave (Ferber 1995), telemedicine provides smooth, ‘modern’ surfaces onto which certain idea(l)s are projected? In Plato’s cave, the shadows on the cave wall are projections of figures carried by people. These shadows are images of reality. This would mean, that what takes place on the smooth screen of a computer or a smartphone is just a projected image, and that reality is *transformed* into these depictions. In order to see the truth, people would have to move beyond the cave walls and the shadows. When thinking about how telemedicine is often practiced as an imitation of a physical consultation, we can think of Plato’s formulation that an imitation “[…] is a sort of vehicle for ‘man-made dreams produced for those who are awake’” (Sörbom 2002, 20).

In medical practices it remains crucial that human contact is not substituted with technology due to the danger of missing or excluding specific perceptions, categories, and ways of knowing. Where should a boundary be drawn? Especially in countries like Pakistan, where healthcare is unevenly distributed, it is important to find a balance between ‘any care’ and ‘good care’. A possible direction could be to apply telemedicine as a response to emergency situations and provide short-term healthcare to people, while not forgetting to work on alternative projects which enable human beings to be encountered, touched, and treated face to face by human doctors and healers of diverse medical practices. Then, telemedicine, can stay what it is: neither utopic styles of medical care, nor a good / bad dream, but medical practices and human interactions relying on technology.

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11. Appendix: Interview guidelines

Doctors

Personal connection to telemedicine

What is your specialization / professional background?

What do you think of telemedicine? What is your personal definition of telemedicine?

When did you first come into contact with telemedicine? How did you learn about it?

Do you practice via telemedicine? (Why / Why not?)

What does that mean? How do you consult or treat patients?

Telemedicine general

Are there overall benefits of telemedicine in your opinion?

Are there critical points regarding telemedicine that you would like to mention?

If you could choose yourself – would you rather be treated via telemedicine or face-to-face? And what practice do you prefer as a doctor?

What aspects in telemedicine are important to guarantee good treatment for patients? (e.g. time, a pre-existing relationship, good internet connection etc.)

Do you notice a difference between treating patients via telemedicine and face-to-face?

Has something changed for you? How does telemedicine alter your medical practices? (e.g. anamnesis, diagnosis, examination)

Are there medical specializations for which telemedicine is especially helpful?

Doctor-patient relationship

What do you think of the doctor-patient relationship? What does a good doctor-patient relationship entail for you personally?

Does something change whether you meet face-to-face or whether you see/hear each other online?

Patients

Personal connection to telemedicine

What do you think of telemedicine? What is your personal definition of telemedicine?

When did you first come into contact with telemedicine? How did you learn about it?

Do you actively seek treatment via telemedicine? (Why / Why not?) Do you think that there are kinds of illness for which you are more comfortable being treated via telemedicine? Are there types of illness for which you would rather see a doctor face-to-face?

What does that mean? How do you consult your doctor? Is it always the same doctor? Can you choose whether you would like to see her/him in person or have an online consultation?

Telemedicine general

Are there overall benefits of telemedicine in your opinion?

Are there critical points regarding telemedicine that you would like to mention?

What aspects in telemedicine are important to guarantee good treatment for patients? (e.g. time, a pre-existing relationship, good internet connection etc.)

Has something changed for you? How does telemedicine alter your health seeking behaviour (e.g. trust, seeking treatment with certain practitioners, privacy…)

Doctor-patient relationship

What do you think of the doctor-patient relationship? What does a good doctor-patient relationship entail for you personally?

Does something change whether you meet face-to-face or whether you see/hear each other online?

Medical professors

Personal view on telemedicine

What do you think of telemedicine? What is your personal definition of telemedicine?

Do you think that telemedicine generally alters the way that doctors (or patients) view the human body?

In your opinion – does telemedicine alter medical practices? (e.g. anamnesis, diagnosis, examination)

In your opinion, what are the overall benefits of telemedicine?

Are there critical points regarding telemedicine that you would like to mention?

If you could choose yourself – would you rather be treated via telemedicine or face-to-face? And what practice do you prefer as a doctor?

What aspects in telemedicine are important to guarantee good treatment for patients? (e.g. time, a pre-existing relationship, good internet connection etc.) Do you think something changes whether people in general meet face-to-face or online? How do you think perception changes?

Telemedicine in medical curriculum

When did you first come into contact with telemedicine? How did you learn about it?

Are there courses at university that deal with telemedicine? Are there experts at your faculty?

Would you like to teach more about telemedicine? Why / why not?

What has changed for you regarding teaching and including practices such as telemedical care?

Doctor-patient relationship

What do you think of the doctor-patient relationship? What does a good doctor-patient relationship entail for you personally? What are important aspects that make doctor-patient relationships work?

What would you like to teach to your students regarding the doctor-patient relationship? Is this issue included in the medical curriculum?

Medical students

Personal view on telemedicine

What do you think of telemedicine? What is your personal definition of telemedicine?

In your opinion – does telemedicine alter medical practices? (e.g. anamnesis, diagnosis, examination)

In your opinion, are there overall benefits of telemedicine?

Are there any critical points regarding telemedicine that you would like to mention?

If you could choose yourself – would you rather be treated via telemedicine or face-to-face? And what practice do you prefer as a doctor?

What aspects in telemedicine are important to guarantee good treatment for patients? (e.g. time, a pre-existing relationship, good internet connection etc.) Do you think something changes whether people in general meet face-to-face or online? How do you think perception changes?

Telemedicine in medical curriculum

When did you first come into contact with telemedicine? How did you learn about it? Are there courses at university that deal with telemedicine?

Would you like to learn more about telemedicine?

When you have finished your course of studies, would you like to practice via telemedicine? (Why / Why not?)

Doctor-patient relationship

What do you think of the doctor-patient relationship? What are the most important aspects for a doctor-patient relationship to work?

Is this issue included in the medical curriculum? Do you learn something about this relationship, communication etc.?

Technicians / Experts

Telemedicine Pakistan

What do you know about telemedicine in Pakistan?

Where in Pakistan is telemedicine practiced on an everyday basis?

How is telemedicine practiced? Are there different approaches / structures?

How is telemedical care implemented? What are the individual steps? What is needed? What are difficulties?

Who is interested in implementing telemedical care? Are there specific foundations/NGOs/investors?

In what areas is telemedicine beneficial? (e.g. women's health, children's health, natural disaster)?

Personal views

When did you first come into contact with telemedical practice?

What do you think of telemedicine? What is your personal definition of telemedicine?