4.1 Navigating the Desert—Concepts of Spatial Orientation

Jacqueline Passon and Klaus Braun

Searching for “Timbuktu”: Does the map show the way? For a very long time now, man has been trying to create an image of the surface of the earth. The expansion of man’s horizons has always been, and continues to be, connected with the making of new maps. Maps, like no other object, document man’s urge to discover the unknown and to attain knowledge. For a long time, knowledge about the structure and appearance of the newly claimed lands brought political, economic and strategic advantages. Geographic knowledge meant power. For this reason, maps were also a well-kept secret.

The portrayal of knowledge on a map reflects, to a large extent, the view of the world by the map’s author, which makes the map a powerful instrument from another point of view. Ultimately, the map-maker decides what the recipient may know. He can also knowingly mislead the map reader. In this way, he has the power of interpretation over the knowledge that he would like to transmit to the recipient. Does he actually possess the sovereignty in matters of interpretation about the knowledge displayed on the map? Too little attention is often paid to the actual process of knowledge generation and to the preparation of the maps related to it. Critical cartography must question the data that are included on a map. What is the origin of the data and whose knowledge or perception do they represent? In doing so, from the perspective of a critical cartography not only one should ask questions about the handed down Eurocentric rules, on the basis of which the knowledge was obtained, formed and transmitted, but one must also take into consideration the strategies and practices in the process of generating and transmitting the knowledge both on the European and—with regard to the production of the North African maps of the nineteenth century—on the Arabic/African side. This means that, on the one hand, light needs to be shed on the type of appropriation of space of all persons involved. On the other hand, all the multifaceted negotiation processes in the generation of knowledge must be examined very carefully. As regards the production of the North African maps of the nineteenth century, it could be demonstrated that these data present not only the collected knowledge of the travelling researchers but also the knowledge which was, and is, deeply connected with the local knowledge of the indigenous population.

As Europeans, we are calibrated to the cultural technology of deciphering a given map. It is difficult for us to imagine how we could orient ourselves without this auxiliary tool in a foreign environment. However, if we would like to gain access to the maps of the nineteenth century and to the trade related to them in the Sahara and the surrounding areas, we must detach ourselves from the idea that the map is the only possibility, in respect of our concepts for spatial orientation, to orient ourselves in a given space. Even today, the Sahara-knowledgeable guides need neither a map nor a GPS. Instead, they rely on two systems of navigation that have been used for thousands of years.¹ The most prevalent of global navigation methods has been the demarcation of paths by stone cairns and upright stone slabs (Arabic alamat; sing. alam) which are even visible from afar. This so-called alamat orientation system is a universal system known from many roads and paths around the globe. As Förster points out, the earliest evidence of such road markers comes from roads established and used by Pharaonic expeditions during the Old Kingdom around 2600/2500 BC. Late prehistoric travellers had clearly only been able to move by developing mental maps of landscape features. “The alamat system modified the former landscape-based orientation in a way that was no longer
Fig. 4.1 Schematic illustrations of navigational strategies to cope with topographical obstacles as deduced from the survey along the Abu Ballas Trail. a Road signs are set at larger distances when the landscape is plain and open, either on the ground or on small isolated hills. b In undulating or hilly terrain road signs are set at short distances, either on the ground or on top of a hill overlooking the terrain. c Ridges and deep valleys are crossed with the help of a hierarchical alamat system: road signs are set on top of the ridges where they are visible at a certain distance while a line of signs leads through the valley. d In large dune fields where dune sand is constantly drifted by the wind, road signs indicate an array of alternative routes and bypaths. e Across wadi systems the road follows natural ascents or descents that is marked at its entrance and exit by landmarks. f Natural landmarks such as cones (e.g. the double cone of the so called “Two Tits” situated at the Abu Ballas Trail in Egypt) or other terrain structures are forming additional elements of the navigational system of the caravan routes. Text modified by the author (see Förster et al. 2010, 68)

restricted to developing mental sequences of the landscape configuration of individual routes, but allowed the following of the artificial lines of cairns” (Figs. 4.1, 4.3 and 4.4).  

“When you lose your way, you learn it”. This illustrates an old proverb of the Tuaregs. What meaning can be extracted from this? Could a deviation from the route be related to the chance to collect important experience? Maybe one goes back along the route once more for a while and tries then to find the correct route by paying more attention. In any case, one learns to look more carefully this way. Just this quality, i.e. looking more carefully, is of central importance for the appropriation of a given space, and it is absolutely vital for anyone who participates in the navigation of the caravan. For a journey across the Sahara to be completed successfully, the caravan guide (saykh), along with his helpers (khabir/taksif), had to have, in addition to precise insights into the political and cultural structures of the societies of the central and sub-Saharan areas, extensive knowledge, in particular, about the section through which the caravan was to be guided. The basic prerequisites for this were that the khabir/taksif:

- knew the sections of the route and their condition precisely, whereby he must have already travelled these routes fairly often
- knew the landscape characteristics (e.g. mountain ranges, wadi courses, vegetation sections, individual trees, prominent rocks (Fig. 4.2) or other landmarks and prominent points of reference; this also included the artificially created direction signs in the form of the so-called stone manikins or stone cairns).

As a rule, a khabir/taksif had already worked as a helper or herdsman with his father or other relatives who were working as guides. These apprenticeship years permitted him to memorise the sections of the route, as well as the respective distances and the corresponding durations. The memorised landmarks served him as a support for orientating on the individual route segments. By carrying out these
activities, the khabir/taksif gained a better perception of the region, its physical characteristics and the distances between the different points of reference. Thanks to his mental mapping, he had a good understanding of the exact location of the points of reference, the distance between them and how much time the caravan needed to cover the route.

In regions where there is no noticeable point of reference on the horizon to indicate the direction, the khabir/taksif needed additional knowledge of orientation. This included, among other things, knowledge about the position of the sun. Using this, the khabir/taksif could estimate the approximate time. By observing the five prayer times, he was accustomed to constantly paying attention to the position of the sun. One could estimate at any time where north was and in what direction one had to travel. In addition, one knew approximately how many hours the caravan had travelled since the last prayer.

At night, there was no problem maintaining direction when one had exact knowledge about the firmament, its constellations and its changes during the seasons. At night, the stars served as orientation for the khabir/taksif. The polar star, in particular, helped to maintain direction. He was able to determine the time by the changes in the constellations and knew how many hours the caravan had already travelled in the darkness or when it was time to set up camp for the night. In addition, he knew how many hours remained for him and the caravan until the Morning Prayer.

Along with the knowledge of the route, the points of reference and the celestial bodies, the khabir/taksif had to have knowledge about the pastures and the availability of water. These were important points of reference within the mental map of every caravan guide, whereby the water points were of central importance:
The course of the route did not always correspond to the shortest distance between the start and end points, but ran from water source to water source.

The very long segments without water sources, and thus particularly difficult and hazardous, were—when possible—shortened by the construction of wells. 3

Until the last century, the caravan guides used the oases, wells and water points on the route, in order to provide the animals and themselves with sufficient water. The trans-Sahara routes led from water source to water source (Fig. 4.5). This allowed for filling up the water supplies at regular intervals. 4

The firewood supplies were important for survival to the same extent as the supplies of water and food. Since there was no tree or bush vegetation on many sections of the route, the khabir/taksif had to assume that no wood could be found. He had to know in which wadi or valley there was vegetation, in order to be able to stock up or increase the firewood supplies. This meant that he had to have an idea about how much firewood was necessary for the preparation of a meal, how many meals had to be prepared per day and for how many days the firewood would last. For this purpose, firewood was already collected in the start area and transported along from there. If the areas with wood resources were directly along the route, he would lead the caravan through them; if they were located off the route, he would send assistants of the caravan with their pack camels to collect firewood and store it. They then had to compensate for the delay by a faster tempo. Since wood was an important and scarce resource, it had to be used extremely sparingly, just as the water supplies which were not unnecessarily consumed. 5

In reality, the khabir/taksif did not exactly follow the tracks of the most recent caravan; rather, he would follow the general direction and take his own route. The offset between the used routes could vary between several metres up to a kilometre. In order to be able to maintain the direction, the khabir/taksif would search for a conspicuous

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Fig. 4.3 Across wadi systems, the road follows natural ascents or descents that is particularly marked at its entrance and exit by landmarks (see above). Road signs are set at larger distances when the landscape is plain and open, either on the ground or on small isolated hills.
point of reference far away and then proceed to follow it without losing sight of it. Depending on whether the route was running westwards or eastwards, the passages varied or side valleys were used. These data are based on the scientific research of the caravan routes in western Libya and in the centre of the country. In travels along different caravan routes which, among other things, were accompanied by travel guides whose families were traditionally closely connected with the caravan trade, the corresponding data were collected by means of observations and inquiries. Along with that, the findings correspond to the results of Meerpohl, i.e. the informative data about the historical, as well as recent caravan trade, which Meerpohl had been able to collect during an expedition through parts of the eastern Sahara. The work of Laydon on the Western Sahara also substantiates this approach to the current practice of navigation in the Sahara: caravan itineraries were not exactly predictable or direct, for they were largely dictated by the environment. Based on interviews with caravaners in 1880, the American consul, Mathews, also acknowledged this when he wrote: “[...] the akabahrs do not proceed in a direct line across the trackless desert to their destination, but turn occasionally eastward or westward, according to the situation of certain fertile, inhabited and cultivated spots, interspersed in various parts of the Sahara like islands in the ocean”.

In two field experiments further conclusions regarding navigation in the desert areas were made. The results obtained also correspond with Meerpohl’s findings. The field experiments attempted to obtain conclusions about navigation by comparing data from the mental map of the guide with landscape features from high-resolution satellite photographs. For example, the guide described the topographical features that are important to him on the following segments along the route from al Fugah to al Qatrun (see From Murzuq to Tajahri). It was interesting to see that these features could be traced on the high-resolution satellite map. This means that the caravan’s khabir/taksif was able to create a mental logbook of positions: prominent points of reference, which, for example, designated a certain descent in a wadi system or the ascent from there, respectively (Fig. 4.7), were saved in his mental map by means of certain points, such as stone manikins, places of prayer or other characteristic landscape features. As already mentioned, the khabir/taksif, besides
Wells or other characteristic objects are the prominent landmarks in each mental map. For “path finding” in the Sahara, central significance is given to countless caravan tracks, way markers (alamat) and above all to watering holes and wells. The water points were the
knowing and recognising the prominent points, also had to remember the approximate duration of the individual segments of the route. In order to determine all that, the guide was asked to specify the days he needed for the next segments of the route. With some help when reading the satellite map, he was able to specify the days required for the next segments of the route. Furthermore, he was always able to indicate the direction to Mecca during the journey. Based on this knowledge, he was able to determine the cardinal points without any problems. In this way, he had a precise spatial perception which allowed him to show the directions in which the next settlements were located, even when they were hundreds of kilometres away. Without even thinking, he was able to show the correct direction. For the guiding of caravans, this means that the khabir/taksif always logs the positions in his memory and compares them with the landscape features. And finally, overall, it is to assume that the khabir/taksif embodied the knowledge of spatial orientation.

European explorers, such as Georg Schweinfurth, tried to attribute an insufficient geographic understanding to the Africans. They used it as an explanation to misunderstandings and errors in their own designations and maps on the basis of the different concepts of space. However, it was not the different concepts of space that hindered the generation of knowledge but, partially, the arrogant self-posturing of the European travellers who had attributed an inadequate concept to the Africans.

During their crossing of the Sahara, traders, pilgrims, scientists or adventurers (Fig. 4.6) have all relied on local guides with certain knowledge and skills in orientation. The trading stations in the south, or the ports in the north, could only be accessed with a caravan that could, in addition to safety, offer orientation in one of the most inhospitable areas on earth. Even if the European traveller had had detailed maps, he would have had little chance of success when venturing out on his own. On the search for Timbuktu, the

Fig. 4.6 A homeward-bound kafla suddenly loomed up before the American explorer, writer and photographer Charles Furlong. He was the first American to explore parts of the Sahara. This experience led to his writing of “The Gateway to the Sahara” in 1909 (Furlong 1909, 198)
Fig. 4.7 Where is the way to Tmassah? To maintain the direction across the endlessly wide, stone-strewn, water and vegetation-free plateau (al Ashhab Plateau), a maximum amount of ability and skill is needed. After the descent from this high plain, which stretches over two altitude levels, there is a supply station for caravans, a “caravan resting place” providing rest and supplies for the livestock (see From Zilla to Murzuq). The road follows natural ascents or descents that is particularly marked at its entrance and exit by artificially created direction signs in the form of so-called stone manikins or stone cairns.
4.2 From Mental Maps to European Knowledge

Jacqueline Passon

4.2.1 Justus Perthes Publishing House—Motor of Map Production of the Nineteenth Century

In the nineteenth century, map production is closely associated with the Gotha publishing house of Justus Perthes. The magazine Petermanns Geographische Mitteilungen (Petermann’s Geographic Notices), which was first published in 1855, soon became the undisputed media of the time. August Petermann, Cartographer who enjoyed high respect internationally and whose name is closely associated with the publishing house Justus Perthes, had a keen sense for expeditions and ensured that cartographically useful material was collected during the expeditions in Africa, and that data transmitted to Gotha were as accurate as possible. These data were then used to draw precise maps. He established a scientific practice of mapping, by giving instructions to the explorers such as to keep itinerary records. His main care was to train the travellers in the proper use of instruments. Initially, the cartographic translation of the collected data required a check for plausibility of the material delivered by the travellers. By means of meticulous comparative analyses, contradictory presumptions were deleted, secured knowledge separated from yet unsecured knowledge, and the newly obtained knowledge was classified in the current state of research. Between 1855 and 1878, Petermann advanced to become a dominant figure. His approach allowed him to publish first-hand information about regions unknown to Europeans. In this way, more than a hundred maps about this region appeared in Petermanns Geographischen Mitteilungen (Petermann’s Geographic Notices).11

At this point, we have to ask how the process of knowledge generation has taken place on the part of the European explorers and the concomitant development of maps about this area in detail. Petermann and other cartographers proposed the most promising routes to the explorers. How did the travellers handle these proposals in action and how much leeway did the Europeans have when following a route?

4.2.2 Negotiation Processes

Tripoli, the capital of present-day Libya, seemed to be the most appropriate gateway to the Sahara due to its topographical situation. Another factor was that Tripolitania and parts of the Fezzan were considered to provide extremely safe passage. Once arrived here, the travellers first had to familiarise themselves with the Ottoman and European officials and to gain their support for the respective projects. In addition, a decision had to be taken in what manner the journey to the south was to be carried out. In order to reach the first important station of a journey to the south, to the caravan cities Ghadames or Murzuq, one either joined a caravan or, if the necessary money was available, one organised his own small kafla. Apart from the negotiations with the Ottoman and European officials in Tripoli and the oases controlled by them, another step was to find local guides and loyal companions as well as to establish contacts with various ethnic groups the territories of whose were on the route.

A journey to Central Africa consisted of different stations where the journey always had to be replanned and new negotiations had to take place. This meant that one had to get involved repeatedly with new political officials, tribal leaders but also companions. The following journey of the British and German explorers Richardson, Barth and Overweg from Tripoli into the Air Mountains is an example of how the negotiation processes took place at the various stages.

The fact that the travellers had to rely on local guides was decisive for a journey through the desert. As described in a previous chapter, these guides moved along paths familiar to them and stored in their mental map. They adhered to the already available paths, primarily used by traders and caravans, but also by pilgrims and pastoralists, which, however, did not mean that the explorers could not leave the caravan for smaller explorations. After the participating parties put together a small kafla in Tripoli, the expedition around Richardson, Barth and Overweg reached at first Gharian located in the Jabal al Nafusah. From there, their way led them to Mizdah and to the Tabunia wadi. Here, they set up camp at a so-called caravan meeting point. Such resting places had an enormously important, highly practical function and were located at places with strategic importance for travel. Where the topography changes in the terrain, i.e. sections without water and vegetation or sections difficult to pass because of the composition of the ground (gravel and sand), there the traveller would find facilities that can be described as caravan meeting places. In the Tabunia wadi, caravans coming from the north or south met. Depending on from which direction one came, the Hamadah al Hamra, the red rock desert, was either ahead or
behind. Prior to ascending into this hostile plateau, a caravan coming from the north had to make vitally important preparations for the onward journey, for the crossing of this section lasted about 6 days. Water was available again only at Bir al-Hassi (see From Tripoli to Mizdah). Even the small kafa of the European explorers had to give water and food to the camels and replenish water supplies prior to the upcoming difficult march. Depending on the size of the caravan, this could be accomplished in one to three days.12

Such opportunities allowed the explorers to carry out their own explorations of the surrounding area of the respective location. Barth used the rest day for a field trip to a nearby Roman tomb as well as for a small outing to Qaryah al Gharbiyah, a former Roman military camp and outpost along the Limes Tripolitanus. Barth’s travelogue revealed numerous references to the desire the German researcher dedicated to the places of antiquity. However, the description of the burial monument near Bir Tabunia clearly shows the interpretative framework in which the researcher was operating: like a solitary beacon of civilization, the monument rises over this sea-like level of desolation, which, stretching out to an immense distance south and west, appears not to have appalled the conquerors of the ancient world, who even here have left behind them, in lithographed proof, “a reminiscence of a more elevated order of life than exists at present in these regions”.13 Inspired by the antique architectural monuments, the explorers measure the contemporary Arab culture and way of life against antiquity which was a model to them. For instance, Rohlf’s concludes 17 years later: “In view of the most glorious architectural monuments and derelict buildings, which often required only few repairs, [...] these people lead their lives in deplorable conditions. They never ask: Why cannot we construct such buildings and live in them? Never does a stone dam, which suggests the perimeter of a former water reservoir or the arch of an antique aqueduct make them think about the current poverty of the country”.14

After 39 days, on 6 May 1850, the small travel party finally reached the first big caravan station on their journey, the mercantile city of Murzuq. Murzuq, however, was not only an important hub for various goods that were traded here from north and south but also a place where negotiations about travel itineraries and travel conditions had to be carried out. The European travellers also were requested to organise their onward journey into the mountain massive of the Air. Unknown to them, it is situated about one thousand kilometres as the crow flies to the south of Ghat. Upon arrival in Murzuq, they did not waste any time and immediately started to prepare for their journey to Ghat or Air. The negotiation processes regarding the route ahead, however, proved to be extremely difficult, as they soon had to realise: “Unfortunately our stay in Murzuk seemed likely to become a very long one, as the chiefs from Ghat, who were to take us under their protection, were not yet sent for. (...) No doubt, in order to visit Air, a country never before trodden by European foot, with any degree of safety, we wanted some powerful protection”15 (Fig. 4.8).

It was clear to the travellers that without the protection or the friendship of a powerful leader or another respected person of the Tuareg, who could provide safe passage, continuing their journey through the Air Mountains would not be possible. Each crossing of the desert meant attacks on travellers by hostile clans and tribes. For this reason, not always the shortest route between two stations was taken, but the route that offered the highest level of security. Choosing an amidi, a friend and protector, was an important matter for European travellers, but also for traders. The “friends and protectors” were generously rewarded for this service: “The northern Tuarek, when they occupied the country round Ghat, established a sort of tribute, or gher- ama, to be paid by merchants passing through their territory, and on payment of which the trader should be no further molested, but enjoy full protection”.16 This tribute was already mentioned by Leo Africanus, who travelled through North Africa at the beginning of the sixteenth century.17

The toleration of Europeans in the desert depended on the benevolence of the local rulers. Adolf Krause, another German–African explorer of the nineteenth century, talks about a kind of “historical right” that the Tuareg assumed in the assignment of the competence when it came to accompanying travellers.18 How did this come about? The Sahara desert has always been a much contested space between the rulers in the north and the ones in the south. The desert, however, always developed its own dynamics. The invasion of the Bedouin tribes Hilal and Sulaim in the Maghreb in the eleventh century also changed the life in the western and south-eastern Sahara. Arab nomads advanced into the south-eastern Sahara from the Nile in Sudan in the twelfth century. In the fourteenth century, individual groups moved to the Western Sahara, where they were able to gain control of the local tribes. The regions in the centre of the desert and its southern borders between Timbuktu and Kuwar remained, however, under the control of the Berber-speaking Tuareg, who founded their own sultanate Agadez in the Air plateau in the sixteenth century.19 Anyone who had the intention to cross this area had to require the consent of the Tuareg. In this context, the desert is always stylised as a lawless space, where there was no law and order and where travellers had to bow to anarchist vagabonds. Much too often, the European understanding is taken as a reference benchmark, as it was also done by many travellers of the nineteenth century. The relationships and structures of African societies, however, are not related to categories of European legal understanding. The spread of Islam had an important influence on the political and economic conditions within the Sahara and also in the areas to the south.
Commerce relied more and more on the Sharia, the Islamic law, and Islamic scholars were used as judges or mediators in case of disputes. This, however, should not obscure the fact that political crises, caused by recurring shift of power and religious disputes, destabilised these areas time and time again.

To be able to continue the expedition, Richardson, Barth and Overweg had to negotiate with the Tuareg, who were in control of the area of which the path led. The negotiations naturally included among others many material concessions, as Hadj Lameen, brother of the governor of Ghat Richardson reminded: "He does not forget to remind us that the Tuaricks..."
expect many presents. I have no doubt they do. He says we must be generous at all the following places:—Ghat, Aheer, Agadez, Damerghou, Zinder, Minyou, Tesaouah, Kashina, Kanou, Sakkatou, Bornou, Begharmi, Mandara, and to the Tibboos of Bilma; not to mention the intermediate towns and villages. However, if the presents be valuable, we may expect in some places rations of food in return.21 In accordance with the usual procedure, the director of the expedition, Richardson, was to negotiate with the Tuareg chiefs and possibly conclude a contract. It was beneficial that Richardson had already met Hatita, a leader of the Tuareg from Ghat, during his last journey in this area: “During my former visit to Ghat, when I travelled as a private individual, known as Yakob, I made acquaintance with Hateetah, a Tuarick Sheikh, who had assumed the title of Consul of the English. It is the custom in that country for every stranger on his arrival to put himself under the protection of one of the head men, to whom alone he makes presents, and who answers for his safety.”22

While Hatita together with an escort was on his way to Murzuq, Barth and Overweg, however, no longer had the patience to wait for Hatita’s arrival. The two Germans meanwhile preferred to continue their way to Ghat without Richardson and with a different Tuareg caravan. One could now only speculate about the motives of the Germans’ behaviour. Halfway through the route to Ghat, Richardson and his companions finally caught up with them again.

The analysis of the travel reports shows that the different assessments of the situation between Richardson and the two Germans further complicated the negotiations with the various actors. In particular, the resulting divergent actions, such as the earlier departure of Barth and Overweg to Ghat, led to irritations, particularly on the part of the Tuareg. Naturally, Hatita showed his anger about the actions of the Germans, which put him in the convenient position to demand further gifts. However, the main difficulty in the course of the negotiations about the route from Ghat to Air and the concomitant question about the protection of the explorers was the assessment of the trustworthiness of the leaders who offered protection. As Richardson was in favour of the help of the Tuareg from Ghat, Barth had doubts about the range of their influence. Barth thought that another contact had been neglected. In Murzuq, the three European met a man named Mohammed Boro, who, carrying the title Serki-n-turawa, “Lord of the wise men”, lived both in Agadez and in Sokoto and who was, according to the former governor of the Fezzan, Hassan Pasha, a man of great influence, even if currently he was not holding public office.23 While Richardson did not think much about him, Barth pointed out his advantages: “Nevertheless, Mohammed Boro was at present a man of great influence and with very important connections and could be of great benefit to us, yet in the opposite situation he could become highly dangerous to us. It is extremely regrettable that Mr. Gagliuifi, for reasons unknown to me, underestimated the importance of this man with respect to the success of this expedition and treated him accordingly. I believe that Hadj el Amin was the one who deliberately spoke disparagingly of Mohammed Boro’s character, fearing that we would attach less importance to the connection with the chiefs from Rhat if we had an influential man from Agadez with us. Therefore he depicted him as conniving and told that he had dealt too much with the Turkish and wanted to use their power to obtain again his previous rank and position. He assumed much more importance than he actually had. In short, he was a man, whose friendship was not worth the trouble soliciting, particularly if it requires a slight sacrifice.”24

Yet, the story shows that many different interests had to be balanced and jealousies were the order of the day. It is interesting in this context that Mr. Galiufi, who held the position of British Vice Consul in Murzuq and in addition was an influential dealer with many contacts, obviously pursued here very much his own interests, as even his compatriot Richardson noted critically in his records. The researchers had to note that the desire for personal gain of their negotiating partners was greater than the one for constructive cooperation, and not only on the part of the Tuareg.25 However, the story also shows the constraints the travellers were subject to. Another notable fact of this event is that the above-stated excerpt from Barth’s German diary cannot be found in the English version.26 There might be many explanatory possibilities for this, and they might be surely linked with the fact that Barth wanted to present himself as prudent mediator and strategist in his travel report. However, on no account did he want to snub the British Government by publicly expressing criticism about their public officials. After all, it was the British Government who acted as sponsor for the expedition.

In the later stages, the situation becomes critical, turning into an open conflict where even death threats from Boro’s part were voiced. Even if this was rather meant as a tactical challenge than dead serious, this event showed the travellers how serious the protective accompaniment in the desert has to be taken. It also showed that Mohammed Boro could become a permanent burden. Although the three explorers secured the services of Mohammed Boro, they angered him as Gagliuifi does not provide him with sufficient gifts. Only when Richardson provided him with new gifts, the situation relaxed.

Overall, it can be concluded that negotiations with the Tuareg were very sluggish. The chiefs finally delayed the onward journey of Richardson, Barth and Overweg until July 1850. On the one hand, this might be due to the difficult situation in the target region; however, these delaying tactics can mainly be explained with the fact that, from the perspective of the Tuareg, the gifts that the travellers had given them were considered insufficient. Only four months after the departure from Tripoli did the explorers reach Ghat and continued their dangerous way into the mountain massif of the Air.27
4.2.3 Summary

The fact that the travellers could obtain reliable geographic data only in close cooperation with the local population is decisive for the process of the generation of knowledge and the production of maps. Even though Petermann and other cartographers proposed the most promising routes to the explorers, they could not really freely decide on location which route to take. If the first stage starting in Tripoli, which initially led to the first major stopover either to Ghadamis or Murzuq, was rather easy to manage by joining a caravan or by the travellers organising a small caravan themselves, in order to travel on the established commercial or pilgrim routes, the onward journey to Central Africa turned out to be much harder. A journey through the desert included lengthy negotiation processes, which, the further one penetrated to the south, became more difficult. This was due to the unclear political balance of power. In order to find and travel on a suitable route, negotiation processes had to be carried out with very different personalities. This included European, Ottoman or Sudanese officials, guides and companions of caravans or representatives of different ethnic groups of the desert and the sub-Saharan regions. In order to make such negotiation processes successful, the travellers had to have not only diplomatic skills and patience, but their success was mainly dependent on their historical understanding as well as their knowledge of the political conditions of the desert and Sudan, and their intercultural empathy. The successful development of negotiation processes was the basis to generate knowledge. The most important abilities were summarised well by Barth as he carried out negotiations with the Tuareg in the region of Ghat: “It was a serious undertaking to enter into direct negotiation with these Tuareg chiefs, the absolute masters of several of the most important routes to Central Africa. It required great skill, entire confidence, and no inconsiderable amount of means, of which we were extremely deficient”. And if the negotiations stagnated, even science could make no progress. Barth grants us insight into his state of mind: “The way in which negotiations took place spoiled almost our whole stay at this place and denied us the opportunity to gain greater insight in the exploration of the interesting and almost unknown ethnological relationships of these areas”.

One could state many more examples that show that the travellers were always forced to refrain from carrying out their plans. For clarification purposes, another scene is to be stated here. The group around Richardson, Barth and Overweg was on the way to Ghat with Hatita, as a decision already taken before had to be changed much to the detriment of Barth: “There had been much talk for some days to the effect that we
travellers, together with Hatita, should take the nearer but more difficult road to Ghat across the range, while our luggage should go by the longer but smoother road round the mountains; but it was at length decided that we should all go by the longer road, and none but the Sfaksi, who was anxious to overtake the caravan as soon as possible, took the more difficult path, which, for geological observations, might have proved the more interesting. The way decisions were made often was not understandable for Europeans and would also appear irrational to them. They only had limited access to the logic of the activities of the indigenous people. One is easily tempted to speak of irrationality and anarchy. However, this explanatory approach would be inadequate.

For the creation of his work, apart from the ancient authors and the available treatises of Arab scholars of the Middle Ages and current contributions of European explorers of the eighteenth and nineteenth centuries, Barth mainly used indigenous sources. In part, he named these sources. For example, he used a Bornu chronicle: “(…) a chronicle (di-van), or rather the dry and sterile abridgement of a chronicle, comprising the whole history of Bornu, from the earliest time down to Ibrahim, the last unfortunate offspring of the royal family who had just ascended the crumbling throne of the Bornu empire when the last English expedition arrived in that country; two other still shorter lists of the Bornu kings; a detailed history of the first twelve years of the reign of the king Edris Alawoma, consisting of two parts, in my copy one of 77 and the other of 145 pages, and written by a contemporary of the above mentioned king, the Imam Ahmed, son of Sofiya and a short document containing information about embassies.

Fig. 4.11 Back then, as today, passing through the territories of a tribe in the Sahara is bound to a permission given by the council of elders. The figure above shows a meeting between the German–Libyan members of the joint venture and the elderly people from al Qatrun. After an initial welcome, a common prayer was spoken. Subsequently, issues of the visit were discussed with the committee, to which ample time should be devoted. Negotiations about where to go and what to do in the area were held. For this, one needs to part with plans already carried out or “western” solutions and keep up with the reality of a tribal community. Back then, for the pioneers of Africa-related research, this was a major challenge: communication with different stakeholders in the Sahara required a strong intuitive understanding as well as familiarity with the local “political and cultural landscape”. As shown, negotiations with different stakeholders were decisive for the process of the generation of knowledge and also for map production. When selecting the routes, the explorers could not always decide freely which way was to be taken. On the one hand, this was dependent on the safety prevailing on the distance to be covered and on the sensitivities of the respective protective powers. On the other hand, it was dependent on which guides were accompanying the travellers. Ultimately, the European explorers moved along the paths stored in the mental map of their guides and companions.
Fig. 4.12 A debate of the elderly people from al Qatrun
sent to Tripoli by some Bornu kings, and published in the Bulletin de la Société Geographique de Paris 1849. Furthermore, Barth replied on informants or rapporteurs. In his work, there are numerous references to the fact that the detailed geographic descriptions were based on “information by rapporteurs”, who the German scientist occasionally questioned, but otherwise very much appreciates their accuracy and value. Barth made map sketches based on his travels and the geographic data based on indigenous sources. Together with detailed written descriptions about places he visited himself or he had heard about, he sent the map sketches to Dr. August Petermann who then started the scientific process of map drawing (Figs. 4.9 and 4.10).

Negotiations with different stakeholders (Figs. 4.11 and 4.12) were decisive for the process of the generation of knowledge and therefore also for map production. When selecting the routes, the explorers could not always decide freely which way was to be taken. On the one hand, this was dependent on the safety prevailing on the distance to be covered and on the sensitivities of the respective protective powers. On the other hand, it was dependent on which guides were accompanying the travellers. Ultimately, the European explorers moved along the paths stored in the mental map of their guides and companions. The travellers could obtain reliable historical and geographic data only in cooperation with the local population. The knowledge of the European explorers laid down in writing and encrypted in maps was essentially based on local knowledge. In contrast to Barth, other researchers such as Georg Schweinfurth tried to attribute inadequate geographic understanding to the Africans and explain misunderstandings only due to the different concepts of space. However, not only the different concepts of space were an obstacle during the process of generating knowledge, but the successful or less successful execution of the negotiation processes.

Points of reference in the landscape are stored in the mental map of a desert guide and can be traceable on a satellite map. It can be assumed that a desert guide embodies all the relevant facts, information and skills for navigating in the desert, which is far more than only storing knowledge in a mental map. Apart from knowing and recognising points of reference, a desert guide can remember the approximate duration of the individual stretches. On a satellite map, he is able to state the number of days he will require for particular stretches of the road.

Notes

1. Interviews with desert guides collected in April and November 2006, March 2008, October 2009.
2. Förster et al. (2010, 54); The way the ancient Egyptians navigated by means of alamat has been studied along the Abu Ballas Trail where lines of hundreds of stone cairns have been recorded (see Förster et al. 2010, 49–75).
3. Tilho (1920, 94).
4. Ciammaichella (1987, 32).
5. Meerpohl (2009).
6. Observations and interviews with desert guides collected in April and November 2006, in March 2008 and in October 2009.
7. Meerpohl (2009).
8. Laydon (2012, 221).
9. Field experiments with desert guides conducted in November 2006; Meerpohl (2009).
10. Fritsch (2009, 87–101), see also Fritsch and Voigt (2008, 1–10); For transcultural communication and negotiation processes in Eastern Africa, see Voigt (2012, 27–38).
11. Schelhaas and Wardenga (2011, 89–107).
12. Barth (1857), Richardson (1853).
13. Barth (1857, 133).
14. Rohlfis (1874, 21).
15. Barth (1857, 224).
16. Barth (1857, 83).
17. Barth (1857, 258).
18. Krause (1882, 266–356), see mainly 328–335.
19. Austen, 80f.
20. See also Lydon (2012).
21. Richardson (1853, 104f).
22. Richardson (1853, 120f).
23. Barth (1857), Richardson (1853).
24. Barth (1857, 174).
25. Barth (1857), Richardson (1853).
26. Barth (1857–1858).
27. Barth (1857), Richardson (1853).
28. Barth (1857, 262).
29. Barth (1857, 96).
30. Barth (1857, 253f).
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