

From Biblical Philology to Scientific Achievement and Cultural Understanding: Carsten Niebuhr, Peter Forsskål and Frederik von Haven and the Transformation of the Danish Expedition to Arabia 1761-1767

Lawrence J. Baack

Abstract

The Danish Expedition to Arabia in the eighteenth century is famous as a quintessential project of the Northern European Enlightenment. But it was a project whose character changed fundamentally over time. In the course of seven years it was transformed from an endeavour whose central focus was biblical philology, using inquiry into the Middle East as a vehicle to better understand the historical and cultural context of the Old Testament, to one whose greatest achievements lay in the natural sciences, cartography, cultural geography, epigraphy and archaeology. Thus it changed from an effort that was essentially Euro-centric to one which was interested in the sciences and the Middle East in their own right, not just as tools for unravelling the meaning of an essential text of the western tradition. This process of transformation was the product of several forces, most of them tied to the roles played by the three principal investigators - Frederik von Haven, Peter Forsskål and Carsten Niebuhr. Exploring these roles and the process of change is the topic of this paper.

The Danish Expedition to Arabia was a quintessential project of the Northern European Enlightenment - a project of intellectual inquiry and sustained curiosity. Like the intellectual movement that spawned it, but on a small scale, it was a dynamic, evolving historical phenomenon, full of diversity and even surprises.¹ From inception to completion and interpretation, the expedition's character changed dramatically. It was transformed from an initiative whose principal purpose was biblical philology to an endeavour whose

central achievements were in scientific investigation, palaeography, archaeology and cultural studies. This process of transformation was the product of several forces, most of them tied to the roles played by the three principal investigators - Frederik von Haven, Peter Forsskål and Carsten Niebuhr. It is these roles and the personal and scientific contexts of their work that we will explore.

The original idea for the Danish Expedition came from Johann David Michaelis at the University in Göttingen, a leading biblical scholar and today studied also for his idiosyncratic contribution to eighteenth century anti-semitism in Germany.² For Michaelis the

1. For scholarly discussions of the expedition see the collection of essays in Rasmussen (1990a), Wiesehöfer and Conermann (2002), and Baack (2013). Also see the important exhibition catalog by Rasmussen (1986).

2. For an overview of Michaelis's entire career, see the

expedition was to be a practical, field demonstration of his neologist methodologies for biblical studies. That is, he wanted to apply a variety of historical, philological and scientific disciplines to the task of discovering the historical and cultural context in which the Old Testament was set down.³ Originally suggested in a presentation in Göttingen in 1753, and then later elaborated in letters to Johann Hartwig Ernst von Bernstorff, the Danish Foreign minister, Michaelis proposed sending a single scholar, fluent in Arabic, to Arabia to investigate the geography, natural history, language and customs of the region in order to more accurately interpret the Bible as an artifact of an hypothesized classical ancient Israelite civilization.⁴ His attention was drawn to Arabia, and especially Yemen, because he judged the area to have been little affected through the centuries by foreign conquest or foreign trade. There he believed “the old customs of the House of Abraham” would still be discernible.⁵

Why Michaelis decided to approach the Kingdom of Denmark-Norway, and not one of the German states, such as Hanover is a somewhat complicated question beyond the scope of this paper. But there is little doubt that his interest in Denmark was awakened by the publication one year earlier in 1755 of the account of the voyage of the Danish naval captain,

Frederik Ludwig Norden to Egypt, analyzed in the Introduction to this volume. Norden was able to gather much valuable information and to execute many handsome drawings and charts during his journey, but the publication of his report was delayed for many years before appearing as a publication of the Royal Danish Academy of Sciences in French in a beautiful two-volume set with magnificent illustrations. We know that Michaelis had seen the two volumes just prior to contacting Bernstorff, so at a time when he was looking for a sponsor for his idea, Denmark’s support of a similar undertaking years earlier was brought to his attention.⁶

Under the guidance of Bernstorff the scale of the expedition soon grew to a team of six, with three principal investigators, a physician, professional illustrator and an orderly.⁷ Michaelis was directed by Bernstorff to craft detailed instructions for the expedition which, in the course of many drafts and with input from other scholars and officials in Copenhagen, he did.⁸ In addition he crafted some 100 questions for the

excellent studies of Löwenbrück (1986, 1988, and 1995). Also see the thorough review by Hübner (2002), and the works of Sheehan (2005), Legaspi (2005), Carhart (2007) and Hess (2002), which cover various aspects of his contributions.

3. Reill (1975), p. 44.

4. For his original mention of the idea see *Göttingische Anzeigen von gelehrten Sachen*, 139 (17 November 1753), 1241-1244. For the initial proposal and correspondence with Bernstorff, see Michaelis to Bernstorff, 20 May 1756, Rigsarkiv København (hereafter RaK), Tyske Kancelli. Udenrigske Afdeling - Arkiv 301. Almindelig Del III, Arabiske Rejse (hereafter AR), Case 3-003, Nr. 1a-b; Bernstorff to Michaelis, 3 August 1756, Niedersächsische Staats- und Universitäts-Bibliothek, Göttingen, Nachlass von Johann David Michaelis (hereafter cited as NSuUG, Cod. Ms. Mich.) 320, Bl. 211; and Michaelis to Bernstorff, 30 August 1756, 2 Drafts, NSuUG, Cod. Ms. Mich. 320, Bl. 212-230, and RaK, AR, Case 3-003, Nr. 2.

5. *Göttingische Anzeigen von gelehrten Sachen* 139 (17 November 1753), p. 1242.

6. The volumes were reviewed in the *Göttingische Anzeigen von gelehrten Sachen* of February 1756, for which Michaelis was the editor. There it was noted that Norden made many orthographical errors in recording place names on his charts because he did not know Arabic. This criticism was repeated in Michaelis’s proposal (along with praise of the project) to Bernstorff. See Michaelis to Bernstorff, 30 August 1756, 2 drafts, NSuUG, Cod. Ms. Mich. 320, Bl. 217-218, and RaK, AR, Case 3-003, Nr. 2. Also see Pedersen (1992): 66-67.

7. The physician was Christian C. Kramer, a Dane; the illustrator was the German, Georg Wilhelm Baurenfeind; and the orderly, Lars Berggren, was from Sweden.

8. For the extensive correspondence on the instructions and the additions from scholars in Copenhagen, see Bernstorff to Michaelis, 2 October 1756, NSuUG, Cod. Ms. Mich. 320, Bl. 231-232; Bernstorff to Michaelis, 8 January 1760, NSuUG, Cod. Ms. Mich. 320, Bl. 273-274; Bernstorff to Michaelis, 23 June 1760, NSuUG, Cod. Ms. Mich. 320, Bl. 275; J.C. Kall to Bernstorff, 26 August 1760, RaK, AR, Case 3-003, Nr. 69 c-d, and NSuUG, Cod. Ms. Mich. 320, Bl. 294-299; Ascanius and Oeder Pro Memoria, 29 August 1760, RaK, AR, Case 3-003, Nr. 69b and NSuUG, Cod. Ms. Mich. 320, Bl. 300-301; Bernstorff to Michaelis, 21 October 1760, NSuUG, Cod. Ms. Mich. 320, Bl. 292-293, and RaK, AR, Case 3-003, Nr. 75 and 75 c-d. For additional documents on the evolution of the

expedition later published as his famous *Fragen an eine Gesellschaft gelehrter Männer*.⁹ The questions focused almost exclusively on the Bible.¹⁰ Michaelis also solicited questions from all over Europe and he received a variety of responses.¹¹ The most important was from the *Académie royale des inscriptions et des belles lettres* in Paris.¹² This forty page document made scant reference to the Bible, concentrating instead on understanding Arabia during its Islamic period. Also contributing to the Instructions were scholars in Copenhagen, notably Christian Gottlieb Kratzenstein, a professor of experimental physics and medicine at the University of Copenhagen. His lengthy paper set forth suggestions for the expedition in botany, zoology, especially marine biology, and the navigational sciences.¹³ His submission was pure science.

In the end the final Royal Instructions retained a strong focus on biblical philology, reflecting Michaelis's central intellectual role and the interests of Frederick V, Bernstorff and Adam Gottlieb von Moltke, the chief advisor to the king.¹⁴ But we can already see

instructions, see Michaelis to Bernstorff, 15 July 1760, NSuUG, Cod. Ms. Mich. 320, Bl. 276-285, for the original draft, and for its different versions, Bernstorff to Michaelis, 21 October 1760, NSuUG, Cod. Ms. Mich. 320, Bl. 292-317, and the many iterations in RaK, AR, Case 3-003, Nr. 85a-85j.

9. Michaelis (1762).

10. As Michaelis wrote in the Preface or *Vorrede* to the *Fragen*, "Almost all of the questions I have posed refer to the elucidation of the Holy Scripture. I can see from the outset that this might displease some, and will appear as much too theological."

11. For the invitation to submit questions, see *Göttingische Anzeigen von gelehrten Sachen* 16 (7 February 1760), pp. 129-131.

12. *Mémoire adressé au nom de l'Académie Royale des Inscriptions et Belles Lettres de France à Messieurs les Académiens Danois qui se disposent à faire le voyage de l'Arabie Heureuse*, RaK, AR, Case 3-003, Nr. 86d.

13. See Kratzenstein to Bernstorff, 26 November 1760, RaK, AR, Case 3-003, Nr. 80, with the attached *Vorschlag*, Nr. 80a.

14. The original instructions, signed by the King and Bernstorff, and retained by Niebuhr, are now located in the archives of the Dithmarscher Landesmuseum, Meldorf, file DLM 26000. For other copies see Bernstorff to Michaelis, 4 March 1761, with its enclosure, NSuUG, Cod. Ms. Mich. 320, Bl. 319-328, and one that is more accessible in Rasmussen (1986), pp. 59-78. It is based on a copy of the original

in their content that the emphasis was shifting imperceptibly away from philology to more general science. The expedition no longer focused on a single philologist, broadly trained going to Arabia, but now also had a natural scientist and a cartographer/astronomer, thus strengthening the resources devoted to these disciplines. Naturally the extent to which these disciplines would present themselves, depended on the vigour and talent of the members of the expedition who represented them, and the character of their encounter with the culture they were visiting. Moreover, because of problems in execution, the expedition did not leave Copenhagen with a full compilation of Michaelis's *Fragen*, but actually received only two brief questions from Michaelis before they left. It was not until well into the journey, shortly before the death of most of the members, that the party received a full collection of Michaelis's questions.¹⁵ However, upon their departure they were provided with a full set of the questions from the French *Académie*, Kratzenstein's paper and copies of the questions from other European scholars.¹⁶ These dealt mainly with the sciences and geography. Thus the process of the transformation of the expedition was set in motion before the members left port.

Frederik Christian von Haven

Now let us turn our attention to the three principal investigators – Haven, Forsskål and Niebuhr. Frederik Christian von Haven was the first member selected for the expedition and by virtue of his field, philology, and nationality, Danish, was viewed as the most prominent member of the expedition. Coming from a clerical family, he studied theology and philology at the universities in Copenhagen and Göttingen and became one of Michaelis's students, training in Ara-

document recorded by Frederik von Haven in his journal.

15. Niebuhr, *Beschreibung*, xvi. Also Bernstorff to Gähler, 7 July 1761 and 28 March 1762, RaK, Tyrkiet, Gesandtskaberarkiver, Case 79-13, and Niebuhr to Temler, 30 October 1764, Archive of the Berlin-Brandenburgische Akademie der Wissenschaften (hereafter cited as BBAW), Nachlass C. Niebuhr, Nr. 28.

16. Paragraph 14, Royal Instructions, see fn.13 above.

bic, the Bible and the natural sciences.¹⁷ Michaelis thought very highly of his ability and recommended him for the expedition.¹⁸ In preparation for the trip Haven continued his studies in Göttingen under Michaelis, reading texts in Arabic and Hebrew in the library, and later studying in Rome to enhance his knowledge of Arabic and Syriac. Thus Haven had a strong classical education with strength in Middle Eastern languages.

As the expedition's philologist, his assignments in the Instructions naturally dealt with the Bible and religion.¹⁹ Paragraphs 11, 12 and 35-42 directed him to do the following:

- observe Arab customs for the light they might shed on understanding Holy Scripture and mosaic law;
- gather information from contemporary, colloquial Arabic and its different dialects that might illuminate terminology in the Bible;
- study the oldest Arabic, Hebrew and Syriac scripts, seek out ancient writings on the religion of the Sabaeans and other pre-Islamic religious practices and make copies of old Hebrew and Greek codices of the Bible;
- acquire instructive manuscripts and books in Arabic and Hebrew that were relevant to the purpose of the expedition; and finally
- copy old Arabic and other Middle Eastern inscriptions, most particularly ones from the Sinai Peninsula believed to be from the time of Moses.

17. The best information on Haven's early life is in the Introduction by Anne Haslund Hansen to his travel diary of the expedition. See Hansen and Rasmussen (2005). Also see Helk, (1980), p. 135, and Selle (1927), the entry Fridericus Christianus von Haven. Hafniensis, Theol. Juni 28, 1751. Nr. 184 (3835,) p. 89. For his assignment and studies in Rome see Bernstorff to Michaelis, 27 June 1758, NSuUG, Cod. Ms. Mich. 320, Bl. 245-247; and Haven to Bernstorff, all RaK, AR, Case 3-003, 21 April 1759, Nr. 21, 26 January 1760, Nr. 45, 23 February 1760, Nr. 47, 22 March 1760, Nr. 48, 23 April 1760, Nr. 49, 24 May 1760, Nr. 50, 28 May 1760, Nr. 52 and 7 June 1760, Nr. 51.

18. Michaelis to Bernstorff, 18 October 1756, RaK, AR, Case 3-003, Nr. 6c.

19. For the Instructions, see fn. 13.

Although the elaboration of his assignments in the Instructions was more brief than for the other principal investigators, his responsibilities still made clear the important place of biblical philology in the objectives of the expedition. Yet despite the original centrality of philology in the expedition's objectives, Haven was able to meet his responsibilities in only two areas - the acquisition of manuscripts, and to a much lesser extent, lexicography, where, for example, he collected eventually seven pages of corrections to the Arabic names used in Norden's map of the Nile among other listings.²⁰ Indeed he was astute and knowledgeable in the purchase, mainly in Istanbul and Cairo, of 116 very valuable volumes in Arabic and Hebrew.²¹ They focused mainly on history and poetry, but also included old codices of the Hebrew Bible.²² Today they are nearly all part of the collections of the Royal Library in Copenhagen. The rest of his assignments were never completed, or in most cases, it appears, even started. What accounts for this failure? The answer lies in Haven's personality, perspective, death and the characteristics of the discipline he represented.

Unfortunately for the expedition, Haven had a difficult personality. While he was bright, academically well-prepared and at times capable of conscientious work, he was also petulant, pretentious and egotistical to an extreme. These latter traits were made more irritating to his colleagues by his disdain for

20. See Frederik Christian von Havens Rejsejournal 1760-1763, Det Kongelige Bibliotek, NKS 133, 2^o. Vol. 1, 453-460.

21. For a full listing of the purchases, see Kirketerp-Møller (1970 and 1979-80). Also see Haven to Gähler, 27 July 1762, RaK, AR, Case 3-005, File 1, Nr. 27/27a, and Haven to Gähler, 26 August 1762, RaK, AR, Case 3-005, File 1, Nr. 32/32a. Sigismund von Gähler was the Danish Ambassador to the Sublime Porte. A useful summary of the purchases may be found in Rasmussen (1990b), pp. 325-336.

22. The codices proved to be useful to Benjamin Kennicott for his project on the Hebrew Bible. For the project and the use of Haven's volumes, see Kane (1977), and Keck (1990). For the sizable correspondence of Bernstorff, who made the volumes available to Kennicott and assisted in other ways, see RaK, AR, case 3-004, Nrs. 33, 33a, 49, 49a, 49b, 55, 114a, 116, 117, and 122a.

them, a lack of fortitude, and a sometimes remarkable laziness.²³ Early on one is struck by a lack of vigour or a sense of adventure on Haven's part. For example, two early images come to mind. One is from the very first month of the expedition, when after a failed attempt by the *Grønland*, the Danish warship that transported the expedition to the Mediterranean, to transit to the North Sea because of stormy weather, Haven complains to Bernstorff about the hardship of a sea voyage. He asks to leave the ship and to travel by land to Marseilles, and his request is approved. He packs his bag and leaves the group.²⁴ Thus at the outset Haven shows little toughness and separates himself from the shared experience of the team. Then later, when the members are in Egypt, visiting the great pyramid of Khufu, they decide to climb to the top. But Haven is too tired and uninterested to accompany them and decides in his words "to pass on this curiosity."²⁵ Having come thousands of miles to Egypt, how could he simply pass on such an opportunity? There is no spark of commitment on his part.

Moreover, he was really comfortable doing work only in an urban environment – Rome, Istanbul, Alexandria or Cairo – where the infrastructure was at least easily accessible to Europeans. It was in this setting that he did his best work. Once Haven left an urban environment whether in the Sinai, the Red Sea or the first months in Yemen, his productivity virtually disappeared. His death in May of 1763 confirmed the reality that the areas for which he was responsible would most likely not be covered during the expedition. He did not master colloquial Arabic and become

conversant with local dialects as did Forsskål, and increasingly even Niebuhr, whose initial knowledge of Arabic was far inferior to Haven's. He never demonstrated an interest in interacting with the Arab peoples and held himself aloof from them.²⁶ As Niebuhr wrote to Friedrich Nicolai in 1778, "von Haven was to be sure a learned man, but he could not condescend to live in the Middle Eastern way and to interact with Middle Easterners on familiar terms, and such a man cannot collect much."²⁷

Haven was also hampered in his work by some of the characteristics of his discipline. While Michaelis highlighted the need for first hand field work in his original presentation of the idea of the trip, there was no precedent for such work in any practical sense. The discipline was still centered in libraries and studies focusing on the critical evaluation of texts. Michaelis wanted to correct this, but he had no field experience himself upon which to draw or guidance to share with the researcher. Haven was forced to operate on his own in uncharted research territory, a task for which he was ill-suited.

Finally, the focus on biblical philology, no matter how broadly and creatively Michaelis defined it, was still supremely Euro-centric. The purpose of the expedition was to mine the Middle East for information that would better inform European knowledge of a text of the western tradition. It was never to understand the Arab Middle East as a contemporary culture. Thus Haven, by virtue of his task, viewed Arab society through the lens of philology, his background in Christian theology, and the classical Greco-Roman tradition in which he was educated. Combined, this proved to be a serious impediment to exploring Arab culture with a relatively open mind and limited his ability to produce meaningful results. Thus, his journal, for example, expertly edited recently by Anne Haslund Hansen and Stig Rasmussen, is a very im-

23. See Hansen and Rasmussen (2005), pp. 65-68, and among others Forsskål, Niebuhr and Baurenfeind to Gähler, 15 March 1762 (written by Niebuhr), RaK, AR, Case 3-005, File 1, Nr. 14; and Niebuhr to Gähler, 8 January 1762, RaK, AR, Case 3-003, Nr. 123f.

24. Haven to Bernstorff, 15 February 1761, RaK, AR, Case 3-003, Nr. 94a; Bernstorff to Haven, 16 February 1761 (draft), RaK, AR, Case 3-003, Nr. 94; also Hansen and Rasmussen (1990), p. 81; Moltke to Haven, 16 February 1761, Hansen and Rasmussen (1990), p. 80; and Niebuhr (1774-78), Vol. I, p. 5.

25. Haven to Temler, 16 April 1762, in Buhle (1794-96), Vol. 2, pp. 63-68.

26. See for example, Haven's difficulties with Arab guides on a trip to the Sinai, Niebuhr, (1774-1778), Vol. I, p. 226.

27. Niebuhr to Friedrich Nicolai, 20 April 1778, Staatsbibliothek zu Berlin Preussischer Kulturbesitz, Nachlaß Nicolai 53; Niebuhr, Carsten (courtesy of Dieter Lohmeier).

portant document for the early history of the expedition and for describing the European social environment in which the members initially moved, but once the group leaves Egypt, Haven records almost nothing about Arab culture, religion, and language, even in the context of biblical philology.²⁸ This is the reality well before his death. Thus we can see that his encounter with the Arab world was severely handicapped by his personality, perspective and discipline, and these combined account for the slender representation of findings directly related to biblical philology in the results of the expedition.

Peter Forsskål

Now let us turn our attention to the Swedish natural scientist for the expedition – Peter Forsskål. In many ways his background was quite similar to Haven’s but his personality and increasingly his education were different.²⁹ Also born into a clerical family, Forsskål received a classical education at Uppsala in theology, philosophy, Latin, Greek and Hebrew. However, at an early age he also accompanied his older brother to the hugely popular lectures of Carl Linnaeus. This began a relationship that would last more than a decade and would lead in time to his becoming one of the great botanist’s “apostles”. In addition, Forsskål studied oriental languages with Carl Aurivillius, Sweden’s most prominent orientalist. He then continued his education in Göttingen where under Michaelis and

others he studied oriental philology, philosophy, theology, Arabic, botany and entomology. Thus his education was somewhat broader than Haven’s and had a more scientific bent.

However, of much greater importance to the expedition, Forsskål had, in contrast to Haven, a personality well suited for an expedition of this kind and his results show a real passion for his work. As Niebuhr once wrote, “It was as though he was born to make an Arabian journey.”³⁰ For example, we get a glimpse of Forsskål’s attitude at the very beginning of his diary. There in its opening, he talks of both the danger and the importance of scholarly research in Yemen, and he adds, “A thorough knowledge of the local language, geography and history is the most suitable preparation for a traveller to any country; but in this case a heroic temperament was needed as well; one had to be prepared to give one’s life in the service of science.”³¹ Indeed, Forsskål proved to be a fearless, dedicated and prescient investigator.

Early on he demonstrated a creative, adventurous, stubborn and contrary disposition. For example, his dissertation at Göttingen was an attack on the philosophy of Christian Wolff at a time when the prevailing views in Uppsala were still strongly Wolffian.³² Then upon returning to Sweden, he wrote a thesis entitled *De libertate Civili*, a polemic advocating greater civil liberties for Swedish subjects. It was rejected by the philosophical faculty at Uppsala. Undeterred, Forsskål had it repackaged and published as a pamphlet entitled *Thoughts on Civil Liberty*. Although it had been reviewed by the censor and modified, it was still immediately banned by the government who ordered it confiscated and destroyed. The censor was fired and Forsskål was given a warning.³³

28. For example, the period from October 1762 to May 1763, that is up to Haven’s death in Al Mukhā, is covered only very briefly by 22 pages of draft notes. For many days the entries are just a single line, just a handful of words, devoid of any scholarly content. See Hansen and Rasmussen (2005), pp. 363-385. With regard to his unpublished notes in his folio journal, except for 13 pages that deal with Yemen, virtually all of the notes appear to come from the period when Haven was in Egypt. See Frederik Christian von Havens Rejsejournal 1760-1763, NKS 133, 2^o, Det Kongelige Bibliotek, København. Also for an accessible and detailed elaboration of the journal’s contents, see Rasmussen (1990b), pp. 303-325.

29. For an introduction to Forsskål, see Baack (2013a), Schück (1923), the background essay in Uggla (1950), and Christensen (1918).

30. Niebuhr (1774-1778), Vol. I: p. 401.

31. Uggla (1950) pp. 1-2 (transl. Hansen (2009-2011), Vol. 4, pp. 283-284).

32. The most detailed discussion of Forsskål’s philosophical views is Dellner (1953).

33. For a discussion of the incident, see Steinby (1970), and the background essay by Thomas von Vegesack in the Swedish/English publication of the pamphlet, Goldberg et al (2009), pp. 23-39.

Fortunately because of his wide ranging education Michaelis had already offered Forsskål the position of naturalist on the expedition, thus rescuing him from his momentary predicament in Sweden.³⁴ Still, during the protracted discussions over his appointment with Bernstorff, Forsskål proved to be a demanding and prickly negotiator. It was he who insisted that all of the scholarly members of the expedition be of equal status, with none subordinate to another, a principle Bernstorff agreed to and honoured religiously throughout the course of the expedition.³⁵ Forsskål brought to the project great assets – competence in biblical philology, Arabic and the natural sciences. His proficiency in the latter two fields was greatly improved by his preparation in Uppsala during the period between his being appointed to the expedition and its departure. He pored over travel accounts to learn about the customs and culture of the Middle East, and he worked with his earlier professor, Aurivillius, to improve his knowledge of Arabic. Of even greater consequence, he studied closely with Linnaeus in the Botanical Garden in Uppsala mastering his system of plant observation and classification. He also read Linnaeus' just published *Instructions for Scientific Travellers*, a copy of which Forsskål sent to Michaelis.³⁶ As Forsskål wrote to Bernstorff, he was

using the time “to become a better disciple of Linnaeus.”³⁷

Thus Forsskål brought to the expedition a robust association with Linnaeus which included not just a detailed knowledge of Linnaeus' taxonomy, but also training by Linnaeus to become a discriminating and precise scientific observer. This was especially significant for as Sten Lindroth has pointed out, “Linnaeus was ... an empiricist. As an observer and describer of objects of the sciences he has had few if any equals. He belongs to the great empirical tradition of the West.”³⁸ The expedition may not have manifested some of Linnaeus' other attributes, such as his strong interest in cameralism, but his standards for observation proved to be of great importance.³⁹ Of course, Forsskål's devotion to Linnaeus and his pronounced Swedish nationalism also introduced a tension into the expedition that had consequences, but there can be no doubt that this immensely talented, energetic and arrogant scientist was at the beginning of the expedition the best prepared of all the members. He served as a good and much admired role model of an empirical field scientist for the, as we shall see, largely uninitiated Carsten Niebuhr. Forsskål was a young polymath of the Enlightenment, full of intellectual curiosity and initially cultural superiority.

Forsskål's instructions for the expedition were quite specific – improve the accuracy of European plant descriptions of the region, elaborate the botanical and zoological listings in Arabic dictionaries, and follow the guidelines laid out by Linnaeus in his instructions. He was directed to pay special attention to any species referred to in the Bible, to retain Arabic nomenclature in both Arabic and Latin script and to

34. Michaelis to Forsskål, 1 January 1759, RaK, AR, Case 3-003, Nr. 17c (copy); draft, Michaelis to Forsskål, 1 January 1759, NSuUG, Cod. Ms. Mich. 322, Bl. 255-256.

35. For the negotiations, see the following: Michaelis to Bernstorff, 31 May 1759, RaK, AR, Case 3-003, Nr. 20c; Forsskål to Michaelis, 6 July 1759, NSuUG, Cod. Ms. Mich. 322, Bl. 261-262; Bernstorff to Michaelis, 21 July 1759, RaK, AR, Case 3-003, Nr. 24; Bernstorff to Forsskål, 21 July 1759, RaK, AR, Case 3-003, Nr. 25; Michaelis to Bernstorff, 6 August 1759, RAK, AR, Case 3-003, Nr. 27; Forsskål to Michaelis, 8 August 1759, NSuUG, Cod. Ms. Mich. 322, Bl. 263-264; Forsskål to Bernstorff, 8 August 1759, RaK, AR, Case 3-003, Nr. 30a; Bernstorff to Moltke, 20 August 1759, RaK, AR, Case 3-003, Nr. 28; Moltke to Bernstorff, 5 September 1759, RaK, AR, Case 3-003, Nr. 29; Bernstorff to Forsskål, 11 September 1759, RaK, AR, Case 3-003, Nr. 31; and Bernstorff to Michaelis, 11 September 1759, NSuUG, Cod. Ms. Mich. 320, Bl. 267.

36. Forsskål to Michaelis, 25 September 1759, NSuUG, Cod.

Ms. Mich. 322, Bl. 265-267; also see the report of the Danish envoy to Sweden, Larrey to Bernstorff, 30 November 1759, RaK, AR, Case 3-003, Nr. 38. For the Instructions see Carl Linnaeus (1759), and in Swedish, Fries (1906), Vol. 2, pp. 195-213.

37. Forsskål to Bernstorff, 25 December 1759, RaK, AR, Case 3-003, Nr. 42a.

38. Lindroth (1983), p. 4.

39. On Linnaeus' economic dimension, see especially Koerner (1999).

support his work with the collection of specimens and illustrations. He was also told to conduct research in marine biology when circumstances permitted, as suggested by Kratzenstein.⁴⁰

Looking at the expedition's results, what was Forsskål's contribution to them? His major botanical work, the *Flora Aegyptiaco-Arabica*, later edited by Niebuhr and an assistant, was the most complete study of the flora of Egypt and Arabia published in the eighteenth century.⁴¹ His zoological work, also published by Niebuhr, received less attention but is no less important. Forsskål's research on the marine biology of the Red Sea was the first scientific investigation of that body of water, and zoologists consider his work to be among "the eighteenth century's most significant zoological publications."⁴² Forsskål was also a great collector of botanical and zoological specimens. For example, the *Herbarium Forsskålîi* at the Botanical Museum in Copenhagen is made up of approximately 1,846 sheets of dried plant specimens.⁴³ This might be compared with the 239 sheets collected by Meriwether Lewis that comprise the Herbarium of the Lewis and Clark Expedition in the American West.⁴⁴ Finally Forsskål's studies stand out in several other ways. First, he preferred, when possible, to incorporate Arabic names into the scientific nomenclature he adopted, and, as directed by Michaelis, he did retain the name in colloquial Arabic as accurately as he could. In Forsskål's work there is no displacement of indigenous terminology. Indeed it was instead preserved

for both European and Arab scholars.⁴⁵ Second, Forsskål's notes comprised descriptions of species containing substantial descriptions of plant habitats, which Niebuhr attempted to preserve in his presentation of Forsskål's research. Valuable in their own right, these kinds of observations also served as the basis for Forsskål's pioneering notes and paper on biogeography, which Niebuhr tried to present and which anticipate the work of Alexander von Humboldt decades later.⁴⁶ Thus, there can be no doubt that Forsskål's research represents a significant contribution to science in the eighteenth century and was one of the most important achievements of the Danish Expedition.

We must remember that Forsskål also died early, less than two months after Haven. What then accounts for his great success in a relatively short period of time? The answer lies mainly in Forsskål's personality. There is no doubt that he displayed tremendous energy in his work, but even more importantly he was able early on to set aside his sense of cultural and social superiority, adopted the Arab way of life, and learned to respect the expertise of local inhabitants. In this he differed from Haven. For example, after being attacked and robbed several times while doing field work in Egypt, he was advised to use the local inhabitants to help him in his work. But Niebuhr later wrote, "As Forsskål could not see what use the progress of Botany could have from the activities of such simple men, he had rejected these proposals but later he accepted them reluctantly, and finally, when he had put them into effect he praised them as being beneficial. For" – Niebuhr then added as his own aside – "the Arabs have as country dwellers from childhood learnt the plants by name, and when offered the opportunity they quickly understood the art of herbarizing and the gathering of specimens. In this way he bought for himself for small expense the needed

40. See the Royal Instructions, paragraphs 16-22, as cited in fn. 13 above.

41. Forsskål (1775). For a thorough updating and interpretation of Forsskål's study, accompanied by a very substantive Introduction, see Hepper and Friis (1994).

42. Wolff (1967), p. 32, (1990), pp. 231-237, and Spärck (1963).

43. On Forsskål's collections, see Klauswitz and Nielsen (1965), "Peter Forsskål's (1732-1763) Famous Fish Herbarium," Zoological Museum, Natural History Museum of Denmark (Electronic Resource, 2006), and Wolff (1967), p. 38. For a full listing of the *Herbarium Forsskålîi*, see Hepper and Friis (1994), pp. 299-335.

44. For the comparison with Lewis and Clark, see Moulton (1999), p. 3.

45. On this point see the very thorough discussion of Provençal (2010).

46. See Forsskål (1775), Introduction, 22, and the translation and discussion in Hepper and Friis (1994), pp. 35-36. Also see Nicolson (1987 and 1990).

peace and security, and made a messenger for the world of science of a robber, who travelling among his own people brought rare desert plants that would never have been seen by the stranger.”⁴⁷ “... That never would have been seen by the stranger...” – these words are pure Niebuhr as we will discuss shortly. He was never confused about who was the “other” in the Middle East and he had a very healthy respect for the knowledge and capabilities of those who lived in the countryside.

Secondly, as a result of his work with Linnaeus, and early botanical investigations in southern France, Malta and Istanbul, Forsskål was well-prepared in field work when he arrived in Egypt.⁴⁸ Moreover, because of the contributions of Linnaeus and others, Botany, in particular, was well-defined with an increasingly standardized set of methodologies. Thus Forsskål had a robust theoretical and practical platform upon which to base his work. Finally, Forsskål pursued his disciplines with genuine enthusiasm and determination that continued virtually until his death.⁴⁹ This was in stark contrast to Haven’s lassitude. Thus, the strengths of both the researcher and the disciplines he pursued account for the remarkable achievements in the natural sciences during the expedition, findings that stand on their own regardless of any relationship to the Bible.

Carsten Niebuhr

Finally let us consider Carsten Niebuhr – the expedition’s only survivor, its surprise achiever and the journey’s interpreter – the person with whom the Danish Expedition to Arabia will always be inextricably connected. The story of Niebuhr’s background is well known. He came from a rural district of northern Hanover, hard on the North Sea coast and the Elbe

Estuary.⁵⁰ It was a region of proud, independent peasant farmers, among them his family, with a good deal of local self-rule. His education in the local schools was interrupted by the death of his father (his mother had already died when he was an infant), as he then was obligated to work on a relative’s farm to learn how to become a farmer. But eventually Niebuhr had other ideas. At age 22 he used his small inheritance to restart his education in Hamburg and then to continue in Göttingen, with the goal of becoming an engineer in the Hanoverian army’s Corps of Engineers. He must have been a strong student because it was his mathematics professor in Göttingen who suggested the overage (25) undergraduate to Michaelis as the mathematician for the expedition and connected Niebuhr with Tobias Mayer in Göttingen – the great cartographer and foremost astronomer in Germany in the eighteenth century.⁵¹ Once Niebuhr had been accepted for the expedition, he had two years in which to prepare for the trip. He studied Arabic with Michaelis (by Niebuhr’s admission without great success), history and other subjects.⁵² With Mayer he was introduced to the basics of astronomy, the art of precise, accurate observation, and cartography. He learned celestial navigation and mastered Mayer’s new and difficult Lunar Distance Method for determining longitude. He also met with Mayer each week

47. Forsskål (1775), Introduction, p. 27, transl. from Hepper and Friis (1994), p. 10.

48. On his excursions to the area around Marseilles (Estaque) Forsskål identified 265 species, in Malta an additional 87, and in Istanbul, the Straits and nearby islands, 481 more. See Forsskål (1775), pp. i-xxxvi.

49. Uggla (1950), pp. 44 and 156.

50. The best discussion of Niebuhr’s early life is Lohmeier (2005); also see Lohmeier (2009); and the charming treatment by Niebuhr’s son, the famous historian of Rome, Barthold Georg Niebuhr, *Carsten Niebuhrs Leben*, in B. G. Niebuhr (1828), also in Danish translation, B. G. Niebuhr (2004).

51. See Niebuhr to Heyne, 20 August 1800, NSuUG, Cod. Ms. Lit. hist. 1279 II, Bl. 136; Lohmeier (2009), pp. 196-197; and B. G. Niebuhr (1828), pp. 13-15. The leading study of Tobias Mayer is Eric G. Forbes (1980).

52. B. G. Niebuhr (1828), p. 15; Niebuhr to Johann Beymgraben, 4 January 1759, Archive of the Berlin-Brandenburgische Akademie der Wissenschaften (hereafter cited as BBAW), Nachlass C. Niebuhr, Nr. 24; Michaelis to Bernstorff, 2 April 1759, RaK, AR, Case 3-003, Nr. 20a; and Niebuhr to Bernstorff, 2 April 1759, RaK, AR, Case 3-003, Nr. 19a.

to practice drawing maps and town plans.⁵³ His two year tutorial with Mayer was the most important formal educational experience of his life. In sum, Niebuhr was technically very well trained but lacked a classical education. His knowledge of languages, theology and philosophy was poor or non-existent. He was the least educated of the principal members and the others looked down on him as a result.

Fortunately for him, Niebuhr's official responsibilities for the expedition were narrowly defined.⁵⁴ As the cartographer/astronomer for the expedition, the Instructions directed him to establish the position of towns and geographical features, to record geographic names in Arabic with careful attention to the correct orthography, and to gather a variety of historical geographical data – the growth and decline of towns, land fertility, population change and the like. As time allowed he was to make astronomical observations and to observe the Transit of Venus on June 6, 1761. Finally, he was designated the treasurer of the expedition, much to the disgust of Haven, because Michaelis and Bernstorff were impressed with his sense of responsibility and commitment.⁵⁵

With this relatively limited portfolio of responsibilities in mind, let us turn to Niebuhr's contributions to the overall results of the expedition. For convenience, we may divide them into two categories – his contribution as the interpreter and publisher of the findings of the expedition, including his work in cultural geography, and his more specific scientific and scholarly contributions in such technical fields as cartography, astronomy, archaeology and palaeography. First, it is because of Niebuhr's singular efforts that today we have over 2,000 pages of published material

for scholars to examine. This is not a trivial achievement. The findings of many scientific expeditions in the eighteenth century – that of Bougainville, Cook, Lewis and Clark and La Pérouse, to name a few – for various reasons were presented to the public only partially or not at all. We must remember that Niebuhr was neither a writer, nor an academic. He had no experience in publishing. After Bernstorff's dismissal in 1770, he received very modest on-going support from the Danish government. He paid for 80% of the printing costs of the six volumes of findings and illustrations published in his lifetime, and he went into debt as a consequence.⁵⁶ These included the *Beschreibung von Arabien. Aus eigenen Beobachtungen und im Lande selbst gesammelten Nachrichten* (Copenhagen, 1772) and the first two volumes of the *Reisebeschreibung nach Arabien und andern umliegenden Ländern* (Copenhagen, 1774-1778), two volumes of Forsskål's botanical and zoological research, and one volume of species illustrations. In this task he had virtually no help from the academics who had conceived and shaped the expedition in Göttingen and Copenhagen.⁵⁷ It is his voice alone that shapes the received narrative of the expedition.

Second, it is the character of the narrative in Niebuhr's own works and sometimes in his introductions to Forsskål's studies that give his accounts special value. His own works have a single overarching goal – to contribute substantively to a more informed understanding of the Arabian Peninsula and its sur-

53. Niebuhr to Bernstorff, 2 April 1759, RaK, AR, Case 3-003, Nr. 19a; Carsten Niebuhr (1803, 1804).

54. See the Royal Instructions, paragraphs 27-34, as cited in fn. 13 above.

55. For his appointment as treasurer, see Michaelis to Bernstorff, 25 August 1760, RaK, AR, Case 3-003, Nr. 64a; and B. G. Niebuhr (1828), pp. 16-17. For Haven's criticism of the selection of Niebuhr as treasurer, see Frederik Christian von Haven's Rejsejournal 1760-1763, NKS 133 2^o, Det Kongelige Bibliotek, København. Pp. 266-267.

56. A discussion of the complicated story of Niebuhr's publication of the findings of the expedition, with its accompanying documentation, is beyond the scope of this study. See the section entitled "The Struggle to Publish the Findings of the Expedition," in Chapter Four of Baack (2013c).

57. For example, despite many requests, Niebuhr received no comments or corrections from Michaelis on his draft manuscript of the *Beschreibung*, which Niebuhr had sent to him. See Niebuhr to Michaelis, 22 October 1770, 22 November 1770, and 8 February 1771, all NSuUG, Cod. Ms. Mich. 326, Bl. 288-294; and Niebuhr to Bernstorff, 9 April 1771, RaK, AR, Arkiv 5129, Bernstorff-Familie, Wotersen, Case 48, Breve til J. H. E. Bernstorff fra forskellige, N-Re. Courtesy of Dieter Lohmeier. He also received no help on the two volumes of the *Reisebeschreibung*.

rounding area on the part of Europeans. His approach is rooted in a basic respect and open-mindedness towards the peoples of the Middle East. As he wrote in the opening to his very first volume, the *Beschreibung*, Arabia was a land, “that is inhabited by a nation that has never been subdued by a foreign people, [and] which, on the contrary, has widely spread its dominion, language, science and religion.”⁵⁸ Thus, he wants to establish standing for Arabia, and point out that its independence was buttressed by a history of geopolitical, cultural and scientific strength.

Then in his Introduction to the *Reisebeschreibung*, his more personal account of the expedition, Niebuhr alerts the reader to the intended character of his work. He knows, he wrote, that those who read these accounts enjoy an entertaining, exciting description of the encounters and misfortunes of travellers in a strange land, and he admits, “I could have easily pointed out more pleasing curiosities,” but he explains, he would not have fulfilled the aim of the expedition. “I was content, that I found the Arabs to be just as humane as other cultured people, and I experienced pleasant and unpleasant days in the countries I visited, just as every traveller must expect.”⁵⁹ What a calming and non-sensational statement that is. Indeed, Niebuhr’s account in the *Reisebeschreibung* is neither in the tradition of so-called “survival” exploration literature, in which participants overcome formidable obstacles and misadventures, nor does it present a panoply of “curiosities” to entice the reader with descriptions of bizarre encounters with strange countries and peoples. No, Niebuhr’s account is consistently straightforward, thoroughly unembellished and intended to educate, not to titillate the reader.

Niebuhr’s works are also full of small moments, anecdotes, observations, local histories and the like, which he hopes are instructive without being pedantic. For example, he attempts to deal with the nuanced concept of “different” as juxtaposed to “strange” by analogizing to something familiar. Thus in dealing with the European perception, clear from Michaelis’s

questions in the *Fragen*, that the practice of eating locusts in the Middle East was strange, Niebuhr writes: “To be sure to Europeans, it is just as inconceivable that Arabs eat locusts with pleasure, as it is unbelievable to Arabs, who have never had contacts with Christians, that Christians consider eating oysters, crabs, shrimp and the like to be an enjoyable meal. In this way the one is as valid as the other.”⁶⁰ In other words, the practice is different, but not strange.

In other instances Niebuhr used the device of empathy to create a sense of the shared humanity of cultures. For example, as he described once while travelling in a small caravan to Shiraz, “On the evening of the 19th, a wrangler in our caravan suddenly died. His brother expressed his grief over this with terrible crying and howling until late at night. He beat himself sometimes about the head, sometimes on the chest and sometimes on his legs and in general was so inconsolable, that I felt sorry for him that his brother had not died in a town where some of his relatives, or hired female mourners, could have helped him in this ceremony. No one in the caravan appeared to take part in his grief.”⁶¹ In this case, Niebuhr does not end the story with the man howling and striking himself, which he easily could have done, remarking on its strangeness. Instead, he leads the reader to an appreciation of what would have been more supportive within the man’s own culture, and to empathy for the shared common experience of loneliness and grief. And this is what he leaves with the reader.

Niebuhr also tried to support accuracy and toleration in matters of religion and cultural beliefs. Once while crossing the Zab River in northern Iraq, Niebuhr’s caravan had to be helped by a community of Yezidis, a people purported incorrectly to be devil worshipers and shunned as a result by Muslims, Jews and Christians alike, and persecuted by Ottoman authorities. Here was a group rejected by everyone. Not surprisingly the Yezidi became a target of Niebuhr’s curiosity. He probed and investigated the sect’s religion and did not blindly accept the common notion

58. Niebuhr (1772), pp. 5-6.

59. Niebuhr (1774-78), Vol. I, p. xii.

60. Niebuhr (1772), p. 171.

61. Niebuhr (1774-78), Vol. II, p. 104.

that the group revered Satan. In the end he reported correctly that the group “did not worship the devil, but simply just honoured God as the creator and benefactor of all people.”⁶²

Finally, Niebuhr tried to create a better understanding of Middle Eastern cultures through the accumulation and reporting of a huge amount of geographic information. The gathering of some basic geographic data – the size of towns, historic and cartographic information – was called for in the Instructions. But early on, long before the death of his colleagues, Niebuhr decided to take his geographical research in a much more cultural and ethnographic direction. Whether it was agricultural machinery, puppet shows, wedding ceremonies and performing monkeys, or head gear, music and systems of policing and justice, Niebuhr was curious about the daily life of the Egyptians. This curiosity characterized his entire stay in the Middle East, and thus his volumes of published works are rich in details of the cultural geography of the regions he visited, including especially religious groups and practices, tribal structures, local customs, history and languages. His focus was not on the cultural antecedents of the Bible, but on the cultural characteristics of the Middle East itself. As a result, Niebuhr’s authored works constitute the most extensive description of the Arabian Peninsula and nearby areas published in the eighteenth century. For over two hundred years they have been valued for their accuracy and open-mindedness. One early reviewer was correct when he held up Niebuhr’s work as an ideal example of what was a travel writer’s duty – that is to present an account that was accurate, comprehensive, clear and honest – devoid of any “makeup or bluster” (*Schminke und Windmacherei*). He saw Niebuhr to be a man who was

62. *Ibid.*, p. 345. for a full discussion of the Yezidi and their religion, see Kreyenbroek (1995). As the author notes in his Introduction, “There is probably no factor that has influenced the perception of Yezidism, both in the Middle East and in the West, as much as the erroneous epithet ‘devil worshiper.’” This was used to justify their persecution in the Islamic world, and stimulated a sort of romantic fascination with them on the part of western scholars in the 19th Century.

“industrious and tireless, without prejudice and superstition.”⁶³

However, as is well known, beyond geography Niebuhr also produced important results for the expedition in cartography, astronomy, palaeography and archaeology. For example, in cartography, his small scale maps and charts of the Red Sea, Yemen, Oman, the Persian Gulf and the Nile Delta were the most accurate for those areas published in the eighteenth century. His chart of the Nile added to the work begun by Norden on his voyage, but was attentive to the proper use of Arabic so as not to repeat the errors of his predecessor. His 28 town plans, including detailed ones such as his plan of Cairo, are of significant historical value because of their uniqueness for the period. His methodology was not based on the perpetuation or evaluation of historic information and existing maps, but on his own measurements in an area, and information he gathered personally from local inhabitants.⁶⁴ For example, his chart of the Red Sea is based on 42 positions determined by navigational astronomy and listed over 200 geographical names.⁶⁵ He followed Michaelis’s instructions and used local names in Arabic to annotate his maps. He did not adopt or assign European names to local features, as was commonly done, and in fact expressly rejected such a practice.⁶⁶ In summary, Niebuhr’s maps and plans represent the greatest single addition to the cartography of the

63. Anton Friedrich Büschings *Wöchentliche Nachrichten von neuen Landcharten, Geographischen, Statistischen und Historischen Büchern und Sachen*, Vol. III, Nr. 15, 10 April 1775, pp. 115-116.

64. Niebuhr (1774-78), I: p. 71. For a discussion of his work in navigational astronomy and hydrography, see Baack (2013b).

65. For Niebuhr’s chart see *Mare Rubrum seu Sinus Arabicus ad observationes maximam partem ab Auctore Annis MDCCLXII et MDCCLXIII institutas delineatus a C. Niebuhr*, in Niebuhr (1772), Plate XX. Forty years after the expedition, Niebuhr’s calculations for his positions in the Red Sea were published in four articles in Zach’s *Monatliche Correspondenz zur Beförderung der Erd- und Himmels-Kunde*, and later were reproduced in the third volume of the *Reisebeschreibung*, published posthumously in 1837.

66. Niebuhr to B. G. Niebuhr, 2-6 September 1810, BBAW, Nachlass B. G. Niebuhr, Nr. 230.

Middle East that was produced through field research in the eighteenth century. As one scholar concluded, “Niebuhr was the first to complete systematically precise astronomically determined positions in land travel through essentially unmapped areas and thereby set a new standard for all future undertakings of this kind.”⁶⁷

Let us for a moment return to the words “precise astronomically determined positions,” because this part of Niebuhr’s work deserves separate attention for two reasons. First, during the initial months at sea on board the *Grønland*, Niebuhr practiced and perfected the practical use of Mayer’s Lunar Distance Method for determining longitude.⁶⁸ It was the accuracy of Niebuhr’s observations and calculations, which were received by Mayer shortly before his death at age 39, that encouraged Mayer to continue to pursue the famous Longitude Prize in Great Britain because Niebuhr’s work convinced him of the efficacy of his method at sea. In the end his widow shared in the award and Niebuhr’s calculations were reproduced in the appendix to the famous British Nautical Almanac, symbolic of his contribution.⁶⁹

Indeed great accuracy characterized Niebuhr’s observations throughout the expedition. More than thirty years after his return, the quality of his scientific work was evaluated by a team of three astronomers, led by Franz Xaver Freiherr von Zach. They concluded that “at the time that Niebuhr undertook his jour-

ney, there was, other than Tobias Mayer, scarcely an Astronomer in all of Germany who could carry out such astronomical observations with more precision, skill and knowledge than Niebuhr ... it is clear from all his observations and calculations, that he had completely mastered all elements of astronomy, that he was completely familiar with the latest progress in this science, and possessed a practical skill that was without equal.”⁷⁰ This judgment is testimony to Mayer’s exceptional qualities as a teacher, and to Niebuhr’s dedication to scientific excellence.

Finally, Niebuhr had achievements of great significance in archaeology and palaeography. His meticulous copying of hieroglyphs while in Egypt were the most extensive and accurate produced up to that time by any visitor to Egypt. And his insights into the challenge of deciphering the ancient Egyptian writings proved to be prophetic.⁷¹ Niebuhr is also recognized for his very detailed descriptions of the subterranean Hindu shrine to Shiva at Elephanta and his extensive representation of the ruins and inscriptions at Persepolis. His drawings and accompanying descriptions at the latter site are considered by the great scholar Heleen Sancisi-Weerdenberg to be “the beginning of truly scientific exploration of that area,” and surpassed in accuracy and insight that of any previous traveller.⁷² Niebuhr’s copies of cuneiform inscriptions at Persepolis are legendary for their precision and accompanying diagnostic insights. His work contributed directly to the deciphering of Old Persian and Middle Persian, and indirectly to the understanding of Babylonian-Assyrian and Elamite.⁷³ His assertion that the site owed nothing to Greek or Egyptian derivation contributed to a new appreciation of Persian antiquities as a manifes-

67. Dörffinger (1980), p. 51. For other similar evaluations of Niebuhr’s cartography, see Hopkins (1967); Kejlbo (1990); and the entry for “Niebuhr” in Henze (1992).

68. For a full discussion, based on much archival research of Niebuhr’s contribution to Mayer’s work on determining longitude, see the two excellent articles by Dieter Lohmeier (2008 and 2010), in addition to Baack (2013b).

69. See “Observations of the Longitude made on board his Danish Majesty’s Ship of War the *Greenland*, after the Method of Professor Mayer’s Lunar Tables; calculated by Carsten Niebuhr”, appendix to the “New and Correct Tables of the Motions of the Sun and Moon, by Tobias Mayer: To which is added the Method of Finding the Longitude Improved, by the same author, Published by Order of the Commissioners of Longitude, 1767” reproduced in Tobias Mayer (2006).

70. Niebuhr (1837), III, Anhang I, pp. 5-7.

71. See Iversen (1993), p. 111, Faure (2004), p. 69 and Hartleben (1906), Vol. I, p. 362.

72. Sancisi-Weerdenburg and Drijvers (1991), p. 21. For a full discussion of Niebuhr’s work at Persepolis see above all Wiesehöfer (2002).

73. In addition to Wiesehöfer above, pp. 279-281, also see the very clear discussion in the same author’s (1996), pp. 230-242, and the informative account of Harbsmeier (1992).

tation of Asian culture separate from the Egyptian-Greco tradition.⁷⁴

In summary, taken as a whole, Niebuhr's scholarly results during the expedition are truly remarkable. They have warranted discussion in some detail because his work in cultural geography, cartography, astronomy, palaeography and archaeology dominate the achievements of the expedition and give it a much more scientific and less Euro-centric character. This is accentuated because he is the interpreter of the expedition. What accounts for Niebuhr's emergence as the most important contributor to the results of the expedition and the one who most changed the perspective of the journey? Obviously the death of his colleagues is significant, but long before their deaths, Niebuhr was producing scholarly results in all of the fields mentioned above. Thus their deaths diminishes the contributions that they might have made, but does not account for Niebuhr's productivity. No, Niebuhr's wide ranging success has its origins elsewhere, namely in an unusual synthesis of experience, values and personality wonderfully suited to the task he faced. First, he was extremely competent technically in the scientific fields in which he was trained, and the standards of accuracy and precision he learned from Mayer, and perhaps, indirectly through Forsskål, from Linnaeus, set the tone for his work in other fields as well. Second, he was proud of his peasant heritage and was most comfortable in a rural environment. This is demonstrated by his voluntary move to Meldorf in 1778, where he remained for the rest of his long life.⁷⁵ Niebuhr was never part of the so-called European metropol, whose members were steeped in the tradition of a classical education and frequently displayed a social and cultural sense of superiority born of that education and their standing as part of the urban middle class and lower nobility. Instead his back-

ground helped him to respect the knowledge and way of life of people who lived in the countryside and small towns and formed part of the ever moving groups of pilgrims, small merchants, wranglers, farmers, and mariners with whom he travelled. Third, and lastly, Niebuhr's personality was central to his success. He combined an incredible, unflagging curiosity with conviviality, honesty and humility. He was truly interested in the diverse peoples he met. How many questions must he have asked? How many conversations did he hold with local people - inquiring, listening, and recording usually without judgment. He did this with a cultural generosity, unpretentiousness, openness and eye for detail that is remarkable.

An Expedition Transformed

In Conclusion, the personal contexts of each member had a decisive impact on the course of the expedition. Because of Haven's weaknesses as an overseas investigator and because of the limitations of the field in which he was trained, the central role of biblical philology declined and virtually disappeared. This reality was confirmed by Michaelis in his memoirs, and was noted explicitly in the detailed obituary of Niebuhr written by his famous son, Barthold Georg.⁷⁶ Because of Forsskål's vigorous personality, ability to transcend his background, and the robust character of Botany in the era of Linnaeus, the contributions of the natural sciences to the final scholarly results of the expedition were very great. Finally, because of Niebuhr's rural background, a personality especially well-suited for cross-cultural encounters, and technical scientific excellence, he was able to produce an impressive array of multi-disciplinary scholarly results. From an intellectual perspective, we might observe that the empirical methodologies of Linnaeus and Mayer superseded the biblical philological objec-

74. Niebuhr, "Persepolis", in Niebuhr (1837), Appendix II, p. 132. Also see Niebuhr to Oluf Tychsen, 9 August 1798, quoted in Krieger (2002), pp. 350-351.

75. The best expression of Niebuhr's attitude about his move from Copenhagen to Meldorf is in Niebuhr to Carl Friedrich Spies, draft, n.d. (April 1778), BBAW, Nachlass C. Niebuhr, Nr. 27. Also see Lohmeier (2010b).

76. Michaelis (1793), pp. 74-76. As B. G. Niebuhr wrote with some exaggeration, the original objective of the expedition, at least as manifested in Michaelis's *Fragen*, became "an infinitesimally trivial matter of secondary importance." Niebuhr (1828), p. 12.

tive of Michaelis which the former were originally intended to serve. In addition, the intrinsic natural and cultural richness of the Middle East asserted itself in its daily interaction with Forsskål and especially Niebuhr. Thus, in this encounter the contemporary indigenous cultures were not going to play a subordinate role to a biblical focus.

In the course of seven years the expedition was transformed. While much of the information gathered was in the end useful to Michaelis in his work on mosaic law and the Hebrew Bible generally, enhanced understanding of the Bible was not the main achievement of the Danish Expedition. Its greatest achievement was new understanding of the physical and natural environment of the Middle East and of the peoples who lived there.

References

- Baack, Lawrence J. 2013a. A naturalist of the Northern Enlightenment: Peter Forsskål after 250 years. *Archives of natural history* 40.1: 1-19.
- Baack, Lawrence J. 2013b. "A practical skill that was without equal": Carsten Niebuhr and the navigational astronomy of the Arabian journey, 1761-1767. *The Mariner's Mirror* 99(2): 138-152.
- Baack, Lawrence J. 2013c. *Undying Curiosity: Carsten Niebuhr and the Royal Danish Expedition to Arabia, 1761-1767*. Copenhagen: Forlaget Vandkunsten.
- Buhle, Johann Gottlieb (ed.). 1794-96. *Literarische Briefwechsel von Johann David Michaelis*. 3 vols. Leipzig: Weidmannschen Buchhandlung.
- Carhart, Michael C. 2007. *The Science of Culture in Enlightenment Germany*. Cambridge, Mass.: Harvard University Press.
- Christensen, Carl. 1918. *Naturforskeren Pehr Forsskål*. Copenhagen: H. Hagerups Forlag.
- Dellmer, Johan. 1953. *Forsskåls Filosofi*. Stockholm: Bokförlaget Natur och Kultur.
- Dörflinger, Johannes. 1980. Die Erforschung der Erde und ihr kartographischer Niederschlag im Zeitalter der Aufklärung - Grundzüge und Marksteine. In: Grete Klingenstein, Heinrich Lutz and Gerald Stourzh (eds.). *Europäisierung der Erde? Studien zur Einwirkung Europas auf die außer europäische Welt*. Munich: R. Oldenbourg Verlag. Pp 39-54.
- Faure, Alain. 2004. *Champollion. Le Savant déchiffré*. Paris: Fayard.
- Forbes, Eric. G. 1980. *Tobias Mayer (1723-62). Pioneer of enlightened science in Germany*. Göttingen: Vandenhoeck and Ruprecht.
- Fors[s]kål, Petrus. 1775. *Flora Aegyptiaco-Arabica sive Descriptiones Plantarum quas per Aegyptum Inferiorem et Arabiam Felicem*. Ed. Carsten Niebuhr. Copenhagen: Möller.
- Fries, Th. M. (ed.). 1906. *Skrifter af Carl von Linné*, Vol. 2. *Valda Smärre Skrifter*. Uppsala: Almqvist och Wiksells Boktryckeri AB.
- Goldberg, David, et al. (eds.). 2009. *Peter Forsskål, Thoughts on Civil Liberty*. Stockholm: Atlantis.
- Hansen, Anne Haslund and Rasmussen, Stig T. (eds.). 2005. *Min Sundheds Forliis. Frederik Christian von Havens Rejsejournal fra Den Arabiske Rejse 1760-1763*. Copenhagen: Forlaget Vandkunsten.
- Hansen, Lars (ed.). 2009-2011. *The Linnaeus Apostles. Global Science and Adventure*. 8 vols. in 11. London: IK Foundation & Co. Vol. 4, *Peter Forsskål's Journal*.
- Harbsmeier, Michael. 1992. Before Decipherment: Persepolitan Hypotheses in the Late Eighteenth Century. *Culture and History* 11: 23-59.
- Hartleben, H. 1906. *Champollion. Sein Leben und sein Werk*. 2 vols. Berlin: Weidmann.
- Henze, Dietmar. 1992. *Enzyklopädie der Entdecker und Erforscher der Erde*. Vol. 15. Graz: Akademische Druck- u. Verlagsanstalt. Pp. 602-612.
- Hepper, F. Nigel and Friis, Ib. 1994. *The Plants of Pehr Forsskål's "Flora Aegyptiaco-Arabica"*. Kew: Royal Botanical Gardens.
- Hess, Jonathan M. 2002. *Germans, Jews and the Claims of Modernity*. New Haven: Yale University Press.
- Hopkins, I. W. J. 1962. The Maps of Carsten Niebuhr: 200 Years After. *The Cartographic Journal* 4: 115-118.
- Hübner, Ulrich. 2002. Johann David Michaelis und die Arabien Expedition 1761-1767. In: Josef Wiesehöfer and Stephan Conermann (eds.). *Carsten Niebuhr (1733-1815) und seine Zeit*. Stuttgart: Franz Steiner Verlag. Pp 364-376.
- Iversen, Erik. 1993. *The Myth of Egypt and Its Hieroglyphs in European Tradition*. Princeton: Princeton University Press.
- Kejlbo, Ib Rønne. 1990. Carsten Niebuhrs Kartografiske opgaver. In: Stig T. Rasmussen (ed.). *Den Arabiske Rejse. En dansk ekspedition set i videnskabshistorisk perspektiv*. Copenhagen: Munksgaard. Pp. 269-302.
- Kirketerp-Møller, Hertha. 1970. Fra København til Konstantinopel 1761. På Grundlag af F. C. von Havens Dagbog. *Fund og Forskning* 17: 79-94.
- Kirketerp-Møller, Hertha. 1979-80. Arsenik og Gamle Håndskrifter. *Fund og Forskning* 24: 119-140.

- Klausewitz, W. and Nielsen, Jørgen G. 1965. On Forsskål's collection of fishes in the Zoological Museum of Copenhagen. *Spolia Zoologica Musei Hauniensis* 22: 1-29 and 38 plates.
- Koerner, Lisbet. 1999. *Linnaeus: Nature and Nation*. Cambridge, Mass.: Harvard University Press.
- Kreyenbroek, Philip G. 1995. *Yezidism - Its Background, Observations and Textual Tradition. Texts and Studies in Religion*. Vol. 62. Lewiston: E. Mellen Press.
- Krieger, Martin. 2002. Zwischen Meldorf und Bützow. Carsten Niebuhrs Korrespondenz mit Oluf Tychsen. In: Josef Wiesehöfer and Stephan Conermann (eds.). *Carsten Niebuhr (1733-1815) und seine Zeit*. Stuttgart: Franz Steiner Verlag. Pp. 341-356.
- Legaspi, Michael C. 2010. *The Death of Scripture and the Rise of Biblical Studies*. New York: Oxford University Press.
- Lindroth, Sten. 1983. The Two Faces of Linnaeus. In: Tore Frängsmyr (ed.). *Linnaeus. The Man and His Work*. Berkeley: University of California Press. Pp. 1-62.
- Linnaeus, Carl. 1759. *Instructio peregrinatoris*. Uppsala.
- Lohmeier, Dieter. 2005. Ein Leben im Zeichen der Arabischen Reise: Carsten Niebuhr. In: Dieter Lohmeier. *Die weltliterarische Provinz. Studien zur Kulturgeschichte Schleswig-Holsteins um 1800*, ed. Heinrich Detering. Heide: Boyens. Pp. 187-244.
- Lohmeier, Dieter. 2008. Carsten Niebuhr, Tobias Mayer und die Längengrade. *Fund og Forskning* 42: 73-114.
- Lohmeier, Dieter. 2009. Heinrich Wilhelm Schmeelkes Biographie seines Onkels Carsten Niebuhr. *Jahrbuch der Männer von Morgenstern* 88: 187-229.
- Lohmeier, Dieter. 2010a. Mann, Spies wird denken, es rappelt bei dir nach Meldorf zu ziehen: Carsten Niebuhr erklärt einem Freund. *Dithmarscher Landeszeitung*. 16 January 2010, p. W22.
- Lohmeier, Dieter. 2010b. Mondistanzen und Längengrade. Der Briefwechsel zwischen Carsten Niebuhr und Tobias Mayer 1761. *Fund og Forskning* 49: 135-165.
- Löwenbrück, Anna-Ruth. 1986. Johann David Michaelis et les débuts de la critique biblique. In Yvon Belavel and Dominique Bourel, eds. *La siècle des Lumières et la Bible*. Paris: Beauchesne. Pp. 113-128.
- Löwenbrück, Anna-Ruth. 1988. Johann David Michaelis' Verdienst um die philologische-historische Bibelkritik. In: Henning Graf Reventlow, Walter Sparr and John Woodbridge (eds.). *Historische Kritik und biblischer Kanon in der deutschen Aufklärung*. Wiesbaden: Otto Harrassowitz. Pp. 157-170.
- Löwenbrück, Anna-Ruth. 1995. *Judenfeindschaft im Zeitalter der Aufklärung, Eine Studie zur Vorgeschichte des modernen Antisemitismus am Beispiel des Göttinger Theologen und Orientalisten Johann David Michaelis (1717-1791)*. Frankfurt am Main: Peter Lang.
- Mayer, Tobias. 2006. *Schriften zur Astronomie, Kartographie, Mathematik und Farbenlehre*. Ed. Karin Reich and Edward Anthes. Vol. 3. Hildesheim: Olms-Weidmann.
- Michaelis, Johann David. 1762. *Fragen an eine Gesellschaft Gelehrter Männer, die auf Befehl Thro Majestät des Königs von Dannemark nach Arabien reisen*. Frankfurt am M.: Johann Gottlieb Garbe.
- Michaelis, Johann David. 1793. *Lebensbeschreibung von ihm selbst abgefasst*. Leipzig: Johann Ambrosius Barth.
- Moulton, Gary (ed.). 1999. *Herbarium of the Lewis & Clark Expedition*. Vol. 12. Lincoln: University of Nebraska Press.
- Nicolson, Malcolm. 1987. Alexander von Humboldt, Humboldtian Science and the Origins of the Study of Vegetation. *History of Science* 25: 167-194.
- Nicolson, Malcolm. 1990. Alexander von Humboldt and the geography of vegetation. In: Andrew Cunningham and Nicholas Jardine (eds.). *Romanticism and the Sciences*. Cambridge: Cambridge University Press. Pp. 169-185.
- Niebuhr, Barthold Georg. 1828. Carsten Niebuhrs Leben. In: Barthold Georg Niebuhr. *Kleine historische und philologische Schriften*. Bonn: Eduard Weber. Pp. 1-82.
- Niebuhr, Barthold Georg. 2004. *Carsten Niebuhrs liv*. Copenhagen: Forlaget Vandkunsten.
- Niebuhr, Carsten. 1772. *Beschreibung von Arabien. Aus eigenen Beobachtungen und im Lande selbst gesammelten Nachrichten*. Copenhagen: Möller.
- Niebuhr, Carsten. 1774-78. *Reisebeschreibung nach Arabien und andern umliegenden Ländern*, Vols. I and II. Copenhagen: Möller.
- Niebuhr, Carsten. 1803, 1804. Biographischen Nachrichten aus Tobias Mayers Jugendjahren aus einem Schreiben des Königlich Dänischen Justiz-Raths C. Niebuhr. In: Franz Xaver von Zach. (ed.). *Monatliche Correspondenz zur Beförderung der Erd- und Himmels-Kunde* 8: 45-56, and 9: 487-491.
- Niebuhr, Carsten. 1837. *Reisebeschreibung nach Arabien und andern umliegenden Ländern, Vol. 3. Carsten Niebuhrs Reisen durch Syrien und Palästina, nach Cyprien, und durch Kleinasien und die Türkei nach Deutschland und Dänemark*. Ed. J. N. Gloyer and J. Olshausen. Vol III. Hamburg: Perthes.
- Pedersen, Olaf. 1992. *Lovers of Learning. A History of the Royal Danish Academy of Sciences and Letters 1742-1992*. Copenhagen: Munksgaard.
- Provençal, Philippe. 2010. *The Arabic Plant Names of Peter*

- Forsskål's flora Aegyptiaco-Arabica. Biologiske Skrifter 57.*
Copenhagen: Det Kongelige Danske Videnskabernes Selskab.
- Rasmussen, Stig T. 1986. *Carsten Niebuhr und die Arabischen Reise 1761-1767. Ausstellung der Königlichen Bibliothek Copenhagen in Zusammenhang mit dem Kultusministerium des Landes Schleswig-Holstein.* Heide: Westholsteinische Verlagsanstalt Boyens & Co.
- Rasmussen, Stig T., ed. 1990a. *Den Arabiske Rejse. En dansk ekspedition set i videnskabshistorisk perspektiv.* Copenhagen: Munksgaard.
- Rasmussen, Stig T. 1990b. Frederik Christian von Haven og de filologiske resultater. In Stig T. Rasmussen, ed. 1990. *Den Arabiske Rejse. En dansk ekspedition set i videnskabshistorisk perspektiv.* Copenhagen: Munksgaard. Pp. 303-337.
- Reill, Peter Hanns. 1975. *The German Enlightenment and the Rise of Historicism.* Berkeley: University of California Press.
- Sancisi-Weerdenburg, Heleen and Drijvers, Jan Willem, eds. 1991. *Achaemenid History VII. Through Travellers Eyes.* Leiden: Nederlands Instituut Voor Het Nabije Oosten.
- Schück, Henrik. 1923. *Från Linnés Tid. Peter Forsskål.* Stockholm: P. A. Norstedt och Söners Förlag.
- Selle, Götz von, ed. 1937. *Die Matrikel der Georg-August-Universität zu Göttingen, 1734-1837.* Hildesheim: A. Lax.
- Sheehan, Jonathan. 2005. *The Enlightenment Bible. Translation, Scholarship, Culture.* Princeton: Princeton University Press.
- Spärck, Ragnar. 1963. Peter Forsskåls Arabiske Rejse og zoologiske Samlinger. *Nordenskiöld-samfundets tidskrift* 23: 110-136.
- Steinby, Torston. 1970. *Peter Forsskål och Tanker om Borgerligen Friheten.* Helsingfors: Hufvudstadsbladet.
- Uggla, Arvid Hjalmar, ed. 1950. *Resa till lycklige Arabien. Petrus Forsskåls Dagbok 1761-1763.* Uppsala: Almqvist och Wiksells Boktryckeri AB.
- Wiesehöfer, Josef. 2002. "... sie waren für ihn das Juwel von allem, was er gesehen" – Niebuhr und die ruinenstätten des Alten Iran. In Josef Wiesehöfer and Stephan Conermann, eds. *Carsten Niebuhr (1733-1815) und seine Zeit.* Stuttgart: Franz Steiner Verlag. Pp. 267-285.
- Wiesehöfer, Josef and Conermann, Stephan, eds. 2002. *Carsten Niebuhr (1733-1815) und seine Zeit.* Stuttgart: Franz Steiner Verlag.
- Wolff, Torben. 1967. *Danske Ekspeditioner på Verdenshavene.* Copenhagen: Rhodos.
- Wolff, Torben. 1990. De zoologiske resultater af den Arabiske Rejse. In Stig T. Rasmussen, ed. *Den Arabiske Rejse. En dansk ekspedition set i videnskabshistorisk perspektiv.* Copenhagen: Munksgaard. Pp. 231-237.