

HISTORY OF THE BIBLE CARTOGRAPHY AS AN EXAMPLE OF THE CARTOGRAPHY OF HISTORY

Adam Linsenbarth
Institute of Geodesy and Cartography
Modzelewskiego St. 27, 002-679 Warsaw, Poland
adam.linsenbarth@igik.edu.pl

Abstract

The paper presents the history of the Bible cartography which is referred to the territory of the Bible events described both in the Old and New Testament. This history was divided into several stages starting from the ancient data which can be considered as the precursors of cartography. Since 13th century the classical Bible cartography was developing very rapidly. The cartographers from the various countries, representing the different cartographic schools were engaged in the elaboration of maps and atlases of the Holy Land. Hence their works represent the cartography of the Bible history as well as the history of cartography.

Introduction

The Holy Land, as a place of many historical and Bible events, was presented on various maps and atlases. There are more than 6 000 maps referring to the Holy Land which have been produced up to this date (Ron, 1989). These maps represent both the cartography of the Bible history and the history of cartography presented by Bible maps.

The maps of the Holy Land belong to the very specific kind of the historical maps presenting the Bible events as well as the other historical events which occurred in the Bible period. They are based on the geographic maps on which the historical or Bible contents are overlaid.

The history of the Bible cartography has its roots in the old ancient documents in which the territories of Bible events were described. The long history of the Bible cartography can be divided into several stages which indicate the progressively improvement of the achievements in the field of geodesy, geography, cartography and Bible studies.

Precursors of the Bible cartography

As the precursors of the geographic maps, the descriptions of the terrain geography and geographic objects can be considered As the precursors of the geographic maps. There are many ancient documents describing the geographic space and objects. The oldest sole historical information, from the Early Bronze Age, referring to the Palestine territory, are inscriptions on the tombs in

Abydos in Egypt describing the five military campaigns in the time of Pepi I (2390-2361 B.C.) to "*The land of Sand-Dwellers*" (Aharoni, 2002). This name was used for the lands on the east of Egypt. There is detailed information referring to one of these campaigns to the area of Acco and Jizreel Valley. In this inscription the headland of Carmel is called "*Nose of the Antelope's Head*". The most impressive and principal information regarding the cities on the Palestine territory are so called "*Execration Texts*" presented on the clay figurines from Sakkara. In the earlier group of these texts, from the mid-twentieth century B.C., only Jerusalem, Ashkelon and Rehob are mentioned. In the later group of these texts from the end of nineteenth century B.C. there are listed sixty-four towns from Palestine territory.

During the time of Thutmose III (1503-1483 B.C.), the scribes, described in details his seventeen campaigns. The list of conquered towns was inscribed on the wall of Karnak temple. The roster has one hundred and twenty names, which represent a geographical spread from Gaza to Kadesh. Besides the towns, such geographical objects like "mountains" and "valleys" appear in addition to the town names. In the El-Amarna letters and in the rosters of later pharaohs, there are many other names of towns and descriptions of their campaigns. On the stele found in Beth-Shean, the campaign of Seti I in 1291 B.C. was described. The expeditions of Ramses II, in 1275 and 1274 B.C., to the northern Canaan are recorded on a Luxor relief and on the victory stele at Nahr el-Keleb. One of the topographical lists follows an itinerary along the coast of Mediterranean. The campaign of Merneptah in 1207 B.C., was recorded on his victory stele in Thebes (Aharoni, 2002).

A lot of geographic and cartographic information is contained in the two works of the famous historian Josephus Flavius (37-103 A.D.): *The Jewish War and the Jewish Antiquities*. Some of this information is very detailed, giving a very good impression of the Palestine geography and history. Information included in his works was later used by geographers and cartographers for the edition of Bible maps and atlases.

Claudio Ptolemaios (100-168 A.D.) astronomer, geographer and cartographer from Alexandria, elaborated a map of the world and edited a book *Geographic Sciences* comprising a roster with 6411 names of geographical objects. Unfortunately his maps were lost, but on the basis of his book the maps were reconstructed by the cartographers in XIV century.

The oldest geographical lexicon to the Bible is the famous Onomasticon of Biblical Place Names - written in Greek - by the bishop Eusebius of Cesarea (260-340 A.D.) around 320 A.D. and translated into Latin by St. Jerome shortly before 400 A.D. His onomasticon comprises 983 biblical object names. This invaluable lexicon was one of the main sources for the compilation of geographic and bible maps of Palestine.

A lot of information can be found in the huge amount of diaries, itineraries and books written by the travelers and pilgrims to the Holy Land. Among the travelers, there were also geographers, ethnographers and historians. One of the

first book describing a tour through the Holy Land was "*Itinerarium Burdiglensis*" written by unknown French traveler before 333 A.D.

St. Jerome (347-420 A.D.), before he started to translate the Bible into Latine, during two years traveled over the Palestine territory and visited all Bible places. In the year 385 he compiled the Bible map of Palestine. Hence, very often St. Jerome is called the first cartographer of the Holy Land (Linsenbarth, 2007). The XII century copy of his map survived up to the present time. His lexicon was later used for the compilation of various maps.

The mosaic map of Madaba is the oldest existing map of Palestine (Donner, 1992). The Madaba map was created in the second half of 6th century probably before 565 A.D. This map was created on the floor of the church of St. George in Madaba city in Jordan. According to the archeological investigations, performed during the restoration works in 1965, the original map measured about 15,60 m in length and 6,00 m in width. It covered ca 93 square-meters and consisted of ca 2 millions mosaic cubes.

The details represented on this mosaic refer to the physical and historical cartography of Palestine and Lower Egypt. The map is oriented to the east, not to the north. The Holy Land - with Jerusalem in its centre - is seen from the west. The Madaba map represents the specific kind of cartography presenting the historical events but also the state of art for particular historical period.

The above mentioned old sources of information created a basic material for Bible maps. The description of the geography of the Holy Bible territory, which can be found in old archives in Egypt and Mesopotamia and in the rosters and onomasticons, allowed cartographers to compile maps in later periods. In these old documents many historical events were recorded. Also in the Bible there are two groups of information regarding both the physical geography of the Bible territory and description of the Bible events. The geographical information included in the Bible is related to the description of the terrain topography, towns and settlements, mountains and ridges.

Bible cartography between 12th and 15th century

The Bible maps have various territorial extents. Most of these maps are related to the old Palestine territory, some are covering larger area including territories of Mesopotamia and Lower Egypt but there are also maps on which the territories extended up to the Italy are presented.

An excellent example of the map based of the personally collected geographic materials was the map compiled by the famous Moslem cartographer and traveler el- Idrisi (1100-1166 A.D.). The map was directed to the south. His map has very limited geographical contents, because only the main mountain ridges and rivers as well as a very limited number of towns is indicated. Also the location of these geographic elements is not adequate to their proper positions in the geographic space. Al-Idrisi was also the author of the world map engraved in silver in the year 1154 A.D.

From 12th century, there is a map of Jerusalem in circular form. Outside the city walls, the adjacent towns are shown. On the old maps, the Jerusalem was shown as a centre of the world. In 1250 the English monk Mathew Paris prepared a pilgrim route map from Europe to the Holy Land, with special attention paid to Jerusalem and Acco. In 1321 the Venetian nobleman Marino Sanudo prepared - for the Pope John XXII - several maps for his book "Liber Secretorium Fidelium Crucis". One of his maps presents in details the Holy Land. For the first time the true shape of Palestine was presented and the grid of squares was added.

The drastic changes in cartography occurred in 15th century by the application of the letterpress by Johannes Gutenberg (1399-1489), who in 1445 printed the Holy Bible. In 1475 in Luebeck, a very original map of Palestine was edited by Luca Brandis de Schass. The map consists of two joined sheets with dimension 388 x 578 mm, which were included in his work: *Rudimentum novitiorum sive chronicarum historiarum epitom.* The map is divided into many irregular figures representing geographic or historical objects with signatures of particular objects. In the middle of this map the enlarged perspective view of Jerusalem is located. This map is considered to be one of the first printed Bible map.

In second half of 15th century there were several pilgrims traveling to the Holy Land. One of these pilgrims was the German Deacon Bernhard von Breidenbach who visited the Holy Land in 1483. He was accompanied by the Flemish painter Erhard Reuwich. Bernard von Breidenbach prepared very detailed verbal and graphic description of the Holy Land, while Erhard Reuwich compiled a very interesting map of the Holy Land oriented to the east. This map incorporates very detailed view of Jerusalem drawn from the Mount of Olives.

All the maps of the Holy Land edited in this period has a very poor geometric value, but the Bible contents referring to the Bible events is presented very impressively.

Bible cartography in 16th and 17th centuries

A very specific, interesting and innovative map was *Tabula Peutingeriana* acquired by Conrad Peutinger in 1507. The original map was drawn probably in the 12th or 13th century but it was apparently a copy of much older maps drawn in 4th century. The map is in the form of a very elongated vellum scroll and presents the area between Europe and India. The total length of this map is 6.28 m and the high 32.5 cm. The mapping area is cut into 12 segments. On the sixth segment the Palestine is shown. This is thematic road map and represents the network of Roman roads and road stations and distances between those stations.

There are several other old maps edited in the 16th century. Among them are maps made by Gerard de Jode and by Gerhard Mercator. Gerhard de Jode (1509-1591), compiled a map of the Holy Land which was edited in Antwerp in 1578. This map was included in his work *Speculum orbis terrare.* The map looks very nice but it is presenting rather the artistic view than the map or sketch due to completely incorrect location of the geographic objects. In the lower right corner

of the map, a very nice perspective view of Jerusalem, drawn by Fernando Bertelli (1556-1572), is shown (Ran, 1989).

Gerhard Mercator (1512-1594), the Flemish cartographer, the world known creator of the scientific cartography, the author of the new cartographic projection, introduced the name “atlas” as a collection of maps. In one of his atlases imprinted in 1608 in Amsterdam by Jan Jansson of Arnheim, the map of Canaan was included. On the map, which is oriented to the west, the boundaries of tribe’s territories are depicted. The Bible objects are depicted very clearly but with low geometric precision. On the maps from this period, there is one mistake repeated consequently on all maps: the shape of the Jordan River between the Dead Sea and Genezaret Lake instead of the nearly straight line is looking like sinuous curve.

The territory of the Holy Land was mapped by the Paolo Furiani from Venetia in 1589. The map presents the territory of Palestine from the Dead Sea on the south up to the Turkey on the north. The Cyprus is very well presented.

The Flemish cartographer Abraham Ortelius (1512-1594), also visited the Holy Land. His atlas under the title *Theatrum Orbis Terrarum* was printed in Antwerp in years 1570-1612. Among the various maps there is a map presenting the routes of Patriarch Abraham from Mesopotamia to Canaan. This map was printed in Antwerp in 1608. From the artistic point of view it is one of the most impressive maps with very nice ornaments around the frame. The map was oriented to the north. Ortelius was also the author of a map, printed in 1608 in Amsterdam by Jan Jansson of Arnheim, presenting the route of Israel from Egypt to the Promised Land. There were several editions of his maps of the *Terra Sancta* edited in the years 1584, 1601 and 1619. All these maps are oriented to the east and are looking very similar. The geometry of these maps is rather incorrect. This remark is concerning the wrong shapes of the lakes and rivers. Another Ortelius map, presenting the travels of St.Paul, was edited in 1677 by Johannes Janssonius van Waesbergen.

From the artistic point of view, there is another very impressive map edited in Antwerpen in 1598 by Joannes van Doetichum (1592-1630). The map was based on the Abraham Ortelius map. The original of this map is in the Moldovan Family Collection in New York. It is a very nice physical geographic map indicating both the hydrographic network and mountain ridges. Unfortunately the geometry of this map is incorrect.

One of the most famous world cartographers Willem Janszoon Blaeu (1571-1638) from Amsterdam published a world atlas *Theatrum Orbis Teatrum Sive Atlas Novum* which also incorporates the maps of Holy Land. On one of the maps drawn in 1629, which were included in the first edition of his atlas in 1635, Blaeu described the Exodus from Egypt to the Promised Land. The route of the Children of Israel is shown by a light-blue broken line. On the maps there are applied very impressive symbols like red tents illustrating the forty-one desert encampments and red buildings and towers for marking of cities. On the map the boundaries of the tribes of Israel are marked. The map is illustrated by the

picture of Moses holding the two stone tablets and Aaron wearing the Ephod. From a topographic point of view the map very roughly describes the Palestine territory. The coast line is incorrect as well as the location and shapes of all rivers. For example the river Kishon connects the Mediterranean Sea with the Lake of Genezareth. Rivers Jarmuk, Jabook and Arnon are located in completely wrong positions. The mountain ridges are strongly depicted on the Sinai territory while on the other parts they are omitted (e.g. Carmel Mountains).

A very impressive presentation, of the exodus of Israel from Egypt to Canaan, is on the geographical map edited by Visscher family in 1650 in Amsterdam. The exodus track is marked very well indicating the particular stages of this travel through the Red Sea and Sinai desert area. In the lower right corner there are very nice illustrations presenting the Holy Bible symbols.

The French Bible cartography from 17th is represented by the Nicholas Sanson (1600-1667) who was a founder of the Geographic and Cartographic School in France. He published several atlases as well as maps of all regions of the earth. His map of the Palestine was published by Robert de Vaugondy in 1745. The terrain topography is presented incorrectly. The coast line is not true. Many towns are located in wrong positions, like Rabba in Jordan situated ca 40 km to the north or Capharnaum which is located on the east east of the Genezareth Lake. The division of the Land of Israel into tribal lots is presented.

Several old maps were attached to the Bible and books printed at appropriate time. Pierre Duval in 1668 in Paris attached to the book of Josephus Flavius a map of Palestine.

It should be noted, that in the above described period of the Bible cartography, still the geographic reference background is incorrect but on the other hand there was a great progress in the cartographic preparation of Bible maps.

Bible cartography in 18th and 19th centuries

In 1716 John Senex, edited a Bible atlas under the title *Sacred geography contained in six maps* referring to various periods of the Bible history. Among others there was the Map of the Holy Land and a map presenting the St.Paul voyage to Rome. On the map of the Holy Land many towns are presented but with a very approximate identification. The coast line is also drawn very roughly. The map of St.Paul voyages presents a quite correct shape of Turkey, Greece and Italy and belongs to the first maps depicting the voyages of St.Paul. Another classical example is a map of Thomas Hutchinson printed in 1733 in London as an attachment to the book of Josephus Flavius presenting the history of Old Testament.

One of the best maps from the 18th century is very detailed map of Palestine compiled by Pierre Jacotin in the years 1798-1799 during the French expeditionary army which conquered Egypt. The map were based on compass traverses performed under the direction of Pierre Jacotin. The map was printed

in Paris in 1818 in five sheets. This map can be considered as the first modern maps at scale 1:100 000 of the Palestine territory.

German cartographers dealing with the Holy Land can be represented by Rabbi Yehoseph Schwarz (1804-1865) who was born in Germany (Ran, 1989). In 1829 he published the map of the Holy Land which was printed in three editions. This is an example of very well edited map of Palestine. The coast line and all the rivers and valleys are shown very properly. The same is related to the presentation of the terrain topography. The mountains and their ridges are depicted very impressively. The depression of the Jordan valley is correctly marked. On his map the information regarding the boundaries of the tribal territories and the old Canaan towns described in the Bible were introduced.

In 1833 R.Yehoseph Schwarz emigrated to Palestine and settled in Jerusalem. In 1845 he completed his treatise under the title "Tevuot Ha'Artez". His work was focused on the geography of Palestine, tribal divisions, biblical names and places. This work was based on his "in situ" studies of the Palestine territory. He described his research works as follows: *"I shall now write what I saw with my own eyes. I climbed mountains, descended into valleys, searching well. Some things I examined repeatedly, listing to truthful people, in order to arrive at the absolute truth"* (Ran, 1989)

For the first half of 19th century two other examples should be recalled. The first one is a map compiled by James Silk Buckingham in London in 1821. This map is presenting the route during his visit in Palestine together with positions of other places from D'Anville from 1818. The second example is a map compiled by Sidney Hall and printed in London in 1823. This map consists of three maps on the same sheet. One is presenting the countries visited by the St. Paul, the second presents the Asia Minor and Greece and the third presents the Palestine.

The last example, which closes the period of bible cartography at the end of the first half of nineteenth century is a physical map of Palestine and adjacent countries compiled in 1850 in London by August Peterman. This is a classic physical map, looking like the majority of modern maps. It is the only one map on which the Jordan depression is indicated. On the left top corner there is a diagram with meteorological data referring to the Palestine territory.

In the second half of 19th century many modern maps of Palestine territory were compiled, like a map at scale 1:63,300 edited in 1880 by the British Palestine Exploration Found. This trend was continued in the first and in the second half of 20th century.

In the presented period of the Bible cartography a great evolution occurred in the domain of the geographic reference data which were based on the modern topographic surveys. For the first time the modern Bible maps and atlases were edited.

Relationship between the history of Bible cartography and cartography of history

The Bible cartography has a double character. From one side the Bible cartography represents the history of Bible events and from the other side it can be considered as the history of cartography. In the case of the Bible atlases, the maps included in these atlases, present the general history as well as the history of the Bible events. They are related to the particular period of history between 1 800 years B.C. and ca 100 A.D. In some cases this period is extended before and after the period of the Bible events. Hence the history presented by the Bible cartography is related to the defined historical period.

On the other hand the history of the Bible cartography is referred to the much longer period and is reflecting the evolution of the cartography, particularly the evolution of the Bible cartography.

The same historical and Bible events were presented by the cartographers in various historical periods but with application of new methods and technologies. The evolution of the geographic science and the development of cartographic methods and technologies created the possibilities for much more precise presentation of the historical and Bible events. The knowledge about the historical and Bible events was only updated on the basis of new information regarding the location of the Bible places and based mainly on the contemporary archaeological investigations such as the ancient documents found in Qumran in 1947.

Much more new data, referring to the geospace of the Bible territory, were collected by geographers. The new topographical maps were prepared on the basis of the modern geodetic and topographical surveys. As the result of such surveys the better geographic reference maps were produced and were used for editing the Bible maps in consecutive periods.

The Bible maps were elaborated by a large number of cartographers in various countries. The attention of the cartographers from all the Europe was focused during the centuries on the Holy Land, hence the unbelievably amount of more than 6000 Bible maps was edited from the beginning of cartography up to the present time.

Such huge collection creates a very valuable material for cartographic studies. It is possible to study the development of the history of cartography as well as to perform the comparatory studies of the cartographical techniques and technologies applied in the same particular historical period by various cartographers in several countries.

The performed analysis of the old maps of Bible territory indicated that in the same historical period, the cartographers from various countries applied different geographic reference data and the maps elaborated and edited in the same time present different quality and accuracy. Also the applied techniques of cartographic presentation were different.

Final remarks and acknowledgements

The Bible cartography is related both to the territory on which the Bible events occurred and to the defined time of the Bible history. The attention of cartographers from various countries in particular time of history was focused on the Holy Land and on the events described in the Old and New Testament. The Bible events which are referred to the defined time of the Bible history, were presented on the maps produced in the consecutive centuries. These maps were based on various cartographical materials, both geographic and historical, which generally were prepared in earlier periods. The huge and very unique collection of the old Bible maps, prepared in long time of the history of cartography, represents both the cartography of the history of Bible events and history of cartography. Furthermore the old Bible maps and atlases constitute a very valuable material for the various biblical, historical and cartographical studies and research works.

The author's studies of the old maps of the Holy Land were mostly based on the source materials incorporated in the Jewish National & University Library, David and Fela Shapell Family Digitalization Project, Eran Laor Cartographic Collection, the Hebrew University of Jerusalem. A very high quality of the digital form of the old maps in this collection indicates a very professional conversion of the analogue maps to digital form. The old Bible maps mentioned in this paper can be found in the archive of the Holy Land Maps of the Jewish National & University Library (<http://www.jnul.huji.ac.il>).

Bibliography

Aharoni, Y., A.F. Rainey, M. Avi-yonah, Z. Safrai., 2002, *The Carta Bible Atlas*. CARTA, Jerusalem.

Donner, H., 1992, *The Mosaic Map of Madaba*. Kok Pharos Publishing House, The Netherlands

Gonen, R., 1999, *Biblical Holy Places*, Palphot Ltd, Israel

Linsenbarth, A., 2007, *Geospace of Bible events*. Annals of geomatics. Vol.V. No 8, Warsaw

Ran, N., 1989, *Journeys to the Promised Land*. Studio Editions, London.

Jewish National and University Library. The Eran Laor Cartographic Collection. <http://www.jnul.huji.ac.il>

History of cartography. From Wikipedia, the free encyclopedia. The Fra Mauro map, one great medieval European map, was made around 1450 by the Venetian monk Fra Mauro. It is a circular world map drawn on parchment and set in a wooden frame, about two meters in diameter. Cartography, or mapmaking, has been an integral part of the human history for thousands of years. Anaximenes of Miletus (6th century BC), who studied under Anaximander, rejected the views of his teacher regarding the shape of the earth and instead, he visualized the earth as a rectangular form supported by compressed air. Pythagoras of Samos (c. 560–480 BC) speculated about the notion of a spherical earth with a central fire at its core. “When you get the cartography, chronology and archeology right, you get the inspired Bible story right!” Free Bible Maps! Download below!

b. The maps and chronologies were created by taking the Bible as a true record of earth history. c. Many Bible maps are produced by PhD professors who do not believe the Bible is real history and reject the creation story, the flood, the tower of Babel, the Exodus, the Conquest. Further they reject inspiration of the Bible and view David and Solomon as mythical people who never lived. The atheism of these Bible map creators lurks in every city the place on their maps.

3. CARTOGRAPHY: Map creation. a. Great care has been taken in utilizing satellite imagery to get a perfect, distortion free map The book gives a good insight into the history of surveying in China and its links with cartography. The main driving force in China to survey and draw maps was often for military reasons but also for problems such as water conservancy. Once Christianity spread across Europe those of learning were Churchmen and the truth about the world, they argued, was contained in the Bible and not to be found by scientific investigation. An example of Gemma Frisius's triangulation. Following Gemma Frisius, major contributions were made by Gerardus Mercator who studied under Frisius. Mercator made many new maps and globes, but his greatest contribution to cartography must be the Mercator projection.