

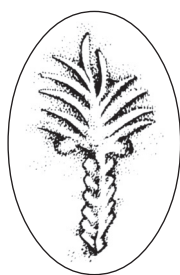
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Centro Ricerche Archeologiche e Scavi di Torino per il Medio Oriente e l'Asia

Near Eastern Capital Cities in the 2nd and 1st Millennium B.C. Archaeological and Textual Evidence

Torino, May 14-15th, 2010 - Biblioteca di Lettere e Filosofia
Rettorato dell'Università degli Studi di Torino, via Po 17

Friday May 14th, 2010

- 9.00 a.m. S. de Martino (Torino) "Introduction"
- 10.00 a.m. **Babylon**
C. Lippolis (Torino), P. Baggio (Padova), B. Monopoli (Padova) "Babylon's Urban Layout and Territory from Above"
O. Pedersén (Uppsala) "Work on a Preliminary Digital Reconstruction of Babylon Using Archaeological and Textual Evidence"
- 11.30 a.m. G. Bergamini (Torino) "Babylon in the Achaemenid and Hellenistic Period"
M.G. Biga (Roma) "Babylon and Beyond Babylon in the 1st Half of the 2nd Millennium BC"
S. Graziani (Napoli) "Babylon caput mundi"
A. Peruzzetto (Paris), J. Allen (Cairo), G. Haney (San Francisco), G. Palumbo (Amman) "The Future of Babylon Project: Site Mapping and Management Planning at Babylon"
- 5.00 p.m. **Assur**
A. Hausleiter (Berlin) "Assur from the 2^d to the 1st Millennium BC - Archaeological Challenges"
E. Cancik-Kirschbaum (Berlin) "Assur: The Making of a Hegemonial Center in the Late 2^d Millennium BC"
- Hattusa**
A. Schachner (Istanbul) "From an Anatolian Principality to an International Empire"
G. Wilhelm (Würzburg) "Combining Textual and Archaeological Evidence of Urban Structures. The Case Hattusa"

Saturday May 15th, 2010

- 9.00 a.m. **Neo-Assyrian Capitals**
J. Reade (London) "The Evolution of Assyrian Imperial Architecture: Practical and Ideological Considerations"
P. Fiorina (Torino) "The Survey at Nimrud: Evidence on Topography and Chronology"
G. Lanfranchi (Padova) "A New Palace for My Royalty! The Wandering Capital of the Neo-Assyrian Empire"
- 11.00 a.m. **Neo-Assyrian Models in the Peripheral Areas**
S. Mazzoni (Firenze) "The Architecture of the Luwian and Aramaean Citadels and the Assyrian Provincial Centres: Models in Contact"
- Seleucia**
V. Messina (Torino) "Seleucia on the Tigris. The Babylonianopolis of Antiochos I"
F. Joannes (Paris) "Une ou plusieurs capitales? Le poids des particularismes régionaux en Babylonie achéménide et hellénistique"



Proceedings of the International Conference
NEAR EASTERN CAPITAL CITIES IN THE 2nd AND 1st MILLENNIUM B.C.
ARCHAEOLOGICAL AND TEXTUAL EVIDENCE

Torino, May 14-15th, 2010

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PLATES

OLOF PEDERSÉN
WORK ON A DIGITAL MODEL OF BABYLON
USING ARCHAEOLOGICAL AND TEXTUAL EVIDENCE

Work on a digital model of Babylon using an architectural CAD program started in 2009.¹ The basic archaeological and textual information used for the building of the model are the available results of the German archaeological excavation 1899-1917 with some additions from earlier and later excavations. Plans, sections, and archaeological descriptions of the excavated buildings and open spaces from the German and other excavations have been combined with satellite images and inscriptional evidence both on clay tablets from archives and libraries and on monuments and building material from Babylon. Much of this huge and interesting material still has to be studied in detail and be published, so the evidence is often quite preliminary even today some 100 years after the excavations.

The presentation here of the preliminary multilevel digital model of Babylon is limited to the period under Nebuchadnezzar II (604-562 BC) when it was the largest city in the world within city walls and the centre of the large Neo-Babylonian Empire. Other levels will be discussed in other contexts.²

1. *Babylon: The site and the sources*

The ruins of Babylon are situated near the west end of the northern half of the fertile floodplain of southern Mesopotamia some 85 km south of the modern Iraqi capital Baghdad. On the immediate south side of Babylon are the outskirts of the modern city of Hilla, the capital of the modern Iraqi province that has also been given the name of Babylon. The Euphrates arm flowing through the city has to the present day dominated the landscape around Babylon. The area is traditionally, like the area around Baghdad, a centre for intensive, small-scale agricultural units often with gardens for growing vegetables and fruits.³

The remains of Babylon consist essentially of a number of tells and long extended heights indicating the stretches of the city walls. In the area of the eastern inner city, there are several tells with the modern names Kasr, Merkes, Ishin-Aswad, Amran, Sahn, and Homera; in the northernmost end of the outer city is the distinct tell Babil, still keeping the ancient name of the city.⁴

During the last 200 years, our knowledge concerning Babylon has changed and increased enormously. Before this time, most of the knowledge about Baby-

lon came from different literary traditions, e.g. the Bible and classical authors. During the last centuries archaeological activities have changed our understanding fundamentally. Further studies both on the site with modern technology, new surveys and excavations, as well as refined studies and publications of the old excavations results including the large number of ancient texts, excavated but never published, have the potential to provide large changes on many aspects of our understanding.

In the Middle Ages, Babylon was in Arabic literature referred to as the place where bricks could be mined.⁵ The brick-mining activity continued during the 19th century on a large scale. During the reign of Nebuchadnezzar II, large-scale construction work in Babylon with good quality baked bricks had often succeeded the earlier less monumental buildings made of unbaked bricks. These baked bricks were after brick-mining reused for construction of modern buildings in Hilla and other Iraqi cities as well as for the late Ottoman construction of the Hindiya dam. Hormuz Rassam and other early excavators had to face the problem that they had official permission to excavate for antiquities whereas at the same time brick miners had official permission to take bricks away in order to construct modern buildings. The first attempt was to try collaboration between the two groups. Robert Koldewey as an architect interested in ancient buildings succeeded in stopping the brick miners in the two main brick-mining areas of the city, first in Kasr, only

¹ ArchiCAD has been used for the model, Artlantis for the renderings. Support for the work with the digital model of Babylon has come from Excellence Cluster Topoi at Freie Universität Berlin and the Urban Mind project at Uppsala University. Vorderasiatisches Museum Berlin and Deutsche Orient-Gesellschaft Berlin are kindly thanked for access to material from the German excavations. A special thanks to the colleagues at the University of Torino for organizing the workshop on “Near Eastern Capital Cities in the 2nd and 1st Millennium B.C. Archaeological and textual evidence” in May 2010.

² For introduction and general questions, see e.g. KOLDEWEY 1990; RENGER 1999; PEDERSÉN 2005; MARZAHN, SCHAUERTE 2008; PEDERSÉN, SINCLAIR, HEIN, ANDERSSON 2010, all with numerous additional references. Due to the preliminary character both of the model and of the documentation, detailed references will be published in later studies.

³ WIRTH 1962.

⁴ KOLDEWEY 1990, with additional bibliography.

⁵ JANSSEN 1995.

later on in Babil. But at that time large sections of the old buildings had gone.⁶

Early excavations had a focus on finding cuneiform clay tablets, other aspects of findings were in the early years considered to be less promising. In fact the first major excavation period started after large amounts of cuneiform clay tablets came on the antiquity market in 1876. The British Museum therefore sent Hormuz Rassam 1878-1882 to excavate for clay tablets in Babylon. The early excavations were to a large extent concentrated in the Amran and western Ishin-Aswad areas of Babylon.⁷

The Royal Museums (later called The State Museums) in Berlin and the at that time recently founded Deutsche Orient-Gesellschaft (DOG) sent Robert Koldewey and some other German architects 1899-1917 for large-scale excavations in Babylon. The excavations were conducted during the whole years with large groups of workers, not for a few weeks or months like modern diggings. Most of the information we now have about Babylon is the result of these enterprises. Much of the activities were spent on the palaces and the Street of Procession in Kasr, but also on temples and private houses in Kasr, Merkes, Ishin-Aswad, Amran, Sahn, and Homera, as well as the palace in Babil. Large sections of the city walls were excavated around the Inner City as well as some parts of the walls of the Outer City.⁸

When allied troops approached Babylon in 1917 during World War I, the German archaeologists had to quickly run away. In the following years Germans were not allowed to visit Babylon where most of the objects from the excavation were temporarily stored in the excavation house, which for a period served as a rest house for British officers. Some of the best looking finds disappeared during these years and came into the antiquity market. After the establishment of the Iraq Museum in 1923, a proper division of all objects that remained in the excavation house was arranged between the museums in Baghdad and Berlin in 1926. Supplementary German excavations by the Deutsches Archäologisches Institut (DAI) in 1962-1972 clarified a selection, but far from all, of the remaining archaeological problems.⁹

Iraqi excavations and reconstructions started in 1958 and evolved into a large-scale enterprise from 1978 onwards during a decade. The Iraqi monumental reconstructions of the South Palace of Nebuchadnezzar, the Street of Procession, three or four temples, and several private houses have greatly increased the tourist potentials of the city. Italian archaeologists and architects have conducted surveys followed by excavations in Babylon from 1974-1989.¹⁰

Much needed geomagnetic and radar explorations of the city area of Babylon have never been carried out. Such explorations could have solved several of the major questions concerning the size of the inhabited city, and the use of the different sections of the large

city. Instead Babylon, due to the 2003 war, was for a period used as an allied military base. In 2010 the World Monument Fund started a restoration project in Babylon, dealing especially with the Ištar Gate but also with other areas with the intention also to prepare a management plan for the future of Babylon. Today, we know where some of the main city walls were situated, but we do not know the extent of the inhabited areas inside and outside these walls, and these and many other important questions remain to be solved.

Much of the excavation activities have been concentrated on the western central part of the east Inner City. Hardly any excavation has touched the West City. The eastern part of the Inner City and the whole eastern Outer City have not been excavated except in order to follow the alignment of the city walls.

Many thousands cuneiform texts have been excavated. First the texts were mostly unearthed without proper context by early British and other excavations, then the Germans started giving more proper attention to finding circumstances. Most of this material unfortunately remains unpublished. The content of a large number of monumental inscriptions and a huge number of groups of clay tablets from ancient archives and libraries from Babylon have been used in a preliminary way for the model, but much more systematic work is needed to secure the results.

Babylonian topographical texts give a detailed description of sections of the Inner City of Babylon as it existed before the main expansion during Nebuchadnezzar II. The 43 temples, the two city walls, the eight city gates, and several of the streets are referred to by names. Other information is totally missing at least in preserved parts of the texts, e.g., there is no reference to the palaces in Babylon, well known from both archaeological excavations and a number of other texts. Information from the topographical texts is also wanting on the subjects of houses for living, business, trade, and early industrial production. All this has to be supplied by means of other textual or archaeological sources.¹¹

Due to high ground water level, the earliest, deepest levels have not been excavated in Babylon. The oldest evidence for dating Babylon is the Early Dynastic III potsherds found on the surface of Amran and west of Homera¹² from ca 2400 BC. Textual evidence refers to Babylon in a date formula from the reign of

⁶ KOLDEWEY 1990; KOLDEWEY 1932, 41-43.

⁷ READE 1999.

⁸ KOLDEWEY 1990, with additional bibliography.

⁹ SCHMID 1995; KLENGEL-BRANDT 1999; PEDERSÉN 2005; PEDERSÉN, CANKIK-KIRSCHBAUM 2010.

¹⁰ Cf. PARAPETTI 2008 and KOLDEWEY 1990, 437-440, both with additional bibliography.

¹¹ GEORGE 1992.

¹² GIBSON 1972, 149.

the Old Akkadian king Šar-kali-šarri ca 2200 BC. From the Ur III period (2100-2000 BC) there are several references in cuneiform texts to Babylon, especially to the ensi of Babylon.¹³

The earliest excavated levels are late Old Babylonian and Middle Babylonian. Due to the modern high ground water level, excavations could only provide evidence for the last 100 years of the Old Babylonian Period (2000-1600 BC), and the Middle Babylonian Period (1600-900 BC). The excavation of these levels was limited to a few years in the middle of the German excavation, and was only possible due to the collapse of the Hindiya dam lowering the ground water level.¹⁴ The German excavations of these early levels unearthed only ca. 0.05 % of the total city area, indeed a very small section of the city. It was essentially limited to private houses in the Merkes area.¹⁵

The Neo-Babylonian Period covering approximately the period 900-100 BC have seen much more extensive excavations. The Neo-Babylonian levels are near the surface and this fact made it possible to conduct much more extensive excavations than for earlier periods. Babylon during the Neo-Babylonian period consisted of the Inner City, the Western City, and the eastern Outer City with a total area of ca. 800 ha inside Nebuchadnezzar's city walls. Most archaeological activity has been concentrated to sections in the Inner City mostly in its western third along the river.

The German excavations unearthed some 12 ha of the Neo-Babylonian city according to approximate measuring of the areas on the published plans. Palaces, temples, and private house were unearthed in Kasr, Merkes, Sahn, Amran, Ishin-Aswad, and Homera, all inside the east Inner City. Inner and partly outer city walls were also excavated. Hardly anything has been excavated in the Western and Outer Cities, except part of the palace in Babil. The excavated area can be calculated as ca. 1.5 % of the total city area.¹⁶

Some strategic decisions were made during the excavations so despite obvious large unknown areas, we have information about the city walls and the moats, some of the palaces, a selection of the temples with the main ziggurat, some areas with private houses and some streets and open places. With this information, it is possible to start work on a digital model of Babylon. There already exist some physical models in museums and even a one-period digital model focused on an exhibition. However, a research digital model can contain a lot more information, like different levels and possibilities to test different alternative solutions.

2. Babylon: The preliminary digital model

The preliminary digital model of Babylon has been in preparation since 2009 using the ArchiCAD program. The basic information used has been the avail-

able results of the German archaeological excavation 1899-1917 with some additions from earlier and later excavations.

The model is still quite rough and schematic and most of the interesting and often well-known decorative details have not yet been applied to their places on the walls and other positions. Much work is still pending. The present state of the model shows the main types of the basic building materials. Walls of unbaked bricks are shown in white. Walls and other construction elements of baked brick have red brown colour. Walls with blue glazed bricks and figurative relief decorations are shown as light blue in the preliminary model.

The Artlantis rendering program has been used to prepare the figures of the preliminary digital model presented here. All figures are seen from the north in southern direction. The Euphrates is running from the north through the city in southern direction. Moats, some 80 m wide, surrounded the large city walls.

The figures are intended to show the development of Babylon during the reign of Nebuchadnezzar II. The 43 years of his reign (604-562 BC) when Babylon was the centre of the largest international political power resulted in a tremendous development and change of the size and monumentality of the city. The use of baked bricks saw an incredible increase resulting in the fact that the levels of Nebuchadnezzar's constructions are obvious goals not only of excavation (and unfortunately also brick-mining) but also quite suitable for reconstruction and modelling of the buildings.

For the presentation here, the construction works during the reign of Nebuchadnezzar II are divided into four main chronological steps. The first step represents the beginning and the fourth step the end of his reign. In between are the second and third steps. All steps are based on a combination of archaeological and inscriptional evidence. The absolute detailed datings will be an object of further research.¹⁷

Many buildings have their lower parts often rather well preserved, sometimes even with several meters high walls still standing. The lower parts of the walls in the model are therefore often rather secure. On the other hand, the upper building parts are hardly ever preserved. They have to be reconstructed sometimes using building parts falling down, sometimes using ancient illustrations or parallels from other sites. The upper parts are therefore almost always much more

¹³ EDZARD, FARBER 1974, 21-22; EDZARD, FARBER, SOLLBERGER 1977, 22; SOLLBERGER 1985.

¹⁴ PEDERSÉN 2005, 17-68.

¹⁵ More details in PEDERSÉN 2011.

¹⁶ KOLDEWEY 1990. More details in PEDERSÉN 2011.

¹⁷ In addition to building inscriptions, absolute datings of the constructions can be possible to extract from archival texts, e.g. PEDERSÉN 2005, BEAULIEU 2005.

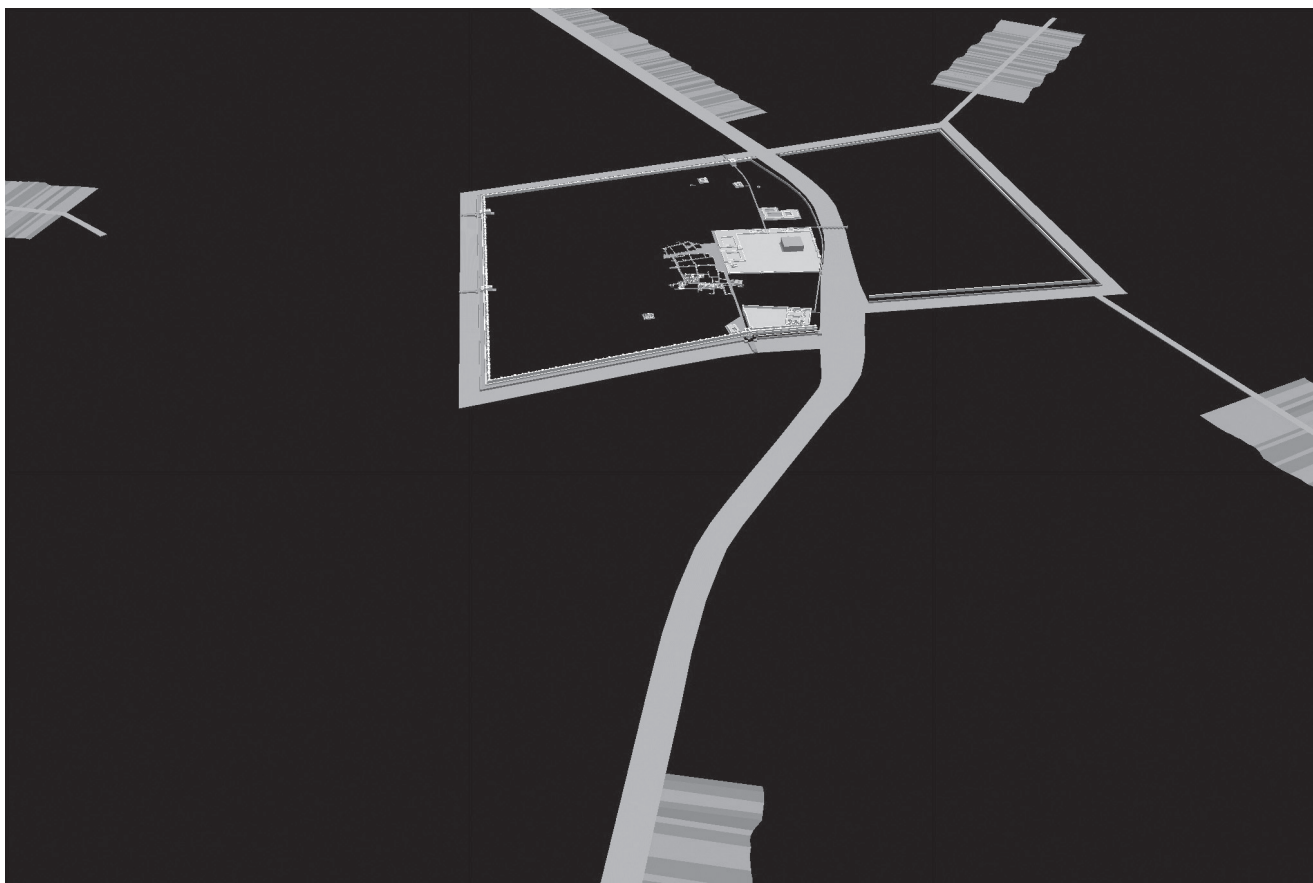


Fig. 1 - Babylon, broad perspectives. View from the north. First step of constructions of Nebuchadnezzar II. City walls and moats as in previous centuries surrounded the 400-ha-city. Euphrates running in the middle. A few main canals.

hypothetical. It is also quite unclear how many stories the houses had in Babylon. The archaeologists used one story in principle. The other extreme is Herodotus, who claimed there were three or four stories. The model has mostly only one story, occasionally there are two when the walls are quite heavy and there exist possible stairs. The excavators' ideas about the reconstruction have to a large extent been followed here, but alternative solutions may be possible to discuss in the future.¹⁸

2.1. Model in broad perspectives

Let us first compare the beginning of the reign of Nebuchadnezzar II with the end of his reign. In broad perspectives, we will notice the large city expansion and the heavily increased monumentality.

The fall of Nineveh in 612 BC and the collapse of the whole of the Neo-Assyrian Empire in front of Median and Babylonian troops started a period of political expansion for Babylonia under king Nabopolassar (625-605 BC). Babylon was now the capital of the Neo-Babylonian Empire comprising approximate-

ly the same areas as the previous Neo-Assyrian one. As the capital of the new empire, Babylon experienced a rapid development and increase in size and monumentality. All the figures of the perspectives are seen from the north in southern direction.

First building step during Nebuchadnezzar (Fig. 1). During the beginning of the reign of Nebuchadnezzar II in 605 BC, Babylon was a large 400 ha city still however smaller than the recently captured and destroyed Neo-Assyrian capital Nineveh (700 ha). Babylon had an almost rectangular layout surrounded by a double city wall with an 80 m wide moat on the outside. The Euphrates was flowing approximately in the middle from north to south. Most of the known official buildings were situated on the east side of the river. The buildings were mostly constructed with the traditional unbaked mud bricks. The size and form of the

¹⁸ For dwelling houses with more than one floor, see e.g. WOOLLEY, MALLOWAN 1976, 25-26. HERODOTUS 1946, Book I: 180 talks about houses in Babylon sporting three or four stories.

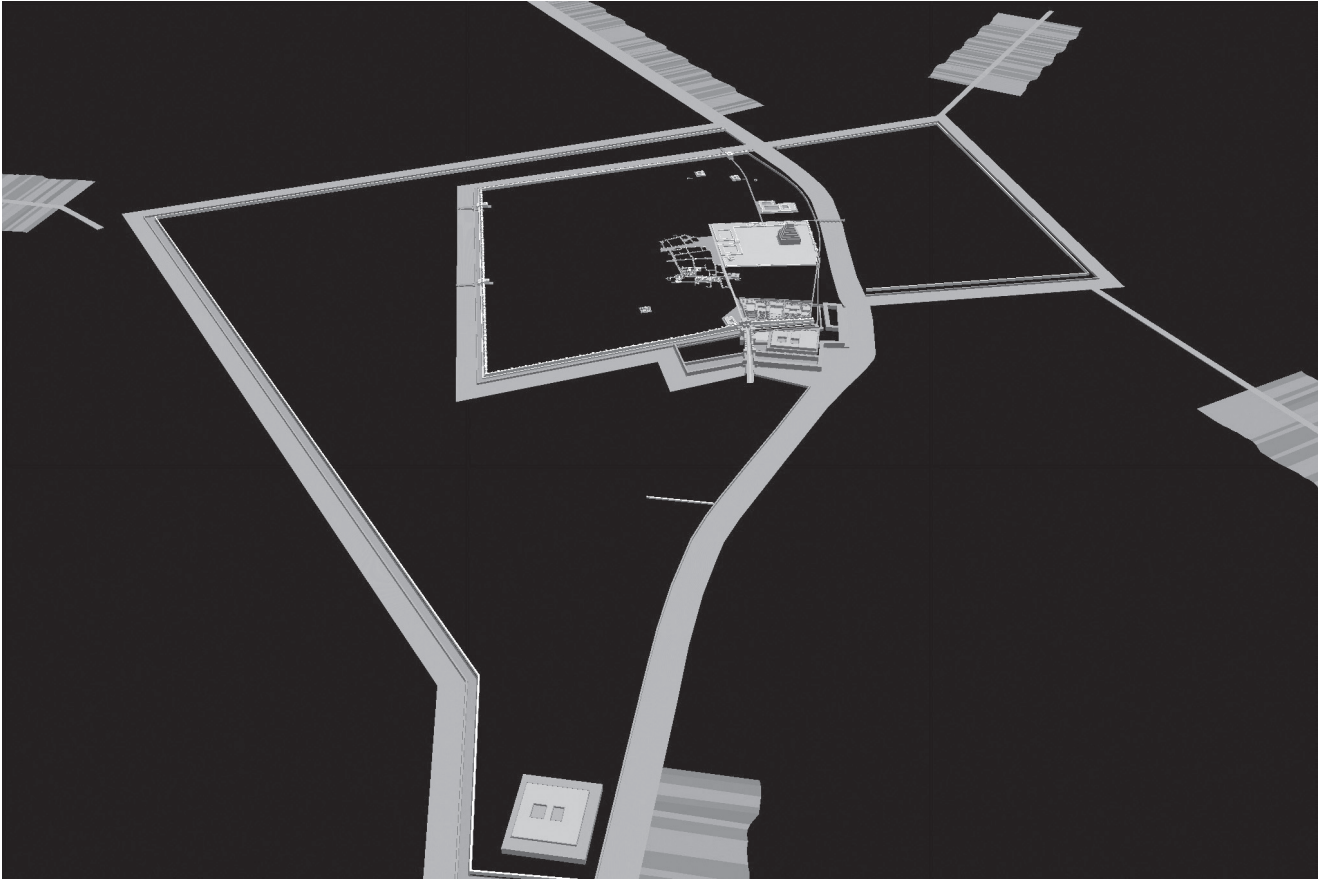


Fig. 2 - Babylon, broad perspectives. Last step of constructions of Nebuchadnezzar II. The 800-ha-city surrounded by city walls and moats. Euphrates and a few main canals.

city may have been essentially the same since late Old Babylonian time; details have to be discussed elsewhere.¹⁹

According to cuneiform texts, canals could be found in all directions from Babylon: the New Canal to the northwest, the Borsippa canal to the southwest in the direction of Borsippa, the Old Kutha canal in the northeast, the Bānītu canal to the southeast leading to Kish, and the Piqūdu canal to the south. In the model can be seen the approximately placed three main canals: the New Canal, the Borsippa Canal and the Bānītu Canal.²⁰

A large number of gardens with date palms existed around, sometimes also inside, Babylon according to contemporary cuneiform documents. Examples of series of long but narrow stripes of land with gardens and fields have been preliminary placed in the model along some of the waters outside Babylon.²¹

Last building step during Nebuchadnezzar (Fig. 2). At the end of the reign of Nebuchadnezzar II in 562 BC, we can see the results of the huge expansion and monumentalisation that occurred during the 43-year reign of that king. Babylon was now a city of the

double size measuring 800 ha, which is even larger than Nineveh was, when it was conquered some 50 years earlier. A number of new or reconstructed monumental buildings have changed many of the key political spaces in the city even if much of the basic layout has remained the same but often with much more monumentality.

The main construction works during the reign of Nebuchadnezzar II started in the city centre with the renovation work on the main Marduk temple and the repairing of the city walls in unbaked mud brick. Then followed a complete rebuilding in baked bricks of the main palace and of the temple tower, the zikkurrat, of the Marduk temple. At the same time the city expanded eastwards and the surrounding outer city walls with

¹⁹ KOLDEWEY 1990, with additional bibliography. For building inscriptions see LANGDON 1912, BERGER 1973, and DA RIVA 2008 with further references. Old Babylonian texts document the Iṣtar Gate (PIENTKA 1998) and the northeastern New Town (e.g. PEDERSÉN 2005, 40).

²⁰ E.g., WUNSCH 2000, ZADOK 1985.

²¹ WUNSCH 2000, BAKER 2009.

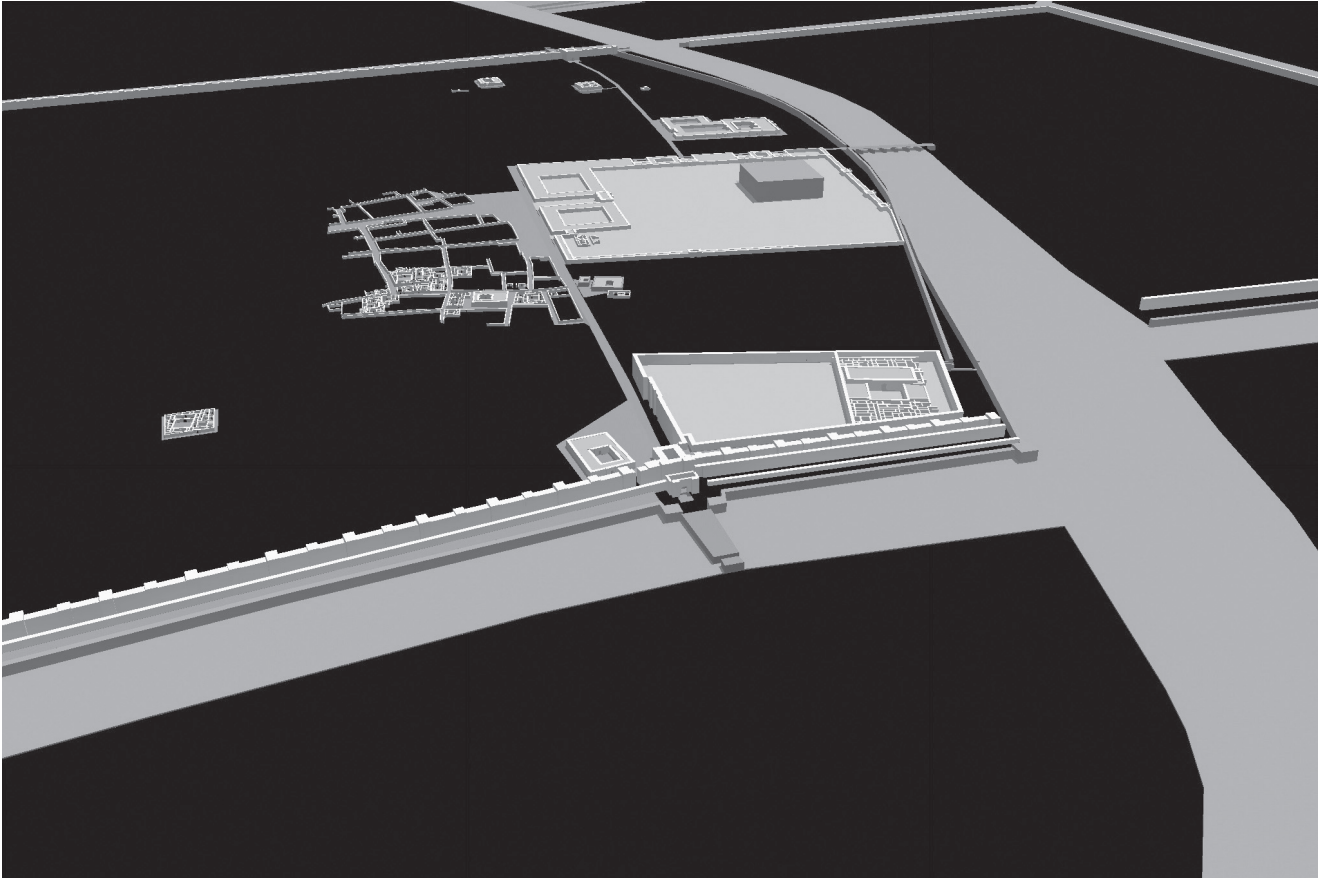


Fig. 3 - Babylon, centre. View from the north. First step of constructions of Nebuchadnezzar II. Palace and Istar Gate still of mud brick. Zikkurraat still unfinished. Rebuilding of Marduk temple and city walls.

their 80 m moat gave Babylon a total size of 800 ha inside the city walls. After the expansion, a palace or arsenal (called “Sommerpalast” by the German excavators) was constructed in the northernmost corner of the outer city facing off towards the north. The palace in the city centre (“Südburg”) got several expansions in northern direction. In the final step, the main palace in the centre got an even larger expansion in northern direction (“Hauptburg” and “Nordburg”) combined with a much higher levelling of the Street of Procession and the Istar Gate. The northern entrance section of the Street of Procession as well as the Istar Gate now got the famous façades of blue glazed bricks with relief decorations.²²

2.2. Model with the centre of Babylon

Let us now have a look at the political and religious centre of Babylon from the point of four main steps of building construction during the reign of Nebuchadnezzar II. The establishment of the exact years of each step has to be left for future studies.

First building step during Nebuchadnezzar (Fig. 3). At the beginning of the reign of Nebuchadnezzar II in 605 BC, according to inscriptions of that king, the zikkurraat (Etemenanki) rebuilding work by his father Nabopolassar was unfinished with only the lower part of the first platform standing in a large courtyard. The courtyard was surrounded by a number of other buildings not yet properly excavated, but essentially only with their main walls traced. They were possibly used for storage. The Istar Gate was at this time a gate built in mud brick just like the other gates of the city walls, in no clear way larger or more magnificent than the other gates. The palace buildings were according to the excavators probably smaller than the later ones and according to inscriptions built in mud brick. The surrounding walls around the palace area may have had the approximate size of the later ones.

²² KOLDEWEY 1990, with additional bibliography. LANGDON 1912, BERGER 1975, and DA RIVA 2008.

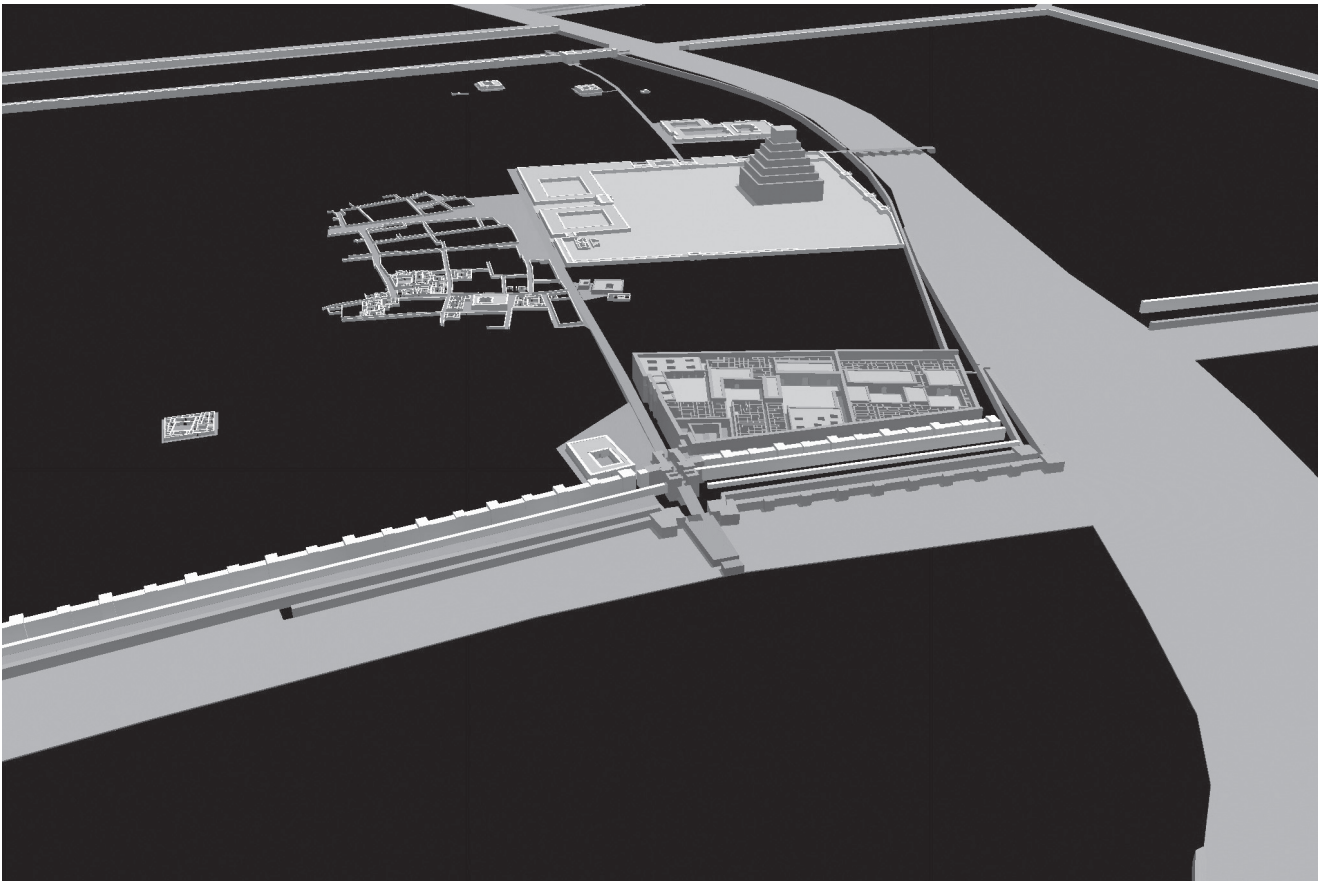


Fig. 4 - Babylon, centre. Second step of constructions of Nebuchadnezzar II. Rebuilding of zikkurraat, palace, and Ištar Gate in baked bricks.

The city walls themselves were made of unbaked brick and not in the best shape.²⁵

In the figure, seven temples can be seen with reconstructed roofs. The largest temple was the Marduk temple Esagil, south of the zikkurraat Etemenanki. Six more temples have been excavated and can be seen on the figure; south of the Marduk temple are the Išhara and Ninurta temples; north of the zikkurraat-enclosure are the Nabû and Anunītu temples next to the Street of procession, the Ištar of Akkad temple in the Merkes area with private houses, and next to the Ištar Gate the Belet-ilī or Ninmah temple.

During the first step, the main construction projects were the renovation of the temple of the main god Marduk and the rebuilding of the city walls with their moats. Esagil, the large complex of the Marduk temple south of the zikkurraat area, has never been properly excavated. The excavators in most cases only followed the walls in order to give a schematic plan. The inner city wall was called *Imgur-Enlil* and the outer one *Nīmetti-Enlil*. A large street separated the city walls. The moat outside was 80 m wide. In some of the later Greek traditions, these walls got a rather

improbable height and were treated as one of the architectural wonders of the world. The building constructions during the first step were as far as known almost all in unbaked brick.²⁴

Second building step during Nebuchadnezzar (Fig. 4). The second step included the large city expansion, rebuilding of the palace and finishing the zikkurraat. New city walls with an 80 m wide moat were constructed in the east giving Babylon the double size. Hardly any excavation has been attempted inside this expanded part of the city. It may be very promising for a survey including geomagnetic or radar examination in order to establish the town planning of what may turn out to be a more or less one period city level.²⁵

The palace (*ekallu*, called “Südburg” by the German archaeologists) was completely rebuilt with baked

²⁵ KOLDEWEY 1990, with additional bibliography. LANGDON 1912, BERGER 1973, and DA RIVA 2008.

²⁴ *Ibidem*. For the Greek traditions, see references in note 32.

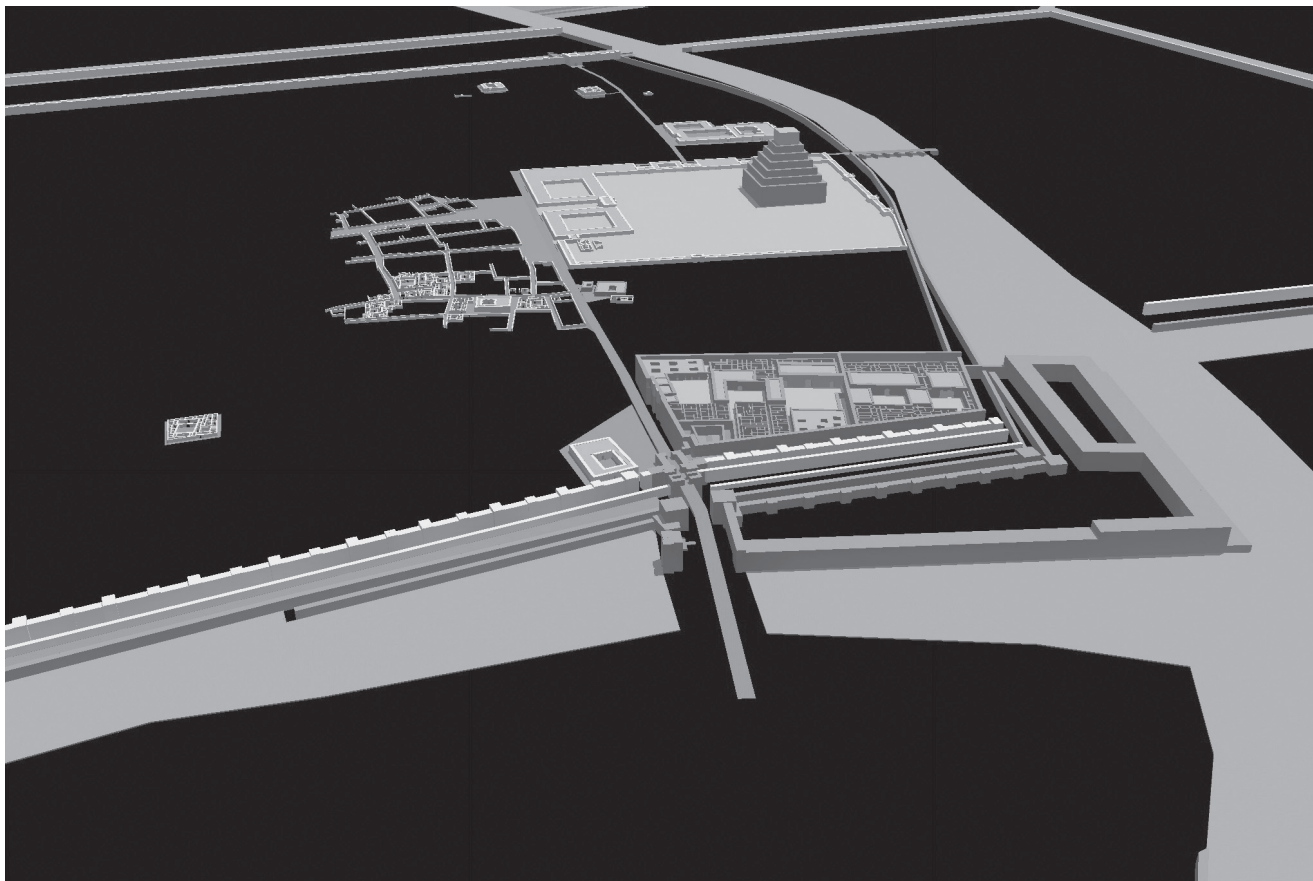


Fig. 5 - Babylon, centre. Third step of constructions of Nebuchadnezzar II. Expansion of palace area.

bricks. The old palace in unbaked bricks was taken down and the new one was constructed on a level several metres higher. Low protection walls were added on the waterside of the palace outside the remaining city wall. The zikkurrat was completed with its upper levels. It had a surface of baked bricks. At the top of the zikkurrat was a building called *kummu* “private area” with outer walls made of blue glazed bricks. The outcome of Nebuchadnezzar’s rebuilding of the zikkurrat was by far the highest building in Babylon. It had a foundation 90 x 90 m and was 90 m high, and would have been visible from far away in the flat landscape. Several cities and areas in different parts of the empire contributed to the building of the zikkurrat according to preserved royal inscriptions. The zikkurrat was standing in an enclosed courtyard with open space of some 11.5 ha. It figures as the Tower of Babel in the Bible.²⁶

Large-scale state organized transportation of food arrived by boat along the Euphrates to Babylon because the surrounding fields and gardens could not provide sufficient food for such a large city as Babylon. According to the cuneiform documents in the

palace archive dating to the reign of Nebuchadnezzar II (604-562 BC), a fleet of ships brought especially barley in huge quantities from several cities in the area between Sippar in the north down to Marad in the south as well as from the Chaldean tribal area of Bīt-Dakūri further downstream and the Sealand in the southernmost Mesopotamian wetland. The barley was stored in Babylon in large silos next to the palace and supervised by it. Should the archive deal with a situation of the second building step, the large silos seem to have been placed south of the palace, but see below for other alternatives.²⁷

²⁵ KOLDEWEY 1990, with additional bibliography. LANGDON 1912, BERGER 1973, and DA RIVA 2008.

²⁶ SCHMID 1995 with a continuing discussion, for which cf. GEORGE 1992 for cuneiform texts and GEORGE 2011 for a stone stele. LANGDON 1912, BERGER 1973, and DA RIVA 2008.

²⁷ PEDERSÉN 2005. Cf. the large silos excavated in Hattuša, SEEHER 2000. The Babylon silos should however be much larger in order to store the large quantities referred to in the archival texts.

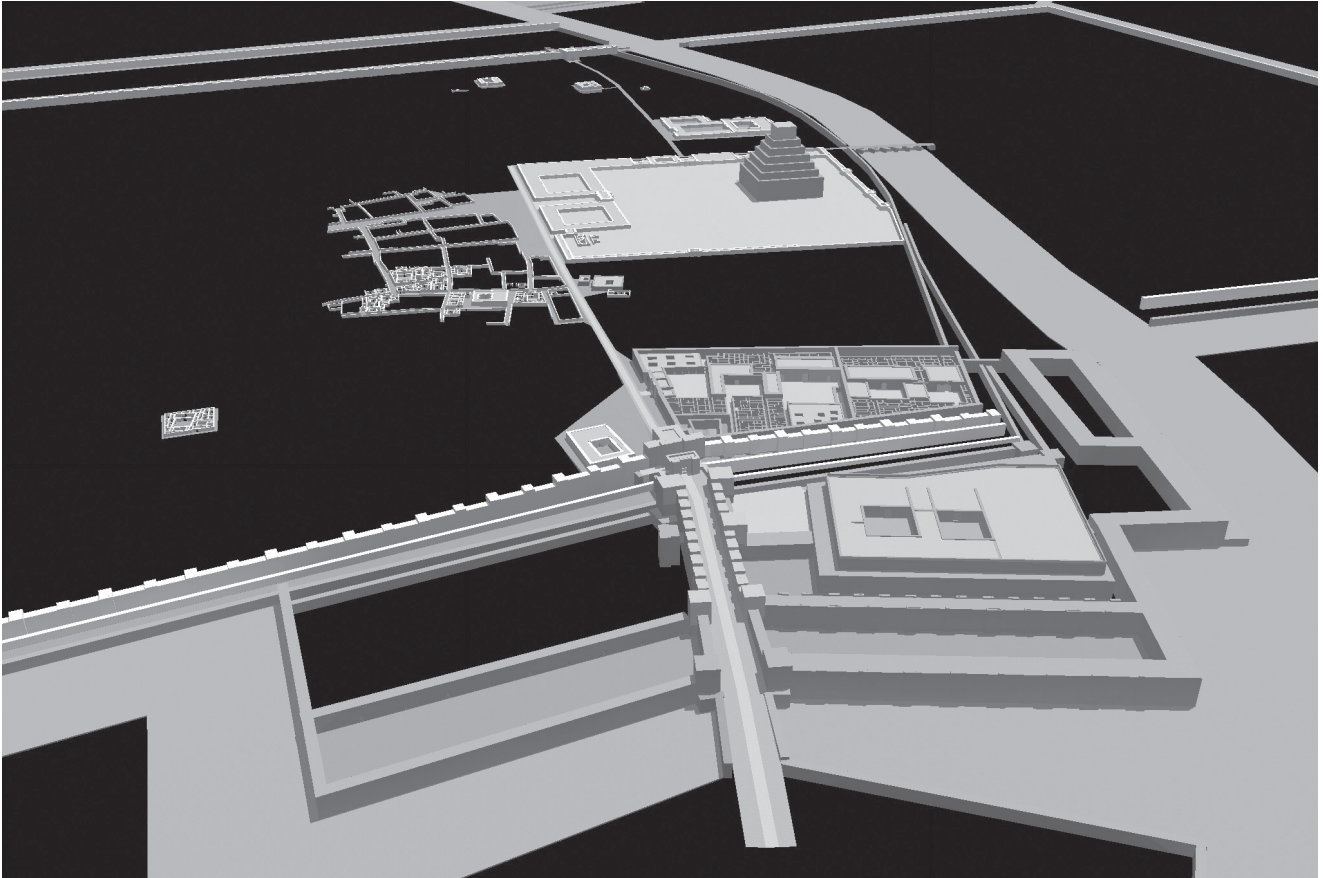


Fig. 6 - Babylon, centre. Last step of constructions of Nebuchadnezzar II. Expansion of palace area. New palace. Istar Gate and entrance section of Street of Procession as well as other details in blue glazed decorated bricks.

Third building step during Nebuchadnezzar (Fig. 5). The third step concerns addition of large areas next to the palace. There was a remarkable expansion of the areas belonging to or boarding the main palace (*ekallu*) in western direction into the area of the Euphrates and in northern direction into the area of the moat and further on. The functions of these large new areas have never been clearly established. Uncertainty is due to the fact that the northwest corner of the extension has never been excavated and most of the north extension of this step has not been studied because the massive constructions of the next step cover this area. It is not clear how long the northern extension was in use if it ever was finished and not covered by buildings of the next step even before completion.²⁸

These large expansion areas next to the palace may possibly have served as storage space and for military. Should the palace archive referred to in the second step turn out instead to refer to the building of the third step, large parts of the new areas could have been used for very large silos of barley described as stored next to the palace.

Last building step during Nebuchadnezzar (Fig. 6). The fourth and final step of the building activities during Nebuchadnezzar's reign until 562 BC included the construction of the so-called "Hauptburg", and the rebuilding on a higher level of the Istar Gate and the nearby entrance section of the Street of Procession both with façades of glazed bricks with relief figures.

The area with the heavy wall of the northerly palace expansion built during the third step was expanded with two sections in northern direction between the Tigris and the Street of Procession. A similar structure, but not so monumental, was also erected on the eastern side of the Street. A massive platform of baked brick was erected above the two southernmost sections of the western expansion areas. On top of the platform a palace building, the "Hauptburg", was constructed, reported as even more magnificent than the southern palace by the excavators. Cuneiform texts as well as

²⁸ KOLDEWEY 1990, with additional bibliography. LANGDON 1912, BERGER 1973, and DA RIVA 2008.

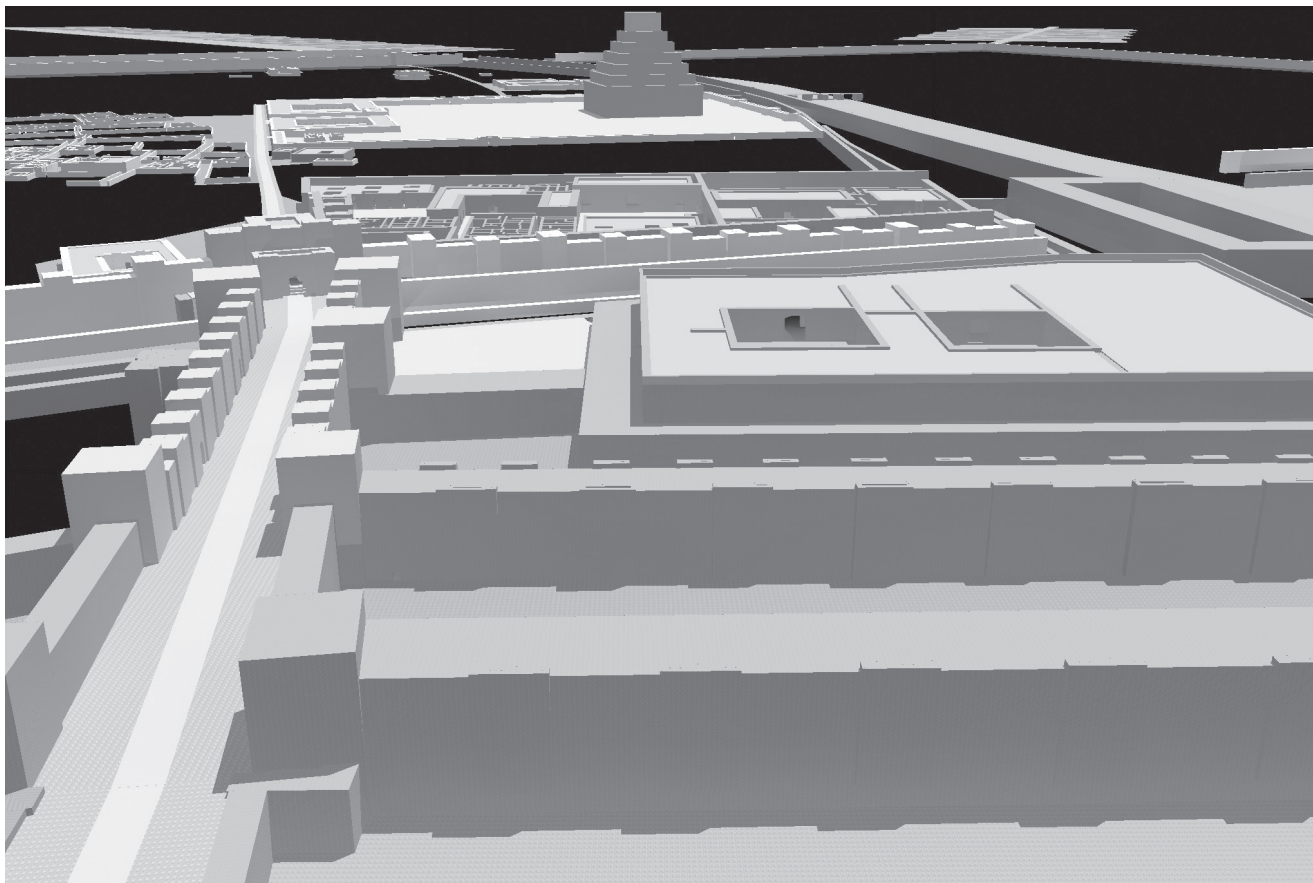


Fig. 7 - Babylon, political centre. View from the north. Palaces, Street of Procession, zikkurra, Marduk temple. Last step of constructions of Nebuchadnezzar II. The blue walls in the model mark walls with decoration of blue glazed bricks.

their quotations in later Greek traditions claim that the building was completed in 15 days, a piece of information causing interpretative problems of reliability. In the building inscriptions, it was regularly called *kummu*, “private area”, like the top of the zikkurat, only occasionally *ekallu*, “palace”. Administrative texts from the Eanna temple in Uruk document how several institutions for a number of years contributed to the construction work of the palace in Babylon. The area north of the building as well as the areas east of the Street of Procession may have been used for storage and by the military, continuing the function of the similar-looking areas of the third step.²⁹

The Ištār Gate and the Street of Procession have for every step of building construction got a higher level. The last step of the area at the Ištār Gate was some 15-20 m higher than during the beginning of Nebuchadnezzar’s reign, something the excavators noticed and for which later excavated clay tablets provided further evidence. In the final version, the Gate and the entrance section of the Street got the famous magnificent decorations in glazed bricks partly with reliefs. Walls with glazed brick façade decorations are shown as blue in the preliminary digital model.³⁰

Political centre at the end of the reign of Nebuchadnezzar (Fig. 7). Shown are the Street of Procession leading through the Ištār gate into the city, the palace private area (*kummu*, “Hauptburg”), the south palace (*ekallu*, “Südburg”), Etemenanki, the zikkurat with the blue glazed top chambers (also called *kummu*), and Esagil, the Marduk temple, behind it.

The Street of Procession consisted of the 250 m new entrance area before the Ištār Gate in the expansion area of the palace, 50 m through the Ištār Gate, and 900 m inside the city before a sharp turn to the right. The Ištār Gate and the area in front of it will be discussed in somewhat more detail in the following section.

In the figure, three more buildings with decorations of blue glazed brick can be seen. The *kummu* “private area” at the top of the zikkurat was according to cuneiform inscriptions built of blue glazed bricks. The

²⁹ *Ibidem*; BEAULIEUX 2005 discusses the still mostly unpublished texts from Eanna.

³⁰ KOLDEWEY 1990 and for the inscription ISMAIL 1985.

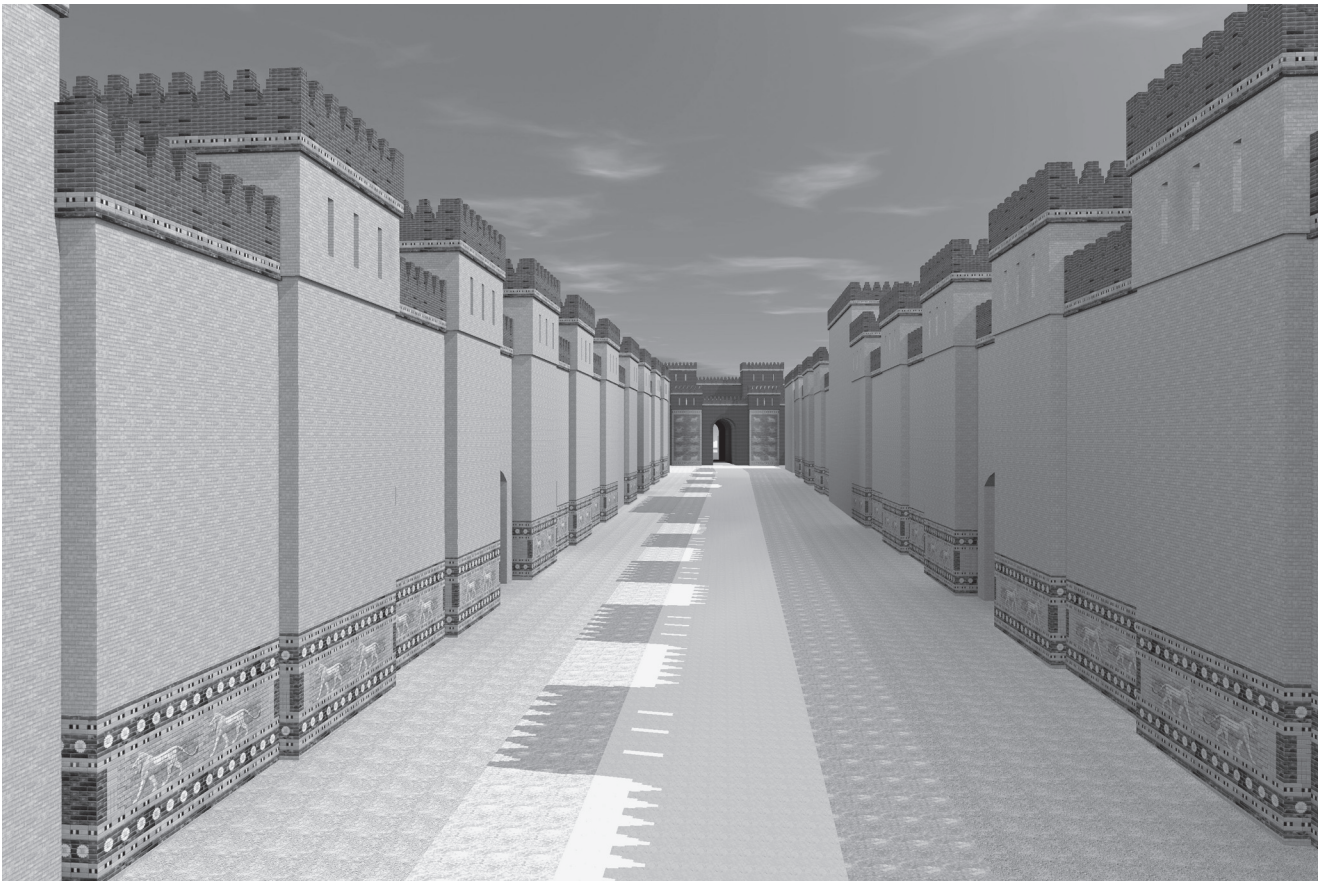


Fig. 8 - Babylon, Street of Procession leading up to the Ištar Gate. Preliminary rendering of the decorations of glazed coloured bricks with reliefs on the lower sections of the façades on both sides of the street.

crenellations or battlements at the top of the northern palace extension, the “Hauptburg” also called *kummu*, were constructed by means of blue glazed bricks according to inscriptions. Between them, the central courtyard of the palace, the *ekallu* or “Südburg”, to be discussed elsewhere. The blue glazed areas were part of the central political spaces in Babylon with significance for the empire and the king.³¹

One of the later Greek architectural Seven Wonders of the World was the Hanging Gardens in the palace of Nebuchadnezzar, occupying a place of pride among Ancient Near Eastern man-made constructions. These gardens have not been found in any preserved cuneiform text and the location in the palace area has never been definitively proven. However, there have been many suggestions, which are not to be discussed here.³²

2.3. Model of the Street of procession

Let us now have a more detailed but still preliminary look at the Ištar Gate and the Street of Procession coming from the north to the entrance area in front of the Gate. Again the view is seen from the north

in southern direction. When the magnificent decorations in glazed bricks were placed on the Gate and the walls of the buildings in front of it, this part of the city was already inside the recently established eastern Outer City protected by its city walls (Fig. 8).

The Street of Procession had a surface of white limestone in the middle with red breccia stone on the sides of it. Until the last step of Nebuchadnezzar’s constructions, there was a gradual increase in elevation of its surface. During the last step of construction, the 180 m of walls of the buildings in front the gate were decorated with blue glazed brick depicting long rows of lions protecting the gate according to the interpretation of the archaeologists. The distance between the parallel walls was 20 m. In the masterly reconstruction of a section of the Street of Procession in Vorderasiatisches Museum in Berlin, the distance

³¹ KOLDEWEY 1990, with additional bibliography. LANGDON 1912, BERGER 1973, and DA RIVA 2008.

³² KOLDEWEY 1990, 99-107; KRISCHEN 1956; FINKEL 1988, 38-58, and several others.

between the walls is only 7 m due to modern building restrictions. Details of alternative reconstructions are planned to be discussed elsewhere.³³

The Iṣtar Gate consisted of two buildings: a lower front gate, which has been given a magnificent full-scale reconstruction in Vorderasiatisches Museum in Berlin, and a higher gate-building behind. Both had the façades in blue glazed bricks decorated with protective dragons and bulls according to the archaeologists' interpretation. A series of 5 m wide door openings behind each other on the 50 m long gate area narrowed the street and gave an impression of a partly tunnel like entrance through the gate to the Inner City. It is planned to discuss details elsewhere.³⁴

3. *Babylon: Future work on Babylon and the digital model*

The preliminary work with the multilevel digital model of Babylon has been presented by means of the eight figures above illustrating some aspects of the city development during the reign of Nebuchadnezzar II (604-562 BC) when Babylon was the largest city in the world within city walls and the centre of the large Neo-Babylonian Empire.

The work so far is only a beginning based essentially on material from the German excavations with some additional evidence. In the next step of the project, it is planned to complete separate levels for different historically and archaeologically attested periods. Also missing from the preliminary model is a large number of details. Among the many missing but planned to be added materials are the well-known wall decorations, e.g. at the Iṣtar Gate and the Street of Procession already alluded to several times above and preliminary shown in the last figure. This means reworking and perfection of every house in the city.

In several cases more than one alternative reconstruction is possible. New information or reconsideration of available material may allow more than one alternative. In such cases different interpretations are placed on separate levels in the model. Some separate levels may have a more strict keeping to the excavated material but others would also allow more interpretations based not only on archaeological remains, but also from texts and comparative studies.

The basic archaeological and textual information used for the building of the model are the available results of the German archaeological excavation 1899-1917 with some additions from earlier and later excavations. Plans, sections, and archaeological descriptions of the excavated buildings and open spaces from the German and other excavations have been combined with satellite images and inscriptional evidence both on clay tablets from archives and libraries and on monuments and building material from Babylon.

It will hopefully be possible to use a more detailed

inventory of excavated objects and their findspots in order to get precision in the reconstruction of details. This includes use of all available inscriptions, both on buildings and monumental objects and on clay tablets in archives and libraries. The inscriptional material can give information about the construction of buildings, their function, and the people living or working therein.

Collaboration with related projects is necessary in order to achieve more far-reaching perspectives. Important would be a better linking to British, Iraqi, and Italian excavations of Babylon in order to get a better more complete coverage of the city in the model. There is a great need of geomagnetic or radar surveys of the whole city area, especially of the large not yet examined areas. In the older Inner City, it may be difficult to distinguish between levels from different periods, but e.g. Nebuchadnezzar's eastern Outer City, which has hardly been examined archaeologically, may turn out to be more or less a one level city quite suitable for such a survey. The surrounding landscape outside the city walls would also be interesting to survey before modern buildings and agriculture have changed it completely. Excavations in strategically places could give answers to some of the many pending questions. There is still so much to do with Babylon in the future.

The model will be used to answer a number of questions connected with city development, the impact of historical and environmental factors, and will of course also produce new questions. The flexibility with different levels for different periods and for alternative interpretations will hopefully be of use for future studies and interpretations of the city of Babylon.

Babylon is an example of a great city, which was the main political centre of an empire. Nebuchadnezzar expanded Babylon to the double size and rebuilt it with great monumentality at the time it was the largest walled city in the world. With only some 1.5 % of the total city area during the maximum extent of the city at the reign of Nebuchadnezzar II properly excavated and much of the excavated material and documentation not yet published, there are much for future research and there will be many surprises and important new discoveries. We know about some of the most important political spaces, others still have to be discovered. Despite all important work done, we are only at the beginning of a proper understanding of this huge city so central for world history.

³³ KOLDEWEY 1990, with additional bibliography.

³⁴ KOLDEWEY 1918, KOLDEWEY 1990, with additional bibliography.

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