# Political/Ideological Display or Economic Need? The Problematical Picture of the Hydraulic Networks in Seventh Century BC Assyria

**Frederick Mario Fales**

There is a long-standing historiographical opinion (born from a number of stratified prejudicial attitudes, virtually all of nineteenth century origin) that the Assyrian Empire, from approx. 850 to 612 BC, was economically based on the pure and simple accumulation of riches from the many external conquered lands, for the essential benefit of an in-group formed by the ruler and his immediate family and magnates. This opinion has been critically disproved on various occasions. Research shows instead an accurately pursued, forward-looking, and even in part locally cooperative, economic strategy of the Assyrian Empire in different scenarios—e.g. regarding the horizon of the Southern Levant (esp. Phoenicia and Philistia), where the existence of a *Pax Assyriaca* with consequent local economic development is by now a largely accepted factor (see most recently Fales 2017a, b, with previous lit.). The present case-study will, instead, focus on the economic care for "innermost Assyria" (the area around the Middle-Upper Tigris and northwards), which could have been the object of one king's specific attention and planning, and for which unusual monumental and archaeological evidence supports the (few) written texts.[1]

[1] The present study is written in the framework of the research activities of the "Land of Nineveh Archaeological Project"/ "Progetto archeologico regionale Terra di Ninive" (*LoNAP/PARTeN*), directed by Prof. Daniele Morandi Bonacossi at the University of Udine. The writer personally visited the area of Khinis/Bavian with Dr. R. Del Fabbro as philologists of the project in September 2012. For detailed and updated studies of the Jerwan aqueduct and its inscriptions, cf. Fales and Del Fabbro (2012–2013, 2014, 2016). A more archaeologically detailed overview of the Khinis/Bavian complex may be found in Fales (2017a), which should at present be updated with the important discoveries published in Morandi Bonacossi (2018c), subsumed in brief also in the present article. Prof. Morandi Bonacossi is to be heartily thanked for his kind help and suggestions, both on the field

F. M. Fales (✉)
Dipartimento di Storia e Tutela dei Beni Culturali, Università degli Studi di Udine, Udine, Italy
e-mail: mario.fales@gmail.com



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**Fig. 1** The Khinis/Bavian gorge and rock face overlooking the Gomel, from N. The bathing figures in the stream are concentrated around the remains of the **GM**

No sculptural complex in the entire Assyrian empire is as majestic as the one executed by king Sennacherib (704–681 BC) in the rocky cliffs of Khinis/Bavian, in the north-eastern corner of Assyria (present-day Iraqi Kurdistan), although its overall monumental and conceptual logic is still disputed, thus opening the possibility of taking up the matter again here in a historical-economic perspective. This vast Assyrian sculptural complex—placed on the rock face of a steep gorge formed by the southern ridges of the Kurdish mountains, through which a river flows that more upstream is named Atrush, and in this area Gomel[2] (Fig. 1)—was discovered already in 1845 by French travellers, and first described in full in 1853 by the British archaeologist Austen Henry Layard, in his second illustrated account of his

and in group discussions in Italy, as well as for timely information on new publications. For reasons of convenience, the main monumental realities of the Khinis/Bavian gorge and adjacent areas will be indicated in the following through acronyms: **RR** = 'Rider Relief'; **GR** = 'Great Relief'; **GM** = 'Gate Monument'; **N** = 'niches' with Sennacherib's image on rock face; **BI** = 'Bavian inscription of Sennacherib'; **J** = Jerwan aqueduct.

[2] Cf. Bagg (2000, pp. 208, 212). The Atrush basin covers a relatively limited area (525 km$^2$) in the mountains to the north of Khinis but receives a quite high amount of annual rainfall (Ur 2005, p. 336). The Gomel river bends sharply after the Khinis gorge in a N–S direction, tracing a slight arc for some 30 km, before its confluence with the more eastward-lying Khāzir or Ghāzir. The final stretch of the two converging waterways bears the name of the one with higher water output, Khāzir; it continues southwards, with a somewhat meandering course through the Jebel Maqlub, before disgorging into the Greater Zab (cf. Fales and Del Fabbro 2014, p. 78).

**Fig. 2** Frontal view of the Khinis/Bavian monumental complex. At centre-right of the rock face, the large sculptural panel of the **GR**; beneath it to the right, a glimpse of the **GM** lying in the waters of the Gomel; above it, in parallel from right to left, three of the rock-cut inverted stelae or niches (**N**) bearing the image of king Sennacherib. To the left, bottom, the square niche of the **RR**. The cavities in the rock face are due to activities by medieval hermit communities. Photo by D. Morandi Bonacossi, http://asorblog.org/2014/01/15/back-to-assyria-cities-villages-and-canals-in-the-land-behind-nineveh/

Assyrian travels and discoveries (Layard 1853, pp. 207–216).[3] Layard gave a correct identification of Sennacherib as the ruler on the large sculptured panel in bas-relief on the rock face (the so-called "Great Relief" [**GR**]), and a preliminary interpretation of the so-called "Bavian inscriptions" **(BI**) of this king, inscribed in three of the round-topped, stele-like niches **(N**)—of which eleven were formerly known, but most recently twelve have been identified (Morandi Bonacossi 2018c)—carved into the sides of the rock cliffs, bearing also small bas-relief portraits of Sennacherib himself (Fig. 2).

[3] Layard however duly noted (ibid., p. 207) that Simon Rouet, the French consul at Mosul, had previously visited the area. In point of fact, this public servant, who acted as *gérant* for the absent P.-É. Botta, had alerted the French academic authorities on Khinis/Bavian and its monuments as early as January 1846. Rouet's activities seem to have excited Layard's animosity at a time when he was attempting to persuade Stratford Canning, the British Ambassador at Constantinople, to back him more forcefully with the local Pasha on his work at Nimrud (Larsen 1994, p. 77). An entry in the British cultural journal *The Athenaeum*, n° 949, Jan 3, 1846, p. 18, mirrors clearly the respective status of the two at the time: "The same journals mention that the French consul at Mossul, M. Simon Rouet, has just discovered, within ten leagues of that city, some Assyrian bas-reliefs in perfect preservation; and that an attaché of the English embassy, Mr Leard [sic], has been making excavations near Mossul, but has, as yet, found only some bricks bearing cuneiform characters".

**Fig. 3** **GM**, side view, as photographed by Gertrude Bell, May 6, 1909. From the *Gertrude Bell Archive*, Album M_035 (1909), online at: http://www.gerty.ncl.ac.uk/photo_details.php?photo_id=3337—accessed on June 1, 2017

As for the so-called "Gate Monument" **(GM)**, Layard viewed it as a broken stone monument fallen from above within the Gomel waters (Layard 1853, p. 234)—where it still lies nowadays (Figs. 3 and 4).[4] Layard's interpretation of the monumental complex was that of "a sacred spot, devoted to religious ceremonies and to national sacrifices" (ibid., p. 215), given the many representations of divine figures to which the king visibly paid homage in the sculpted scenes. Finally, Layard gave a first description of the mangled and abraded panel of the "rider relief" (**RR**) to the south of the **GR**.

Short of half a century later, the Khinis/Bavian monumental complex was visited by the Semitist Eduard Sachau for the *Deutsche Orient-Gesellschaft* (1898), who compared it to Darius' rock inscription with its trilingual inscription at Behistun—thus pointing to a new perception of the purpose of the complex itself (Sachau 1900, p. 118). Sachau was also the first to note that Sennacherib's **BI** spoke "of a major

[4] Layard's description contradicts to a large extent the attached woodcut, in which the fractured memorial is shown standing decidedly above the level of the river. Unfortunately, this misleading illustration ("Fallen Rock-Sculptures (Bavian)"), made its way into the travel and archaeological literature for many decades: e.g. it was recopied by Faucher-Gudin in vol. VIII of Maspero's bestselling *History of Egypt* (London 1903), p. 66, as "Assyrian Bas-Reliefs (sic) at Bavian". A reproduction may still be retrieved online (last accessed: december 2018) at https://commons.wikimedia.org/wiki/File:History_of_Egypt,_Chaldea,_Syria,_Babylonia_and_Assyria_(1903)_(14763156992).jpg.

**Fig. 4** **GM,** side view, as photographed by the author, September 12, 2012

hydraulic work, through which the king irrigated his residence in Nineveh" (ibid., 120). A few years later (1904), the prominent British Assyriologist Leonard W. King made a quick but detailed visit to the site, coming up with a detailed sketch map, with drawings and photographs of **GR**, **GM**, **RR**,and **N** (Fig. 5). But especially, he recommended investigating the hydraulic layout of the gorge and surrounding areas:

> It would also be most important for the Expedition to investigate and make plans of the water-constructions etc. at Bavian and of the paved causeways and other remains in the neighbourhood. I found fragments of inscribed bricks built into the walls of houses in villages near, so I think a careful survey of the district would well repay the time and trouble.[5]

However, King's health failed him, and he never came back to Bavian. In 1914, Walter Bachmann, a long-standing member of the successful archaeological expedition led by W. Andrae to the vast urban site of Assur (=Qal'at Shirgat), decided not to head back to Germany (and to a scenario of war), but to visit the northernmost corner of present-day Iraq on behalf of the *Deutsche Orient-Gesellschaft*, with the aim of providing a full documentation of the Assyrian rock monuments there, through his trained architect's eye. The monumental complex of Khinis/Bavian was to play a major part in his investigations, which also comprised the rock sculptures of Maltai and Gündük, published more than a decade later (Bachmann 1927).

Bachmann's investigation at Khinis was in itself very exhaustive as regards the description and analysis of the gorge's monumental realities, and especially as regards

[5] King *apud* Bachmann (1927, p. iv; see also Bagg 2000, p. 218).

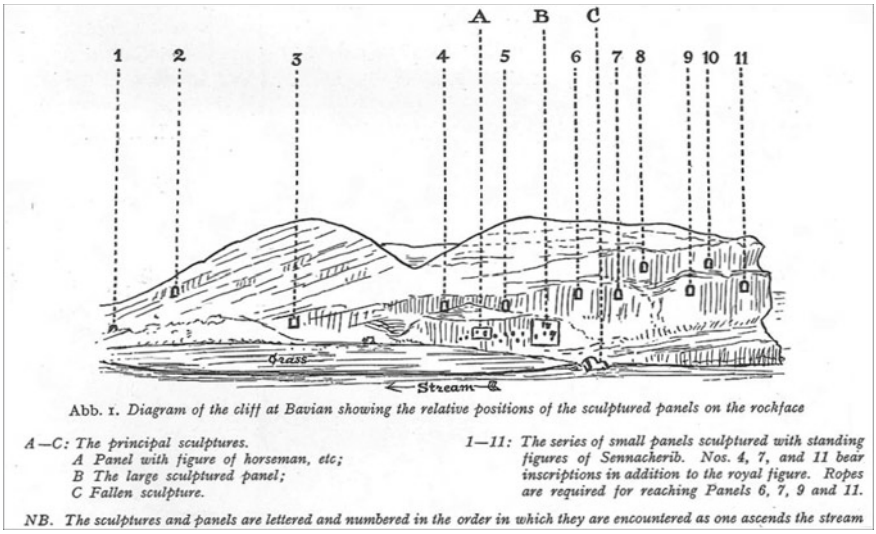


Abb. 1. *Diagram of the cliff at Bavian showing the relative positions of the sculptured panels on the rockface*

*A—C: The principal sculptures.*
*A Panel with figure of horseman, etc;*
*B The large sculptured panel;*
*C Fallen sculpture.*

*1—11: The series of small panels sculptured with standing figures of Sennacherib. Nos. 4, 7, and 11 bear inscriptions in addition to the royal figure. Ropes are required for reaching Panels 6, 7, 9 and 11.*

*NB. The sculptures and panels are lettered and numbered in the order in which they are encountered as one ascends the stream*

**Fig. 5** L.W. King's 1904 sketch plan of the Khinis/Bavian gorge with the location of the main monuments (from Bachmann 1927, p. v). Concordances: A = **RR**; B = **GR**; C = **GM**; 4–11 = **N**, of which nos. 4, 7, 11 bear the **BI**. Notice that Bachmann in the following cases changed King's numbering of **N** (here given in italics): *8* → 11; *9* → 8; *11* → 9, but the original numbering has been kept in more recent studies (see Fig. 13)

the broken and half-submerged **GM** within the Gomel, of which he executed the first reconstructive drawing of excellent craftsmanship (Fig. 6). On the other hand, he totally overlooked King's recommendations to investigate the hydraulic "landscape" involving the site. His overall interpretation of Bavian was that of a *Gartental* even more radical than Layard's:

> On site it is easy to see that only the beautiful landscape of the valley, and the pleasures of pure, cool spring water here led to the founding of a summer residence of the Assyrian rulers. Nature and art created jointly a place of recreation for the summer months… Even hunting may have been quite profitable in this place. Anything else is out of question for the choice of the area; there is no important access to the mountains of Kurdistan, and the surroundings are searched in vain for remains of large settlements.[6]

A new page in the history of research on the Bavian gorge was written in the spring of 1934, when the philologist Thorkild Jacobsen and the archaeologist Seton Lloyd proved this area to be a fundamental pivot in a series of wide-ranging hydraulic works performed by king Sennacherib in northernmost Assyria.[7] Both scholars were engaged in the American-British expedition at nearby Khorsabad, and they had taken four weeks off during the previous year for the first in-depth examination (including some light digging) of the vast stone "causeway" already noticed by Layard, King

[6] Bachmann (1927, p. 1) (translation by the present author). On the connections between Layard's and Bachmann's interpretations of the site, see already Bär (2006, p. 85).

[7] Jacobsen and Lloyd (1935, pp. 44–49).

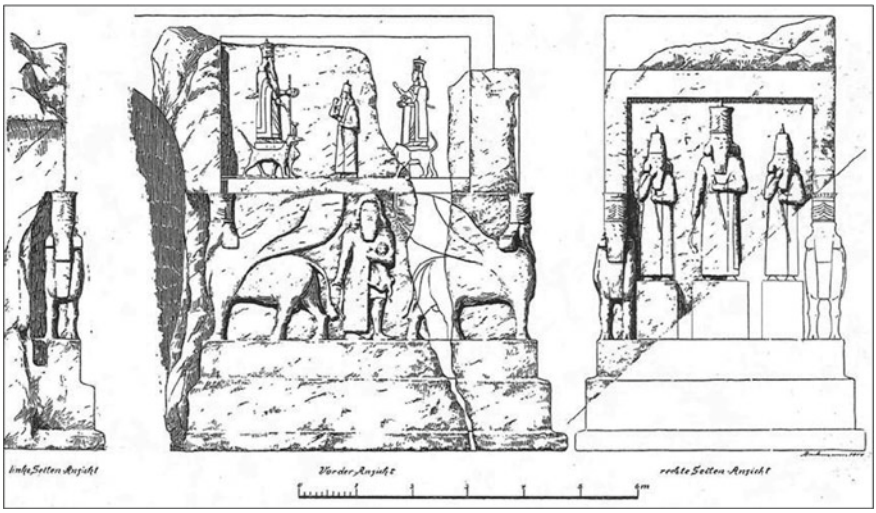

**Fig. 6** Bachmann's reconstruction of **GM**, in three views (left side, front, right side; Bachmann 1927, p. 14)

and Bachmann at Jerwan (**J**),[8] some 30 kms SW of Bavian, which they correctly interpreted as an aqueduct (Jacobsen and Lloyd 1935, pp. 2–30).[9] This vast architectural work (Figs. 7 and 8) carried water over its surface in an E-W/SW direction, i.e. from the catchment area of the Gomel towards the interior, in the general direction of the Ḫusur/Khosr river basin, passing on five cantilevered arches over a deep southward-flowing *wadi*. It represented—thanks to the information given in its main inscription, going back to Sennacherib himself—the first unequivocal proof of this king's interest in conveying water from the rainy northernmost region of Assyria southward towards his new capital, where he had erected an "Incomparable Palace".[10]

Jacobsen and Lloyd had already visited the gorge of Khinis/Bavian in 1933, during a field investigation devoted to tracing the origins of the watercourse which flows over the aqueduct; and they had already suspected that a channel leading to **J** could have originated here. In the meantime, moreover, the **BI** had yielded many of its philological secrets, especially regarding the Assyrian king's assertion

[8] Bachmann (1927, pp. 32–33, and Taf. 33) must be credited with executing the first profiles and location/ ground plans of the Jerwan aqueduct, which are remarkably precise despite the misinterpretation of the monument as the remains of 'an extensive stone dam' employed for irrigation purposes (see now Fales and Del Fabbro 2014, p. 66).

[9] For recent critical appraisals of Jacobsen's and Lloyd's work at Jerwan, and new finds and interpretations made on site concerning the inscribed texts on the monument, see Fales and Del Fabbro (2012–2013, 2014, 2016).

[10] In Akkadian *ekallu ša šānina lā īšu,* usually translated as "Palace Without (a) Rival" (see e.g. Lackenbacher 1990; Russell 1991, etc.); but this rendering by J.E. Reade (1978, 61) is indisputably effective, with no concession to "exotic" undertones. Perhaps even "Palace Incomparable" might be employed, for greater effect.

**Fig. 7** The Jerwan aqueduct (**J**), from NE, present-day condition: the E half is in the foreground, the W half lies beyond the dirt track (corresponding to the wintertime bed of the *wadi*). Foto © LoNAP (2012)

of having performed wide-ranging works of hydraulic engineering for his new capital, Nineveh.[11]

In particular—starting out from a description of the countryside around Nineveh as a dry area, populated by farmers devoid of all means and know-how concerning irrigation—Sennacherib claimed to have dug and interconnected a network of 18 canals in areas north of the city, directing them all towards the capital and its outskirts.[12] In the next clause, the king speaks of a canal, from the city of close-by Kisiri to Nineveh, called *Patti-Sennacherib*; and then, with a broad geographical sweep, he connects the previously named waterworks to an origin in the far-off mountains on

[11] Cf. the recent and accurate edition of the texts by Grayson and Novotny (2014, p. 312 a–b), for the complete list of the composite copies and transliterations/translations of these inscriptions from 1870 onward. In Jacobsen and Lloyd's time, the full and largely reliable edition by Luckenbill (1924) was already available.

[12] Grayson and Novotny (2014, p. 313, ll. 6–11): "Its fields, which had been turned into wastelands due to lack of water, were woven over with spider webs. Moreover, its people did not know artificial irrigation, but had their eyes turned for rain (and) showers from the sky. I climbed high and I had eighteen canals dug from the cities Masitu, Banbarina, Šapparišu, Kār-Šamašnāṣir, Kār-nūri, Talmusu, Ḫatâ, Dalāyin, Rēš-ēni, Sulu, Dūr-Ištar, Šibaniba, Isparirra, Gingiliniš, Nampagātu, Tīlu, Alum-ṣusi, (and) the water that is above the city Ḫadabitu and I directed their courses into the Ḫusur River."


**Fig. 8** The remains of the Jerwan aqueduct (in white) from S, with the darker *wadi* bed at centre, in an OrbView satellite photo (Fales and Del Fabbro 2012–2013, Fig. 8b)

the border of Urartu (i.e. the Kurdish mountains).[13] The text goes on to relate in detail of a further canal, the *Nār-Sennacherib*, insisting to some extent on the small workforce of 70 men required for the task, and again indicating Nineveh as the final destination of all the watercourses.[14]

Based on these textual indications—despite their inner intricacies, and the overall difficulty in relating them to the modern topography of the northern Mesopotamian region—Jacobsen and Lloyd were able to put forth the first coherent suggestion for a reconstruction of Sennacherib's system of waterworks for Nineveh, in which the Khinis/Bavian gorge played a specific role (Jacobsen and Lloyd 1935, pp. 31–43).

[13] Ibid.: 11b-13a: "I had a canal dug from the border of the city Kisiru to Nineveh (and) I caused those waters to flow inside it. I named it Patti-Sennacherib. [*I directed*] the mass of those waters from Mount Tas, a rugged mountain near the land Urarṭu, to my land. Previously, that canal was called the [] canal." The integration in the name of the last-mentioned canal as *Pulpulliya* was first made in Jacobsen and Lloyd (1935, pp. 22, 42); it was upheld by Frahm (1997, p. 153).

[14] Ibid.: 13b–17a: "Now, I, by the command of the god Aššur, the great lord, my lord, added to it the waters on the right and left of the mountain, which are beside it, and [the waters] of the cities Mēsu, Kukkinu, (and) Piturra, cities in its environs. I d[u]g [that] canal with (only) seventy men and I named it Nār-Sennacherib. I added (its water) to the water from the wells and the canals that I had previously d[ug], and (then) I directed their courses to Nineveh, the exalted cult center, my royal residence".

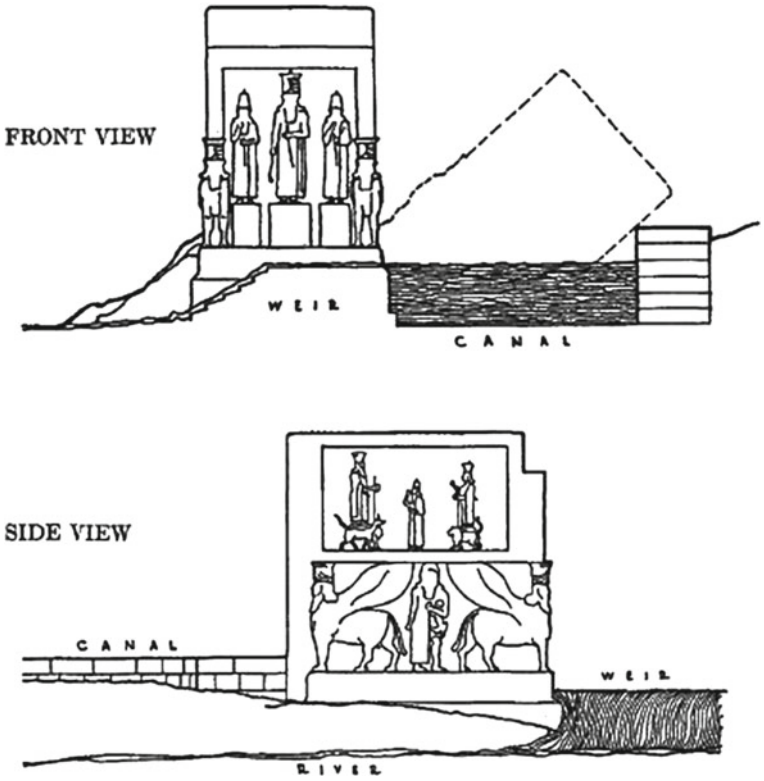


**Fig. 9** The reconstruction of **GM** as a monumental element at the canal head (Jacobsen and Lloyd 1935, p. 49, Fig. 12)

At Bavian, they surmised the existence of a weir which fed the *Nār-Sennacherib* canal, flowing parallel to the west bank of the Gomel, and as such clearing a natural low hill, whereupon it departed westward towards the Jerwan aqueduct.

The two scholars also radically reinterpreted the nature and position of the **GM**, not as a commemorative architectural feature which had fallen into the river from the rock face above, but as a "monumental figurehead", fashioned in situ from solid stone, erected to mark the connecting point (the head or the gate) between the Gomel and Sennacherib's artificial canal, which eventually toppled over from its brick base into the water over time (Fig. 9). This reconstruction not only makes sense, but also accounts for the physical state of the semi-submerged monument, which has in fact suffered a massive vertical break, but is otherwise in a fair condition of preservation to this day—whereas a fall from a greater height would have caused it to be smashed much more minutely.

After Jacobsen and Lloyd's quick and efficient publication of their results in book form (1935), field research on the Jerwan aqueduct and the Khinis/Bavian complex lay dormant for more than seven decades, due to political and wartime difficulties:

the comprehensive re-examination of the Assyrian monuments of the region was only taken up in 2011 by the Udine LoNAP expedition, led by Daniele Morandi Bonacossi.[15] But this dormancy did not apply to wider-scale topographical work and historical(-economic) considerations on Sennacherib's canal system in northern Assyria. In one of the studies resulting from his travels and surveys around northern Iraq, the British archaeologist David Oates formalized in 1968 the observations by Jacobsen and Lloyd on Sennacherib's waterworks for Nineveh, indicating four stages of advancement in different years:

I. "The canalization of the Khosr river for the irrigation of orchards and of a royal park planted with a great variety of trees, collected in the course of Sennacherib's campaigns. (…). This stage was completed in or shortly after the second year of Sennacherib's reign (*c.* 703 B.C.).
II. The clearance and canalization of the sources at the western foot of Jebel Bashiqa, north-east of Nineveh, which were then led into the Khosr. First mentioned in 700 B.C.
III. The diversion into the Khosr of a part of the waters of the Gomel river, by the construction of a canal from the point where the Gomel emerges from the mountains, about 50 km. north-east of Nineveh. This major work included the construction of a stone aqueduct to carry the canal across a watercourse near the modern village of Jerwana, and was completed about 695 B.C.
IV. The diversion of a stream which emerges from the same mountain chain, Jebel al-Qosh, at the modern village of Bandwai, some 30 km. west of Hines…. This part of the scheme is not attested by any surviving inscription, but the two canals can be traced on the ground and it seems to be the logical complement of Sennacherib's known work."[16]

Oates' reconstruction and mapping of the four stages of Sennacherib's hydraulic engineering leading water from the rain-rich mountains of Kurdistan to the parched plain of Nineveh (Fig. 10) has in general withstood the passage of time, but it was revised in various aspects a decade later, by Julian E. Reade (1978), who pointed out first of all that the main project by Sennacherib—the building of his new capital city, Nineveh, in pomp and splendour—was performed leaving "substantial traces on the landscape of what is now northern Iraq".[17] The most significant addition to Oates' observations concerned the so-called "northern canal system", in which the outline of new courses of channels and numerous new insights made by Reade during a field survey—including the retrieval of half-hidden Assyrian sculpted panels—radically expanded the horizon of waterworks around Faida/Bandaway(a) in the NW corner of Iraqi Kurdistan, close to the Tigris riverbank. Reade also clarified that the Khinis/Bavian operation to the NE was surely the conclusive one of the lot.

[15] A first result was an in-depth re-examination of the **J** aqueduct, with its inscriptions viewed per se and in their structural context (Fales and Del Fabbro 2012–2013, 2015, 2016). The **BI** will be also presented anew in a forthcoming publication.

[16] Oates (2005[2], pp. 49–51) and Fig. 4.

[17] Reade (1978, p. 47).

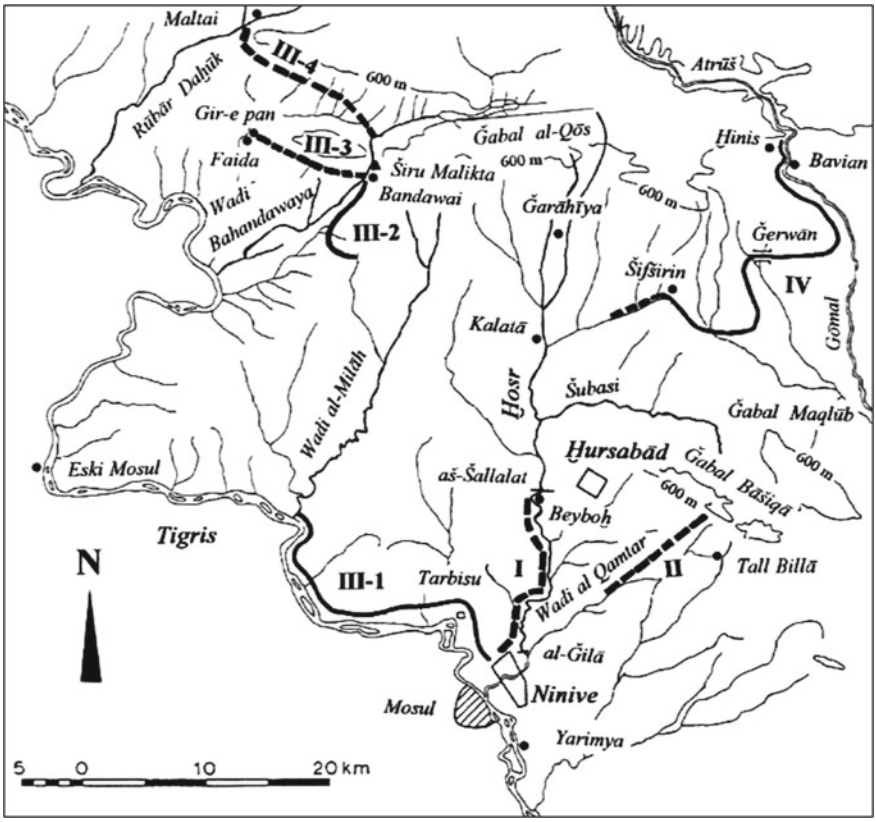


**Fig. 10** Sennacherib's waterworks for Nineveh: sketch map in Bagg (2000), Taf. 63, re-elaborated on the 1968 base map by David Oates (with new numbering). The Khinis/Bavian complex, with the canal leading to the Jerwan aqueduct, is located in the upper right-hand corner (zone IV)

However, despite these numerous innovations of detail over Oates' previous results, Reade shared, by and large, his predecessor's sceptical view concerning the overall economic impact of Sennacherib's wide-ranging hydraulic program. Oates believed that, similarly to the efforts of his imperial predecessors, Sennacherib's system of canals would not have been sufficient to sustain the massive populations of Nineveh without contributions from beyond their immediate agricultural hinterland.[18] In his turn, Reade stated that:

> the economic benefits of the Kalhu and Nineveh canal-systems… may not have been very important to Assyria as a whole. (…) In fact the principal aim of both projects may have been, not so much to augment agricultural production (though this was certainly involved), as to improve the landscape and living conditions of the two great cities, for the benefit most

[18] Oates (2005[2], p. 51): 'It is clear that although the size of the undertaking reflects the notion of grandeur so characteristic of the Late Assyrian kings and it cannot have been an economic proposition, yet it had a practical motive, 'To increase the productivity of the low-lying fields'.

> obviously of the kings who lived in them… It is hard to avoid the conclusion that these canals were luxuries, constructed without serious regard for any requirement of the Assyrian economy.[19]

Partially similar views were brought forth by the German scholar Ariel Bagg in 2000, who allowed for a technical and economic interest on the part of the Assyrian ruler, but all within "a main scope of representative nature". On the other hand, Bagg underscored the fact that Sennacherib could have developed a veritable "office for hydraulic engineering" to carry out his majestic hydraulic projects.[20]

We finally come to the research on Khinis/Bavian during the last two decades, marked first by international conflict in the area under investigation and then by its rapid conclusion entailing thorough political change.[21] Consequences thereof were of two types. In the first place, an important technical instrument for archaeological research in the area came to be introduced, vis-à-vis the previous exclusive recourse to ground observations and—very rarely—to aerial photography: this was the widespread use of satellite photography, even through de-commissioned images previously employed by military and intelligence authorities.[22] The second consequence was represented since 2009 by a policy of openness pursued by the Directorates of Antiquities of Iraqi Kurdistan and the State Board of Antiquities and Heritage of Baghdad towards mid- to long-term international fieldwork (archaeological surveys and excavations).[23] On both counts, results which grounded more firmly, or even somewhat modified, previous findings regarding the Khinis/Bavian gorge and its monumental complex were not long in coming.

Published in 2005, Jason Ur's visual survey of the Sennacherib's canal system for Nineveh through remote sensing and satellite photography aimed at demonstrating—against the scepticism variously expressed by Oates and Reade—that, given the relatively deep and rich soils to the north and east of Nineveh:

> Sennacherib's canal system was an ingenious attempt to redirect springs, rivers and wadis onto such soils and thus to remake the hydrology of Assyria in a form which was much more amenable to human control. Such control would have reduced the inherent risks that come with unpredictable annual rainfall.[24]

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[19] Reade (1978, p. 174).

[20] Bagg (2000, pp. 223–224). See Fales (2017a, pp. 252–253), on the details of Bagg's position, within the history of scholarship on Khinis/Bavian, that a native Assyrian "task force" should have carried out Sennacherib's hydraulic projects.

[21] See Fales (2017a, p. 253, fn. 56), for an assessment of possible, but altogether not exceedingly heavy, damages due to wartime activities and/or local vandalism in recent decades, especially involving the **GR.**

[22] This is the case, e.g., of the CORONA images published in Ur (2005); see ibid, pp. 318–319, for the advantages of these images over more recent realisations (LANDSAT, ASTER, SPOT) due to their higher resolution. Ur also employed aerial photographs from the British Expedition at Nimrud, dated 1955 (ibid., p. 318).

[23] Cf. e.g. Morandi Bonacossi and Iamoni (2015, p. 9).

[24] Ur (2005, p. 320).

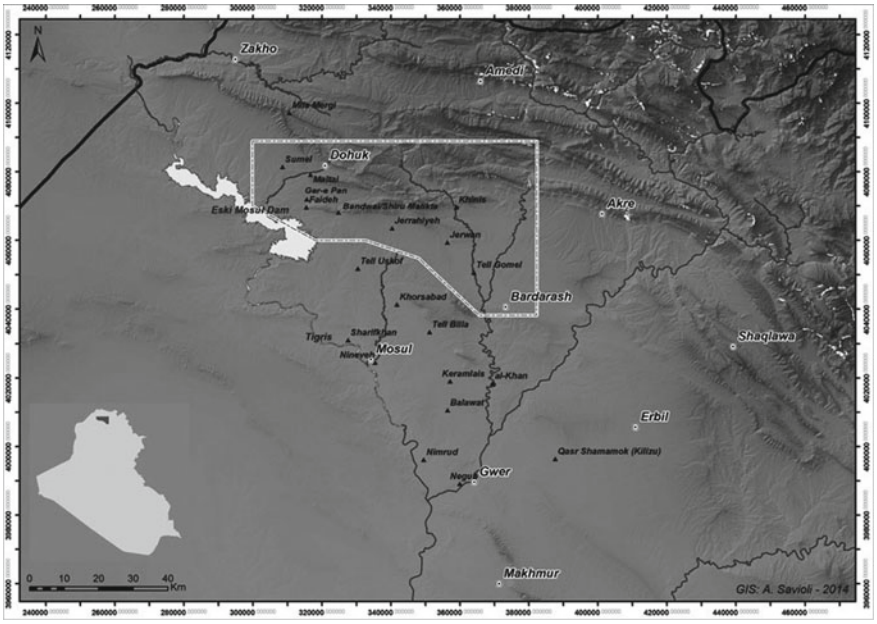


**Fig. 11** Location of the Land of Nineveh Archaeological Project (LoNAP) allotted area in northern Iraqi Kurdistan (from Morandi Bonacossi and Iamoni 2015: 11, Fig. 1)

A further innovation in Ur's results lies in the idea that the very vastness, and the detailed topography, of Sennacherib's waterworks in northernmost Assyria, might indicate that the ruler had different economic purposes in mind:

> the canals all flowed in the general direction of Nineveh and the Khosr but were not all intended actually to reach these places. (….) not *all* the waters were added to the Khosr. An unknown portion was devoted to local irrigation in areas much closer to the canals' sources.[25]

Where are we nowadays on the matter? In recent campaigns, the Italian LoNAP expedition to the Dohuk province in Iraqi Kurdistan (with an extensive survey activity over the 2,900 km$^2$ of the assigned area: Fig. 11) has found support for the overall picture first suggested by Ur, that Sennacherib's lists of toponyms and canals in the **BI** and elsewhere reveal a merely partial cogency with a single master plan for the irrigation of Nineveh. Further suggestions have thus been brought forth concerning the fact that some of the named waterways in the **BI** (and perhaps not only these) could have served a vaster and more diffuse project: that of providing water for irrigation in the entire northern sector of Assyria, from the Tigris to the Greater Zab, and of facilitating the downriver transport of merchandise of various types.[26]

[25] Ibid., pp. 334–335.

[26] It may be recalled that a small but interesting corpus of written evidence from the Assyrian empire (especially in letters sent to the kings by their officials) concerns the widespread and expert navigational activities of the Assyrians on the greater and smaller rivers of the region (both downstream

The first suggestion came from philological studies on **J**. In a renewed appraisal of Sennacherib's main inscription carved in various copies on the ashlars of the aqueduct of Jerwan, R. Del Fabbro and the present author noticed that the king extolled his vast hydraulic efforts, even naming sectors of the Gomel located to the south of the westwards turn of "Sennacherib's canal" towards the aqueduct itself. This self-laudatory description should thus imply that the ruler had—more or less at the same time in which he built the aqueduct "of white stone blocks" as an indispensable waterwork for the multiple canal-fed irrigation of Nineveh to the SW—also hydraulically organized the entire basin of the Gomel/Khazir river (in the so-called Navkur plain), which leads in a southward direction afar from Nineveh itself.[27]

On the archaeological site, a strikingly consonant result was reached by D. Morandi Bonacossi, when the hard winter rainfall of 2013 caused the exposure of a stone quay-wall along the course of the river, i.e. a structure of limestone blocks measuring ca. 28.9 by 3.1 m, located on the right bank. The building technique and the materials used (mortar, limestone blocks, paving stones) are similar to those found in the **J** aqueduct, which makes a date to the Neo-Assyrian period quite plausible (Morandi Bonacossi 2014, pp. 446–447). But a crucial point is that the river quay is not directly connected with the nearby "Canal of Sennacherib", since it is located a few kilometres downriver from the point where the canal starting from Khinis turned westward in the direction of Jerwan (Fig. 12). It is therefore clear that the quay was exclusively devoted to river navigation on the Gomel.

These different results—from philology to archaeology—thus suggest concurrently that Sennacherib, apart from his repeated flaunts about building a vast and technically advanced canal system towards his new capital city, could have had an even wider economic "agenda", which implied a full and efficient use of the waterways of the Navkur plain for various purposes, from irrigation to transport. In a nutshell, despite his own words, at present it would seem that his thoughts were turned not only towards Nineveh, but also towards the entire landscape reorganization of the region north of his new capital.[28]

In recent years, the vast and ramified discipline of landscape archaeology has not only entailed the use of new methods and instruments for research on characteristics of the man-made physical and cultural environment through time,[29] but has

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and upstream) for the purpose of providing materials of various types to the main cities located on the Tigris riverbank: see Fales (1983, 1995, 2017).

[27] Fales and Del Fabbro (2014, p. 76). The official edition of the text (Jerwan inscription **B**), as well as of an abbreviated parallel text in two exemplars (inscription **C**), the second of which was discovered on site by Fales and Del Fabbro in 2012, is now given in Grayson and Novotny (2014, pp. 219–221).

[28] See also Morandi Bonacossi (2018a), where the likelihood that the combined Gomel-Khazir waterways were used for transport as well as for irrigation purposes is suggested, on the basis of more recently studied data.

[29] As is well known, techniques at present in use for non-invasive archaeological investigations comprise laser scanner survey, digital photogrammetry, 3D modeling, micro-relief recording, and Unmanned Aerial Vehicle (UAV, i.e. drone) survey.

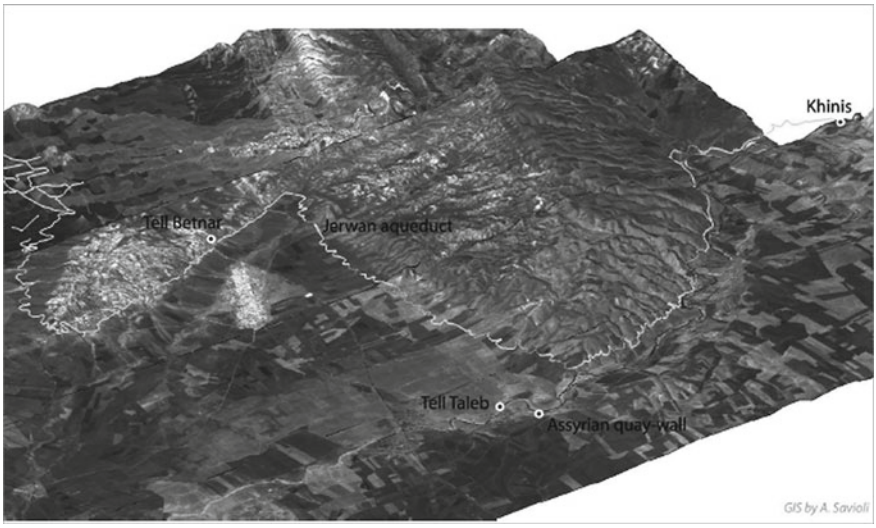


**Fig. 12** Orb-View3 image with course of the Canal of Sennacherib and location of the Assyrian quay-wall discovered by the LoNAP expedition, 2013 (from Morandi Bonacossi 2014, p. 447, Fig. 8)

also devoted attention in theoretical studies to the notions of space and its subdivisions, as well as to monumental markers of the landscape and their implications (on this point, see Harmanşah 2007, 2012). Thus, e.g. a number of contributions by the late and lamented American historian Bradley J. Parker have focused on the complexity of Assyrian imperial control, especially in its northern areas, and its possible implications on landscape modification. In this light, Parker (2013) stated:

> Imperial power was, in most cases, disseminated through regional centers (provincial and vassal capitals, military garrisons, and the like). These centers acted as nodes in networks that linked pieces of the imperial mosaic, some of which might be significantly dispersed, to the imperial core. (p. 139)

This general view, with its possible implications in the realm of agricultural production (see already Parker 2001, 2006), would confirm to a certain extent Ur's suggestion that Sennacherib's system of waterworks north of Nineveh had socio-economic aims beyond the mere provision of water for his new capital. And the present author would add here, that Sennacherib's comprehensive activity could have served the purpose of effectively "(re-)colonizing" areas of under-utilized land between Nineveh/Khorsabad and the piedmont, possibly through a planned policy of deportation ("as a means of creating agricultural surplus to support the burgeoning population in the Assyrian heartland", following Parker 2001, p. 263). But Parker's overall view of Assyrian imperial power as operating through a network of "territorially and hegemonically controlled imperial domains" (Parker 2013, p. 139) would also tally to a certain extent with the details of Neo-Assyrian occupation of the territory between the Tigris and the Navkur plain, where the LoNAP team clearly noted

that, despite the great density of small settlements recorded in the region, as a direct function of its major agro-pastoral potential:

> the Transtigridian plains were not home to widespread urbanism and the size of archaeological sites remains limited throughout their occupation history…. The lack of urbanism … has probably more to do with the rather isolated position of the Transtigridian piedmont belt in the very north of the Assyrian core area, the absence of major trade routes crossing the region, and perhaps its agricultural resources may have been less abundant than those in closer proximity to Nineveh. (Morandi Bonacossi and Iamoni 2015, p. 17)

To focus more clearly on this picture, however, it may be advisable to avoid the possible pitfall of positing a single, all-encompassing, theoretical model of imperial domination for Assyria in the age of Sennacherib (which shows, despite its brevity, various trajectories in distinct phases).[30] Rather, it seems preferable to refer to J. Burbank's and F. Cooper's recently propounded notion of "imperial repertoires", viz. the more fluid search for "actions and conditions that pushed elements into and out of empires' strategies" (Burbank and Cooper 2010, p. 3).[31]

In this light, the quest for a suggested "imperial repertoire" of Sennacherib's reign may lead us to comprise, in a position of prominence, (1) the strategic program, and action, of landscape transformation, effected through the creation of massive hydraulic networks across the piedmont belt of the Zagros in a general N-S orientation. This program was carried out for the supply of water to the new capital Nineveh, as well as, possibly, for the intensive irrigation of the entire northern hinterland—in order to increase yields and reduce the risks for dry-farming practices tied to variable yearly rainfall—for the benefit of a vast number of small rural establishments, probably manned by deportees or servile labour on behalf of the Crown or of absentee landlords from the palatial *élite.*

However—as shown by the sculptures of the Khinis/Bavian gorge, the very same "repertoire" also comprised (2) the figurative and textual commemoration of the royal program in monumental form—i.e. the fashioning of this northernmost gorge into a veritable *lieu de mémoire*,[32] such as to mark for all time the conclusion of his widespread engineering feat. In this light, the very recent retrieval of the twelfth niche-like royal stela (Fig. 13), as well as of fragments of other sculptured panels on the Khinis rock face, definitively proves that the "creation of a grandiose, ideologically extremely sophisticated figurative and textual commemoration of the king's

[30] See Frahm (1997, pp. 1–12; 2002). Also Liverani (1981, 2011).

[31] The present author is grateful to D. Morandi Bonacossi for pointing out this recent historical work and its important methodological implications for the case at hand; see in particular Morandi Bonacossi (2018b), where five elements of the overall Assyrian 'imperial repertoire' are brought forth. The present treatment focuses on the last two of Morandi's elements ('fourth, the construction of hydraulic systems of regional scale; and fifth, the symbolic appropriation of dominated landscapes'), albeit with the suggestion of a further subdivision of the latter between (a) the figurative and textual commemoration of the royal program in monumental form and (b) the communication of a political-ideological message, specific for its temporal relevance, in both documentary domains, on which cf. below.

[32] This concept, first propounded by the French historian Pierre Nora, has been taken up and readapted for Assyria and other ancient Near Eastern monumental realities by Harmanşah (2007, 2012, 2015). See also Morandi Bonacossi (2018b).

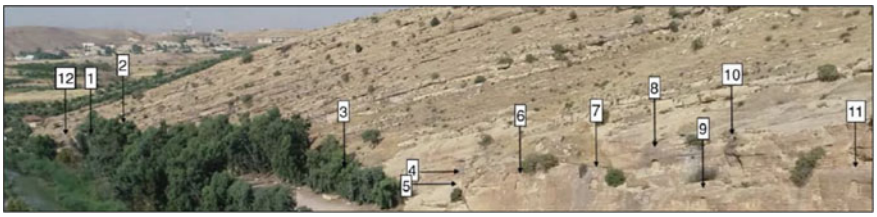


**Fig. 13** UAV view of the Khinis cliff from NNE, with the location of the newly detected 12th rock-cut stela of Sennacherib: from Morandi Bonacossi (2018c), 85, Fig. 8. The numbering is King's original one: see Fig. 5

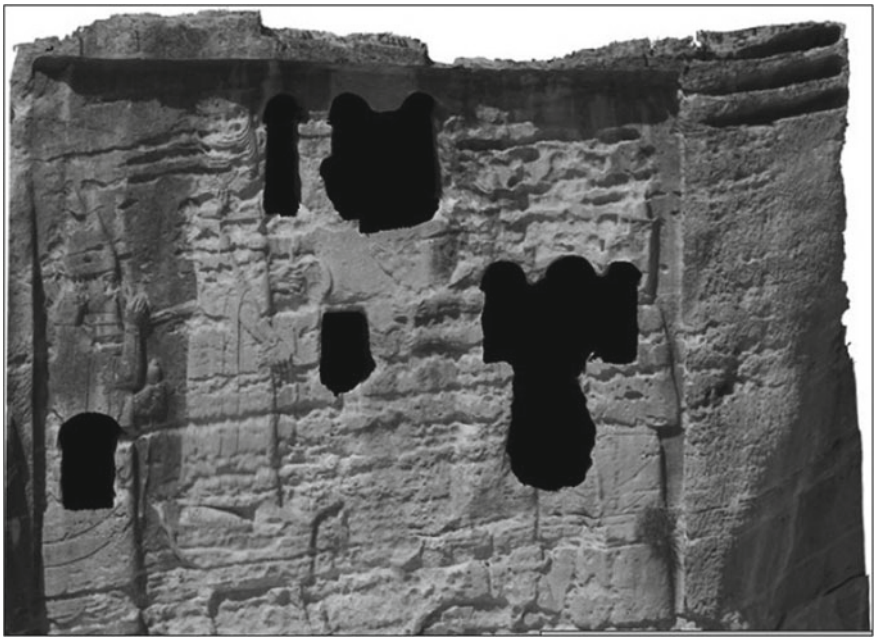

**Fig. 14** A 3D laser scanner model of **GR**, at the head of Sennacherib's Canal at Khinis, realized by Roberto Orazi, *Institute for Technologies Applied to Cultural Heritage*, National Research Council, Rome, for the LoNAP expedition (from Morandi Bonacossi and Iamoni 2015: 33, Fig. 16)

deeds" (Morandi Bonacossi 2018c, p. 89) was at the fore of the king's interests at the same time as his purely technical and economic realizations.[33]

And finally (3), we may posit that the majestic monuments of **GR, GM** and the text of the **BI** also aimed at the communication of a political-ideological message, specifically relevant to the time in which they were executed (see Figs. 14 and 15). As the present author has elsewhere shown, the rock sculptures of Khinis may be traced back to a particular stage of Sennacherib's political-ideological itinerary, centring on

[33] See also Fales (2017a, b, 266) and Morandi Bonacossi (2018b).

**Fig. 15** Reconstruction of the scene depicted in **GR** (from Ornan 2007: 177), showing the specular figures of king Sennacherib in reverential attitude at the sides, behind the god Aššur (left) and his divine consort Mullissu (right), each standing on their symbolic animal-figures. The scene is meant to commemorate the renewal of Sennacherib's tight bond with his national deity, who was exalted through a veritable religious "reform" after the king's conquest and violent destruction of Babylon in 689 BC

the so-called "religious reform", i.e. the supreme exaltation of the national god Aššur, which the king pursued and underscored—both in texts and in building activities—after his conquest and destruction of Babylon in 689 BC (Fales 2015).

At the end of the day, therefore, the Khinis/Bavian figurative and textual complex proves to be a major "soundboard" of Sennacherib's new religious policy: the substitution at all levels of the Babylonian god Marduk by the Assyrian national deity Aššur. The monumentality of the sculptures speaks of this radical change to the observer; the inscriptions exalt the heroic and destructive royal actions. To further celebrate his feats, the ruler opens up a canal in his own name, thus ending his almost fifteen years of hydraulic activity for the welfare of his land; he also builds aqueducts

and quays, and irrigates plenteously his new capital. It is a time of triumph, a time for the display of the entirety of his "imperial repertoire".[34]

The present overview has attempted to chart the changing interpretations regarding the Khinis/Bavian gorge over some 170 years, as regards its specific natural setting, its extraordinary monumental features, its functional descriptions in Sennacherib's own texts, and finally its possible geographical interrelations within the northernmost sector of the Assyrian "heartland" of the seventh century BC. Through the advancements of first-hand exploration or archaeological work in situ, as well as the intensification of philological research, and finally through the major developments in remote sensing technology on one hand, and the apt use of general models of landscape archaeology on the other, it may be stated that—conclusively—both a straightforward attempt to face a situation of economic shortcomings and the political-ideological thrust to leave a "perpetual" imprint of imperial power in a liminal region of his land, may be reconciled in the historical reconstruction of Sennacherib's extensive hydraulic activity in northernmost Assyria.

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[34] On the (still hazy) post-Assyrian history of the Khinis/Bavian complex and its adjoining monuments, see Reade and Anderson (2013, pp. 111–117), regarding the **RR**, an originally Assyrian sculptural composition which was abraded over time and re-sculpted in Parthian or Sasanian times; and Fales and Del Fabbro (2016), regarding the post-Assyrian re-positioning of so-called Inscription **D** at Jerwan, after the opening of a vast breach on the SW side of the aqueduct wall, which brought to light a vast number of inscribed slabs from Sennacherib's time, re-placed in utterly random order. The latter had originally been turned toward the inside of the wall so as to not to be visible/readable and might have come from a palatial building of the Assyrian ruler which had been dismantled/defunctionalized so as to obtain building blocks for the aqueduct. The clear findings (also through petrographical analyses) by Morandi Bonacossi (2018c, pp. 81–86), regarding a limestone quarry on the Khinis rock face, definitively support the idea—already suggested by many previous authors from Bachmann onward—that the slabs of the Jerwan aqueduct came from Khinis itself.

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