



J. Noorduyn

H. Verstappen

Purnavarmans river-works near Tugu

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PŪRNAVARMAN'S RIVER-WORKS NEAR TUGU

The Sanskrit rock inscription of King Pūrṇavarman which was found in the village of Tugu near Tandjung Priok, the port of Djakarta, is of special interest because it preserves the record of river-works executed in the middle of the fifth century A.D. The main details of the text are given in the following summary, which is principally borrowed from Bosch. Mention is first made of a river called Candrabhāgā which was dug in former times by the King of Kings, the strong-armed Guru, and flowed to the famous town before continuing on to the sea. The inscription then speaks of a river called Gomatī, measuring in length 6122 bows (*dhanus*), which was dug by the illustrious Pūrṇavarman in twenty-one days in the twenty-second year of his reign. This river, which cut across (Chhabra's translation) the camping-ground of the Grandfather and Royal Sage and was endowed by the brahmins with a gift of a thousand cows, flows forth.

Those who have previously discussed this inscription indicated that there are several uncertain details contained in it. Owing to the obscure wording of the text and our own lack of background information, we are faced with several difficulties: 1. it cannot be ascertained whether the King of Kings, King Pūrṇavarman, and the Grandfather and Royal Sage are one and the same person or two or three different persons; 2. it is unclear what connection (if any) the first river has with the digging of the second; 3. it remains unknown what the position was of the unnamed 'famous town' and of the enigmatic 'camping-ground' or 'cantonement' (as Chhabra calls it); and finally 4. it is unexplained how it was possible to accomplish the digging of a water-way with a length of 6122 bows — that is nearly seven miles or, according to another calculation, twelve miles — in the inconceivably short time of twenty-one days.

According to Vogel's solution to the last-mentioned problem, "the canal eulogized in the Tugu inscription was a watercourse of very little depth and width. Such a supposition would not seem to be impossible if we assume that the canal dug by order of Pūrṇavarman was not

intended for navigation, but served only the object of deducting part of the main current." On considering this opinion of Vogel's, however, one is led to wonder why the digging of such an insignificant waterway, as Vogel assumes it was, would have been deemed worthy of being recorded in stone.

Bosch in tackling the same problem, went one step further and assumed that in the twenty-one days mentioned in the inscription actually no digging took place at all. According to Bosch, the king handled a trident "as a magic-symbolic emblem [and] traced in 21 days the course of a canal intended to divert the water from the Candrabhāgā river and to lead it into the bed of another river." This ingenious solution of a thorny problem becomes less probable, however, when one realizes that tracing the course of the projected canal was senseless if the canal was not actually dug afterwards. This would take Bosch's assumption a little too far afield from the actual words of the inscription because it would mean that what the inscription calls digging was not digging, whereas the record of the actual digging was not included in the inscription. It seems inevitable to accept that the inscription means what it says when it speaks of digging a river.

This same conclusion may bring into question the suggestion advanced by Vlekke, who, probably speaking on the authority of Berg, thinks it "possible that a canal was not really built. Water plays an important role in Javanese mythology and in this connection, it may stand for 'separation'." This cryptic and unsubstantiated remark seems even less acceptable than the opinion of Bosch mentioned above.

That the subject of the inscription is indeed the digging of a river is borne out by the brilliant explanation given by Bosch concerning another detail. The shape of the rock bearing the inscription and the ornamental figure serving as a divider between the beginnings and the ends of the lines of writing encircling the rock have, as Bosch has shown, symbolic significance. This ornamental figure is a staff crowned with a trident, "whose outer prongs are bent far outward and the central prong is stylized into a flower-shaped ornament." The many examples which Bosch presented of legends and stories make it quite clear that in Indian mythology the trident was an attribute of a saintly or divine Guru ('teacher') who used it as an implement to bring forth from the earth a miraculous spring as a supernatural act of beneficence. It is obviously to this mythological Guru-trident-water motif that the figure of the trident refers, since it occurs alongside an inscription in which a Guru is mentioned, and whose chief subject is the digging of

a canal.¹ The occurrence of this mythological symbol does not imply, however, that the digging referred to in the inscription was also symbolic; on the contrary, it clearly serves to emphasize the reality of the river-works recorded in the inscription and at the same time, probably, to ensure them a supernatural sanction.

This also holds true for the explanation given by Bosch for the shape of the rock: it is noteworthy, he says, that this shape "resembles that of a phallus in a very striking way, a resemblance which was attained primarily by the choice of a cone-shaped stone and was further stressed by the picture of the trident in the shape of a *trens penis*." By referring to a Javanese story in which a mythological personage is presented digging a river by using his phallus as a plough, Bosch showed that the shape of the Tugu rock itself was also symbolically connected with the subject of the inscription. It is obvious, however, that this does not infer anything about the way Pūrṇavarman's canal was dug.

If the inscription then is unable to yield more details than it is prepared to disclose there still remains the question of where the river(s) it mentions and the place of the digging were located. In this matter, too, Bosch has tried to find a solution. He thought it probable that "the two rivers in question are to be identified with the Chiliwung and the Chisadane, the main streams in the region where most of the Pūrṇavarman inscriptions are found." Since "near the present town of Bogor these rivers approach each other within a distance of two miles", Bosch assumes that it was here that the canal was dug or rather that its future course was traced.

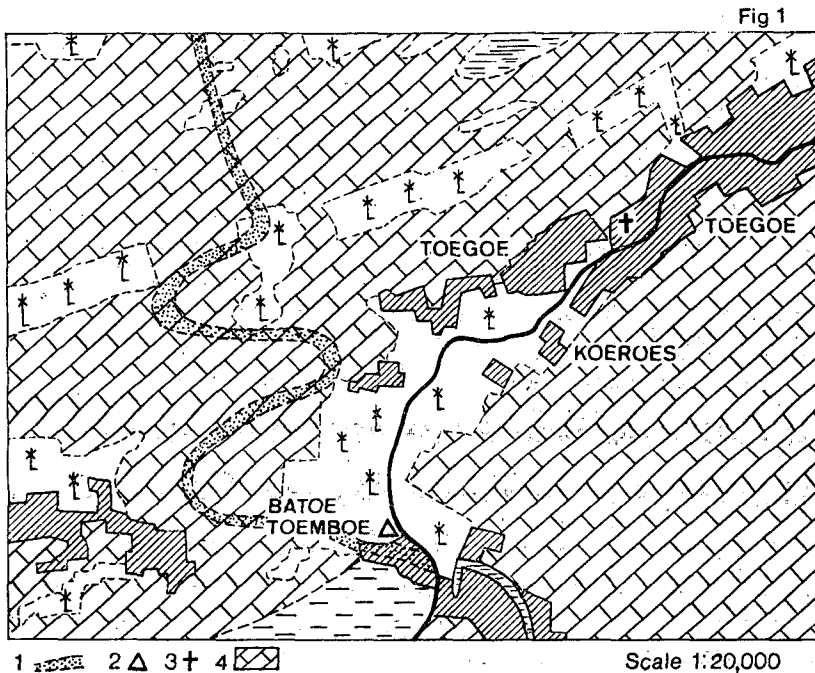
This idea does not seem to be very likely, however, since today these rivers are still two separate and unconnected rivers, and one would therefore come to the conclusion that the canal assumed by Bosch was in fact never dug, or, if it was, it had disappeared again without leaving a trace. Secondly, there would be reason to wonder why the inscription commemorating the digging of this canal would have been placed so far from the spot: Bogor is situated about 40 miles south of Tugu; or,

¹ It must be added that the Indian scholars Chatterji, Chhabra, and Sarkar who have discussed this inscription appear inclined to take the word *guru* in the sense of 'father', which then presumably should be taken to refer to King Pūrṇavarman's father. Some of them suppose that the word meaning 'strong-armed', Pinabāhu, is the personal name of this father. It is clear that this interpretation would detract to some extent from Bosch's theory. Lack of data, however, prevents one from making a definitive statement on this matter.

if it originally did belong in Bogor, why it was removed to Tugu later on.

Be that as it may, it seems preferable for the time being to follow the realistic view held by Krom in this matter that "the canal obviously should be looked for in the neighbourhood of Tugu", and to begin further investigations at this point.

The Tugu rock, which measures about 1 metre in height and a little less in diameter and because of its conical shape is sometimes jokingly called the 'egg of Tugu', is no longer in its original site. It was mentioned for the first time in 1879 and was transferred in September 1911



The area of the river diversion according to the 1:20,000 topographic map of 1901/1902 (slightly generalized). The position of the former course of the Tjakung River is based on aerial photographic interpretation.

Key: 1 = former course of the Tjakung River; 2 = location of the inscribed stone before its removal to the museum in Djakarta; 3 = protestant church of Tugu; 4 = ricefields.

from Tugu to the Djakarta Museum where it has been preserved ever since in the archaeological collection as number D 124.

The report of 1879 states (*Notulen Bataviaasch Genootschap* 1879, p. 99) that the rock was situated about 100 ells to the left of the road

(coming from Djakarta, presumably) approximately half a *paal* (i.e. ± 750 m) before one comes to the Christian church of Tugu, in some bamboo shrubs in the hamlet called Batu Tumbuh (i.e. 'emerging rock'). It was almost completely submerged in the ground and only protruded about 10 cm above the surface. There was evidence that the rock was an object of worship, since pots of incense were found burning near it and fresh flowers had been placed on top of it. These data about the site of the rock serve to show that there is no reason to assume that it had recently been moved to the village of Tugu from elsewhere.

The 1901/1902 edition of the topographical map of the "Residentie Batavia", scale 1:20,000, shows the exact place where the inscribed stone was still standing a few years before it was removed to the Museum. A little triangle on the map indicates the site of this ancient monument on the north side of "Batoe Toemboe", where this hamlet, stretching to the north-west, borders on the west bank of the Tjakung River, which runs northeastwards through the village of Tugu. The site is at a distance of about 1 kilometer to the southwest of the church of Tugu, which is indicated on the map by a Latin cross (see Fig. 1).

If it is accepted that this site is the original one, and that the digging mentioned in the inscription must have taken place somewhere in the neighbourhood, it seems advisable to devote some attention to the physical situation of Tugu and its environment, and especially to the Tjakung River running through Tugu.

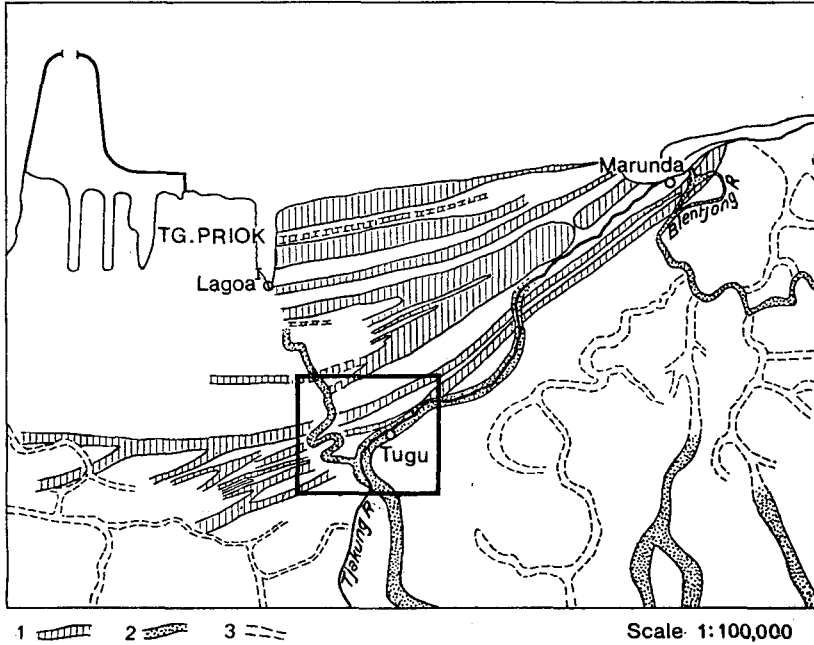
The village of Tugu is situated at the southern limit of a rather extensive complex of sandy beach ridges, each of which marks the position of a former coastline (see Fig. 2).

The lower, elongated depressions occurring between the beach ridges are partly swampy and drained by creeks. The beach ridges start near Tandjung Priok, where a former coral island is buried under the alluvial plain, and run in an east-west direction approximately parallel to the coast, until further to the east they take a more northeasterly direction and finally are cut off by the present coastline near the village of Marunda, where a small estuary formed by submerged depressions marks the mouth of the Blentjong River.

The village of Tugu is located just at the eastern end of the southernmost (oldest) beach ridges. A distinct breach occurs to the northwest of it in the more recent beach ridges, where the winding channel of a former river can be traced towards the southernmost end of the fishing harbour of Lagoa¹, east of Tandjung Priok. The present northward flowing Tjakung River and a former levee ridge of the same river take

an abrupt northeasterly direction at the village of Tugu right before the beach ridge zone. It is at this same point that in the past the Tjakung River's winding course continued on in a generally northern direction.

Fig. 2



The alluvial plain to the southeast of Tg. Priok on the scale of 1:100,000. The diversion of the Tjakung River to the south of the sandy beach ridges is clearly visible near the centre of the map. The former river courses are characterized by natural levees, crowned by settlements. The former coastlines, indicated by the beach ridges, are cut off by the present coastline near Marunda and it is evident that further east considerable recession of the coast has occurred. The low areas (white) are drained by creeks; a poorly drained area is near Tg. Priok. After: Verstappen, 1953.

Key: 1 = beach ridges; 2 = natural levees of (former) rivers; 3 = creeks. The location of the area covered by fig. 1 is indicated.

It is precisely at this juncture, viz. where the Tjakung River and its former course split off at right angles, that the inscribed stone was located in the hamlet of Batutumbuh. The hamlet is in fact built upon the levee of the former river, and the site of the stone is just in the corner formed by the present course and the former one and very close to both. This remarkable coincidence gives rise to the suggestion that

there might be a connection between the inscription and one or both of the river courses.

The fact that the inscription which reports about the digging of a river around A.D. 450 stands just near a former drainage line which coincides exactly with the divergence of the river, makes it likely that the change in the position of the river indicated on the map, is man-made. The idea that the river originally flowed in a northeasterly direction on the landward side of the beach ridges and that in order to improve the drainage conditions, a short-cut to the sea was dug northward from Tugu to Lagoa¹, however tempting, has to be abandoned since the river at present runs northeastward. Furthermore, the breach in the beach ridges situated northwest of Tugu is too broad to be explained by digging only.

One is thus led to consider the possibility that originally the drainage was directed northward to Lagoa¹ and was artificially changed into the present northeastward direction. Since this would lengthen the lower course of the river considerably, it does not seem at first sight to be a logical solution for drainage improvement. Nevertheless, it may have been a good measure if the original, northward drainage was impeded where the river had to make a breach through the beach ridges, and/or if repeated flooding occurred in the low areas downstream (north) of these ridges. For the digging of the new northeasterly drainage, use could be made of existing creeks located in the elongated depressions between the beach ridges. These depressions, due to their low position, contribute to the rapid drainage of the upstream areas and also may serve as storage basins for excess water during the rainy season. These facts may explain why the longer northeastward drain was preferred to the shorter northward river.

The inscription says that the length of the new river is eleven km (or nineteen km according to another interpretation). This great length is remarkable for two reasons: first of all, it is evident that this result could only have been achieved in the twenty-one days mentioned in the inscription if existing drainage lines (creeks) were used over considerable distances. Furthermore, the shortest distance from Tugu to the sea at present is only $3\frac{1}{2}$ km when measured in a northward direction and at most seven km when measured in the direction of the northeastward drain. The presence of the buried coral reef at Tandjung Priok makes it (notwithstanding the slight abrasion occurring there now) unlikely that the coast has ever been much more seaward than at present. In the northeast, however, where the beach ridges are cut

off by the present coastline near Marunda, considerable abrasion must have occurred in historical times. Since the beach ridges, depressions and creeks, make an acute angle with the coast, even limited recession of the coastline would already result in a considerable shortening of the northeast drainage line. An original length of eleven km, therefore, seems within the realm of possibility; that the length of the artificial river initially was nineteen km, as has been suggested by some authors, however, seems to be out of the question.

The possibility that the inscription refers to an artificial change of the river course upstream rather than downstream of its location also has been considered by the present authors and was subsequently discarded. Maps and aerial photographs reveal that the northward flowing Tjakung River upstream of Batutumbuh has not formed a natural levee and thus is also not the site of riverine villages. This part of its course might therefore be relatively recent and was possibly made artificially for reasons of irrigation. On the other hand, the former levee ridge which runs in a south-north direction and is located directly to the east of the Tjakung River, is crowned by numerous villages and marks the position of an abandoned natural water course.

The Tjakung and this former river course join to the southeast of Batutumbuh and not where the inscribed stone was erected. If the inscription were referring to the digging of the Tjakung as an irrigation canal upstream of Batutumbuh, the logical location of the stone would have been the confluence of the Tjakung and this former river, instead of its known position indicated in Fig. 1. There thus seems to be no relation between the inscription and possible alterations of the river upstream. The location of the stone, however, accords perfectly with the changes in the river course downstream described in this paper.

Finally, a few words will be devoted to the interesting problem of the location of the unnamed town of Pūrṇavarman whose existence is mentioned in the inscription. If the former northward course of the Tjakung River was the river which is called Candrabhāgā in the inscription, it follows that the 'famous town' which the Candrabhāgā 'reached' before entering the sea was located somewhere near the former course of the Tjakung River, in the neighbourhood of the present Tandjung Priok. If it is assumed that the river course was changed with the intention of decreasing the flooding of the downstream areas, it would be reasonable to assume that the old town was located in these parts. The environmental conditions around Tandjung Priok, where a buried coral reef provided dry ground for housing in an

otherwise flood-ridden area, relatively good drinking water and a sheltered roadstead near the mouth of the Tjakung River at the present village of Lagoa¹, may have been particularly attractive to early settlers. The modern harbours of Tandjung Priok and the accompanying construction activities would certainly have destroyed all remains if Pūrṇavarman's city had indeed ever been located there.²

The hypothesis put forward in this paper as an explanation of the inscription of Tugu certainly needs further verification. It is evident, however, that a study of the natural environment of the Tugu area may contribute considerably to the solution of the problem.

J. NOORDUYN
University of Leiden

H. TH. VERSTAPPEN
*International Institute For
Aerial Survey And Earth
Sciences (ITC), Enschede*

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² The dates of the archaeological remains which were found at the time when the present harbour of Tandjung Priok was dug are uncertain. Apart from some pottery there is a stone statue, found in 1883, of a two-armed female in sitting posture, which Krom classified as Śivaitic. This expert in archaeology did not repeat Pleyte's suggestion that the statue might date from Pūrṇavarman's time (N. J. Krom 1914: 15; C. M. Pleyte 1912: 101).

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