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Reattributing some (more) Coins of
Candragupta II to Candragupta III

by

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Reattributing some (more) Coins of Candragupta II to Candragupta III

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There is considerable disagreement in the literature over the proper attribution of various types of Gupta gold coins. There are differences of opinion, for example, on the question of whether or not Candragupta I (c.319–50) issued any coins.² The attributions for some of the late Gupta coins are also contested; notably, different authors have different views on how many kings there were who were named Kumāragupta and how many were named Narasimhagupta. This paper is not principally concerned with any of these contentious issues, although the question of Candragupta I's coinage will be discussed. Rather, the purpose of the paper is to propose a reattribution of some coins that so far have been universally assigned to Candragupta II (c.376–415). In other words, it is to create controversy where none has hitherto existed.

The impetus for this proposal is the growing consensus that there was a Gupta king who has come to be called Candragupta III (c.447–56). I have recently reviewed the literature on this king in a 2016 paper.³ In his presently accepted incarnation, his existence was first proposed by P.L. Gupta in 1981⁴ as the issuer of heavy-weight Archer type coins with the name *candra* on the obverse, the epithet *śrī vikrama* on the reverse, and an object between the king's face and the Garuḍa banner. Gupta dated this king to the first half of the sixth century. Raven, however, argued persuasively that he actually ruled immediately after Kumāragupta I (c.415–47 in the mid-fifth century, and before Skandagupta, c.456–67).⁵ I presented further evidence for this in 2013,⁶ and again in 2016. In his recent catalogue,⁷ Sanjeev Kumar lists Candragupta III after Skandagupta, but does not offer any clarification for this particular choice.⁸

¹ Boston University. This paper has benefited tremendously from extremely helpful email exchanges with Ellen Raven. I also wish to thank Joe Cribb and John Deyell for helpful suggestions. Earlier versions of this paper were presented at the Tenth B.D. Kochnev Memorial Seminar at Hofstra University, March 10, 2018, and at the 555th meeting of the Society Historia Numorum, Cambridge, June 20, 2019. I gathered much of the data and photo images used for this paper during two separate periods as a Fulbright-Nehru Fellow to India in 2011–12 and 2016. I am grateful for the support.

² The dates of the Guptas are somewhat debated. The dates used in this article are based largely on Michael Willis, 'Later Gupta history: inscriptions, coins and historical ideology', *JRAS* 15, 2 (July 2005), pp. 131–50.

³ See Pankaj Tandon, 'New evidence on the date of Chandragupta III', *Num Digest* 40 (2016), pp. 67–77.

⁴ Parmeshwari Lal Gupta, 'Heavy weight coins of Candragupta', *Num Digest* V, Part II (December 1981), pp. 36–43.

⁵ E. Raven, 'Candragupta III: tracing the coins of a Gupta king', *South Asian Archaeology* (1989), pp. 441–8.

⁶ P. Tandon, 'Horseman coins of Candragupta III', *NC* 173 (2013), pp. 171–85.

⁷ S. Kumar, *Treasures of the Gupta Empire* (Shivlee Trust, 2017).

⁸ The choice is puzzling because, in his text, Kumar presents arguments for why Candragupta III should be placed before Skandagupta. He says, for example (p. 85): "... these two coin varieties were

As well as the problems of the dating of this king, there is no clear agreement on exactly which coins he issued. In his original paper proposing the existence of the king, P.L. Gupta identified three varieties of the Archer type as belonging to him, all of which had an object in front of the king's face. The varieties differed in what the object was: a crescent, a wheel or *cakra*, or a symbol which Gupta called an architectural symbol but which I have shown is a fire altar. Raven agreed with these attributions. In my 2013 paper, while continuing to support these attributions, I introduced a fourth variety of the Archer type, in which there is a radiate sun in front of the king's face, and I also published for the first time two Horseman type coins that could be assigned to Candragupta III. In a subsequent paper, however, I have suggested that the variety with the altar in front of the king's face may not belong to Candragupta III but instead may have been a Hun issue.⁹ In addition, I suggested the possibility that some other coins previously attributed to Candragupta II might in fact belong to the third king of that name, although I did not flesh out this suggestion. In his recent catalogue, Kumar assigned the sun symbol variety to Candragupta II, while he assigned the altar variety to a different king he calls Candragupta IV.

In this paper, I will argue against Kumar's attempt to move the Sun variety coins to Candragupta II, which, in my view, belong firmly with Candragupta III. In addition, and more important, I will follow through on my earlier suggestion that a large class of coins, presently assigned universally to Candragupta II and never regarded as anybody else's issues, are actually issues of Candragupta III. This reattribution, if correct, will more than double the corpus of known coins of this king.

Attribution of the Sun variety coins

Kumar's argument for assigning the Sun variety coins to Candragupta II is based entirely on their weights. He says: 'The sun symbol coins' weight range of 7.87 – 8.38 grams fits well within the range for the coins attributed to Candragupta II; as such I consider these coins to be issued by Chandragupta II and not Chandragupta III as proposed by Tandon.'¹⁰ In my paper, I had acknowledged the fact that the Sun variety coins were lighter than the other Candragupta III coins, and therefore might plausibly be thought to belong to Candragupta II. I went on, however, to examine carefully some of the stylistic aspects of the coins, as perhaps most easily summarised by the *tamghas* used on the reverses, and concluded that, since the Sun variety coins conform to exactly the same pattern as the other Candragupta III coins, 'the Sun symbol coins could well belong with the other symbol coins and so could be classified as coins of Candragupta III like the others.'¹¹ Kumar completely ignored this argument.

most probably issued by a different king who arrived on the scene after Kumaragupta I but prior to Skandagupta. This new king Chandragupta III seems to have issued these Crescent and Chakra coins during the struggle to take the Gupta throne after Kumaragupta I's death." And again (p. 361): "... the Archer-Lotus Type coins with the obverse symbols of the Crescent, Chakra and Śrīvatsa are now assigned to a king who was issuing coins after Kumaragupta I and continued to issue coins at least through the initial reign of Skandagupta." Despite these arguments, Kumar then lists Candragupta III after Skandagupta in his Catalogue, without offering any further explanation for his choice.

⁹ Tandon, 'New evidence'.

¹⁰ Kumar, *op. cit.*, p. 85.

¹¹ Tandon, 2013, p. 177.

Indeed, I further pointed out that some other coins of Candragupta II also carried the same *tamghas* on the reverse and raised the possibility that those coins may also be issues of Candragupta III. I ended that discussion, however, with the observation that ‘I do not believe we yet have enough evidence to resolve this issue.’ Since that time, I have assiduously been gathering the evidence to resolve the issue, and this paper is the result of this effort. What I will show is that indeed all those coins, including the Sun variety coins, belong with Candragupta III.

The evidence is in the form of a database of 1,609 Gupta¹² gold coins constituting most or all of the collections of seven different museums and nine private collectors. The database consists of photographs of every coin, along with the weight and diameter. The die axis is not recorded as it is random. The museum collections included are those of the Ashmolean Museum, Oxford (73 coins), the British Museum, London (286), the Bihar State Museum, Patna (122), the Rajasthan State Museum, Jaipur (23), and the three major museums of the Uttar Pradesh State Museum system (344): Jhansi, Lucknow and Mathura.¹³ The private collections together added an additional 761 coins.¹⁴ Although the private collections might have more of the rarer coin types or kings, because of their greater desirability to collectors, I feel that altogether this database constitutes a reasonably representative sample of the entire corpus of Gupta gold coins. Indeed, in an early version of the study, I had not yet included the coins from the Ashmolean and British Museums; once I added them, the results did not change in any significant way. I therefore feel that this sample database should yield fairly robust results. I did not include in the database coins that were holed, carried clasps, or otherwise presented obvious features that rendered them non-comparable to the other coins.

The main advantage of having such a large representative sample of Gupta coins is that we can apply statistical methods in order to place our results on a footing that is more defensible scientifically. Kumar, in his analysis of the Sun variety coins, emphasized their weights, but the analysis was by necessity somewhat *ad hoc*. Here, we can feel more secure in making statements about the weights of different coin types. I will apply the data to several questions besides the attribution of the Sun variety coins. Analysis of the database also plays an important role in supporting the proposal I am making here to reattribute additional coins of Candragupta II to Candragupta III.

¹² Although I say the coins are Gupta gold coins, the database actually includes 36 coins that, while traditionally thought to be Gupta coins, are almost certainly Hun issues. They include 16 coins of the king known as Prakāśāditya, who I have shown is in fact the Hun king Toramāṇa (see P. Tandon, ‘The identity of Prakāśāditya’, *JRAS* 25, no. 4 (October 2015), pp. 647–68). The remaining 20 coins are Archer type coins of the so-called ‘Nameless’ king, which I have argued are also Hun issues (see P. Tandon, ‘Attribution of the nameless coins of the Archer Type’, *NC* 178 (2018), pp. 247–68).

¹³ I am grateful to the various individuals who provided or helped me gather this data: Shailendra Bhandare of the Ashmolean Museum, Robert Bracey of the British Museum, Dr. J.P. Singh and Dr. Vishi Upadhyay of the Bihar State Museum, Dr. Prince Uppal of the Rajasthan State Museum, and Dr. A.K. Pandey and Dr. Anita Chaurasia of the UP State Museum. Thanks to Amiteshwar Jha for his help in connecting me with several of the Indian museums.

¹⁴ I am grateful to those individuals who permitted me to examine and study their collections: Kapil Agrawal, Ashok and Akshay Jain, Bal Manohar and Aditya Jalan, Karan Singh, Ranvijay Singh, Parag Tripathy, and two others who wish to remain anonymous. My own collection was the ninth one whose data is included.

Digression on the purported coins of Candragupta I

In analysing this dataset of coins, it is important to be clear on how they are attributed. Since the attribution of the coins is debated, I feel it is necessary for me to justify my attribution choices. In this section, I will take up the question of why I will not assign any coins to Candragupta I.

Whether or not Candragupta I issued coins is a question that has been debated for well over a century, with one school of thought assigning the so-called ‘King and Queen’ type, illustrated in Figure 1, to Candragupta I, and another view, initially proposed by John Allan, assigning the type to Samudragupta (c.350–76).¹⁵ Since the coin identifies the two figures on the obverse as Candragupta and Kumāradevi, the Licchāvī princess, and since we know that Candragupta I married Kumāradevi, it would seem obvious that Candragupta I must have issued the coin. Allan, however, argued that he did not. Instead, he claimed that it was issued by his son Samudragupta in honour of his parents. A full review and analysis of this debate is beyond the scope of this paper, so I will only outline why I believe that the attribution to Samudragupta is the correct one.

The argument stems from a simple observation about coin designs from all over the world and at all periods of time: coin designs tend to evolve slowly. Business people generally are quite conservative; in particular, they tend to dislike uncertainty. They have therefore tended to resist radical changes in coin design. Examples of this abound. I mention just two from Indian history: the necessity for the Indo-Greeks to resort to square coins after they moved south of the Hindu Kush, and the inability of the British to gain acceptance of their initial coinages and the consequent retreat to the issue of Moghul imitations for the first few decades of their rule.



*Fig. 1. King and Queen type coin*¹⁶

The importance of this observation for our purposes is that it helps us to see which must be the earliest Gupta coins. It is well known that the Guptas modelled their coins on those of the Kushans, and it therefore follows that the earliest Gupta coins must be those that most closely resemble late Kushan coins. Unquestionably,

¹⁵ John Allan, *A Catalogue of the Indian Coins in the British Museum: Coins of the Gupta Dynasties and of Sasanka, King of Gauda* (London, 1914).

¹⁶ British Museum, COC12661, photo courtesy Robert Bracey. The images used are not to scale. Coins are approximately 20mm diameter.

these must be the Sceptre (or Standard, or Javelin) types of Samudragupta. Figure 2 places side by side a coin of Shaka, the Kushan king mentioned by Samudragupta in his Allahabad pillar inscription as one he defeated, and a Sceptre type coin of Samudragupta. The similarities are undeniable.



Fig. 2. Coins of the Kushan Shaka (left) and Samudragupta (right)¹⁷

The King and Queen coins are quite different from the Kushan Shaka coin and therefore could not be the earliest Gupta coins. The most notable differences between the Samudragupta Sceptre type coin and the King and Queen type coin are:

- (a) the obverse presents a standing king sacrificing at a fire altar, just as does the Shaka coin, while the King and Queen coin features a radically different obverse depicting the royal couple, and
- (b) the reverse has the goddess of plenty (Lakshmi on the Gupta coin, Ardochsho on the Kushan) seated on a throne, while the King and Queen coin depicts her seated on a lion.

The King and Queen coin therefore represents too radical a departure from late Kushan coins to be plausibly thought of as their immediate chronological successor, while the Sceptre type coin of Samudragupta serves that role admirably. If, for some unknown reason, the King and Queen type did precede the Sceptre type coin (which it would have to do if it were issued by Candragupta I), it seems highly implausible that Samudragupta would then issue coins that closely imitated the now obsolete Kushan type.

Raven, in her two volume study of Gupta coins and in her subsequent and forthcoming works, emphasises a different argument on the matter.¹⁸ By her careful analysis of the styles of the different coin types, what she calls their ‘mint idioms’, she shows that the King and Queen coins and the clearly identifiable issues of Samudragupta cannot possibly be separated temporally; rather, they are obviously the products of the same mints at the same times.

We can apply my database of 1,609 Gupta coins to study this point from a different angle. A well-known truism about Gupta coins, albeit one for which nobody has yet offered a convincing explanation, is that the coins of successive kings tend to weigh a little more, on average, than those of their predecessors.¹⁹ I will look at this question

¹⁷ Shaka coin, Tandon collection no. 195.09, Samudragupta coin, British Museum, COC 307872, photo courtesy Robert Bracey.

¹⁸ E.M. Raven, *Gupta Gold Coins with a Garuda-Banner* (Groningen, 1994) and ‘Samudragupta’s King-and-Queen type coins in the patterning of early Gupta coin designs’, *JONS* 205 (Autumn 2010) Supplement, pp. 31–9.

¹⁹ This does not mean that their gold content was rising; see Kumar, *op. cit.*, p. 81, where he finds no consistent pattern in the change in gold content over time. Thus this datum does not help us in the attribution exercise.

in more detail later but, if the reader would grant me this supposition for now, this would suggest that the coins of Candragupta I, if indeed he did issue any, should be lighter than those of Samudragupta. Certainly, if they *were* lighter on average, an argument could be made that this does indeed suggest that they may have been issued earlier.²⁰ The database contains 55 coins of the King and Queen type, and 369 other coins of Samudragupta.²¹ Figure 3 shows a scatter diagram of the weights of these 424 coins. Each dot represents one coin; the first 55 dots are the weights of the King and Queen coins and the others are the weights of the other Samudragupta coins. Within each of the two groups, the coins are arranged randomly. Such a diagram presents the information on weights in a much richer way than simply looking at averages would. The scatter diagram shows quite clearly that the King and Queen coins are not obviously lighter than the other Samudragupta coins. This therefore supports the idea that all of these coins were issued by Samudragupta.

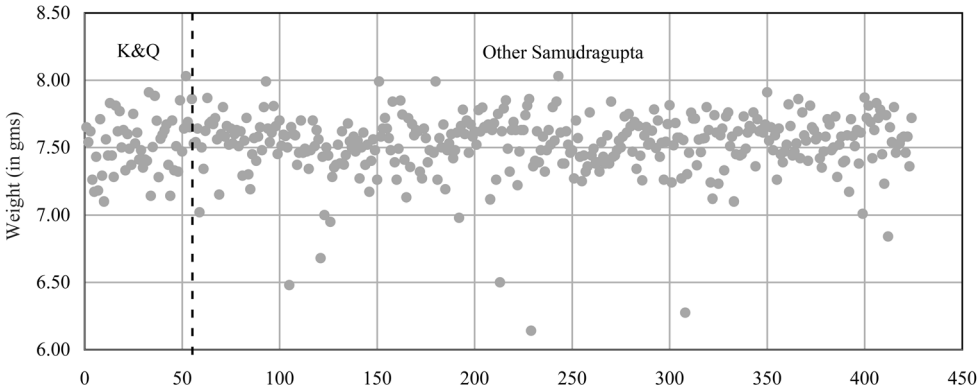


Fig. 3. Scatter diagram showing weights of the 55 King and Queen coins and 369 other Samudragupta coins in the database

To look at this conclusion quantitatively, I calculated the averages of the weights of the two groups of coins and performed a t-test to study the statistical significance of the difference between the two means (assuming the variances of the weights of the two groups are equal). The results are presented in Figure 4. We find that the average weight of the King and Queen coins is actually *higher* than the average of all other Samudragupta coins and the t-test reveals that we cannot reject the hypothesis that the two means are in fact the same. Indeed, given the fact that the average weight of the King and Queen coins is higher, the results provide strong evidence to suggest that they are indeed not lighter, as might be expected if they were issued by Candragupta I.

²⁰ Sanjeev Kumar uses precisely this argument to justify reassigning some Candragupta II coins of the Archer type to Candragupta I; this matter will be discussed in detail later in this section.

²¹ This includes the coins with the legend *Kāca*, which some regard as issues of another king, perhaps Samudragupta's brother Rāmagupta. Separating these coins would not alter the conclusion of the exercise.

	<i>King and Queen</i>	<i>Samudra - others</i>
Mean	7.527109091	7.518946
Variance	0.046680321	0.062228
Observations	55	369
Pooled Variance	0.060238915	
Hypothesized Mean Difference	0	
df	422	
t Stat	0.230111504	
P(T<=t) one-tail	0.409058314	
t Critical one-tail	1.648472442	
P(T<=t) two-tail	0.818116628	
t Critical two-tail	1.965601364	

Fig. 4. Results of a two-sample t-test on the weights of King and Queen coins vs. other Samudragupta coins²²

Most authors²³ who have assigned the King and Queen coins to Candragupta I did not assign any other coins to this king. In his recent catalogue, Kumar breaks from this tradition in that he also assigns to Candragupta I several coin types that had previously been attributed to Candragupta II. These include certain Archer type coins, along with what he calls the Rajadanda-Sceptre type and the Couch type. What all these coins have in common is that the goddess depicted on the reverse is shown seated on a throne. Thus Kumar takes all coins previously assigned to Candragupta II that feature an enthroned goddess on the reverse to be coins of Candragupta I,²⁴ separating them from the coins where the goddess is depicted seated on a lotus. This is indeed a clever idea and an attractive one at first glance. The question is whether it stands up to careful scrutiny.

Kumar's argument rests largely, although not exclusively, on his claim that the Goddess on Throne coins are significantly lighter than the Goddess on Lotus coins. He says:

‘we can see a big divergence in the weights as well as in the design characteristics between these two unique groups. In addition to the Goddess on Throne coins being lighter (7.34 – 7.98 gram) than the Goddess on Lotus coins (7.28 – 8.40 gram), we also see the reverse design of the Goddess evolve away from the Goddess Ardoksho to Goddess Lakshmi over a period of approximately 64 years.’²⁵

²² See Appendix for a discussion of the information included in this and other statistical tables and on the nature of the test.

²³ These include, although are not limited to, Vincent A. Smith: *Catalogue of the Coins in the Indian Museum Calcutta* (Oxford, 1906); A.S. Altekar, *The Coinage of the Gupta Empire* (Varanasi, 1957); and Parmeshwari Lal Gupta and Sarojini Srivastava, *Gupta Gold Coins in Bhārat Kalā Bhavan* (Vārāṇasī, 1981).

²⁴ Kumar also mentions certain Lion-slayer type coins that depict the goddess seated on a lion but where the outline of a throne back is visible on the coin. Although he mentions the possibility that these coins might have been issued by Candragupta I, he ultimately states that they ‘have been classified by me as Class III coins of Chandragupta II’ (Kumar, *op. cit.*, p. 180).

²⁵ Kumar, *op. cit.*, p. 151.

On the topic of the design, Kumar mentions the evolution of the Goddess from being seated on a throne to being seated on a lotus. The Goddess does not appear on a lotus, however, on any coins of Samudragupta. Thus it is not at all clear how the evolution of the design serves as a justification for assigning the Goddess on Throne coins to Candragupta I. The Archer and Couch types represent significant departures from the Kushan prototype and cannot serve as evolutionary links between the Kushan and Gupta coinages. The best possibility rests with the rather rare Sceptre (or Rajadanda) type. But a glance at all the coins of this type in Kumar's catalogue, and all the other ones I have seen, tells us that these also could not serve as the earliest Gupta coins because they depict the king wearing a tunic whose design has evolved away from the buttoned tunic seen on both coins in Figure 2. Thus none of these reassigned coins of Candragupta II can displace the Sceptre type coins of Samudragupta as the earliest Gupta coins. Further, it seems implausible that Candragupta II would have changed the reverse design from Samudragupta's Goddess on Throne to the Goddess on Lotus immediately upon his accession. It is more likely that he initially issued coins very like those of his father (showing the Goddess on a Throne) and changed the design only at some subsequent date when he felt more confident of his position. It is likely (and commonly believed) that Candragupta II wrested the throne away from his (presumably older) brother Rāmagupta. In other words, he was not the legitimate heir, at least by seniority. It therefore seems highly unlikely that he would make significant changes in the coinage immediately upon his accession.



Fig. 5. Coin of Vasishka (Tandon collection no. 275.12) with control mark *thā* above throne back; coin of Samudragupta (Jalan collection no. MJ-73) with inverted triangle mark

Kumar has an extended discussion about what he calls control marks and he points out they were carried over from Kushan coins (see pp. 127–9). Figure 5 illustrates a coin of Vasishka with the mark, seen above the throne back on the right, and a coin of Samudragupta's Sceptre type with a mark in the same position. Kumar uses the presence of these marks, which are sometimes seen on Candragupta Goddess on Throne coins but never on Goddess on Lotus coins, to argue that this provides further proof that the Goddess on Lotus 'coins were struck much later than the Archer-Goddess on Throne coins'.²⁶ As far as I can see, the disappearance of the mark from the Lotus reverse coins does demonstrate that they were issued later than the Throne reverse coins, but I do not see how this establishes that they were 'much later'. The mark appears to have been used throughout Samudragupta's reign. Further, Joe Cribb has pointed out in his presentations and in a private email to me that the

²⁶ Kumar, *op. cit.*, p. 127.

mark is much more prevalent on Samudragupta's coins than on the Candragupta Archer-Goddess on Throne coins. As Cribb has explained, the mark originated as the Brāhmī letter *thā* on certain Kushan coins. It appears that the Gupta die-cutters misunderstood the mark as being part of the throne on which the goddess was seated and inserted a shape that looked only loosely like the letter *thā*. Cribb points out that the mark is much more prevalent on coins of Samudragupta than on the Candragupta Archer with Goddess on Throne coins. In the database, there are 192 coins of the Samudragupta Sceptre type; of these, 73 (38.02%) have versions of the degenerate *thā*. By contrast, there are 49 coins of the Candragupta Archer type with Throne reverse; of these, seven (14.29%) have the mark. The coins from the Bayana hoard catalogued by Chhabra²⁷ provide an even sharper contrast. The corresponding figures among those coins are: Samudragupta Sceptre type coins with the mark: 15 of 50 (30%); Candragupta Archer with Throne reverse coins with the mark: one out of 21 (4.76%). Thus Cribb's assertion is demonstrably true. Contrary to Kumar's claim, the presence of this 'control mark' reinforces the conclusion, already established from stylistic considerations, that the Candragupta Throne reverse coins were issued later than Samudragupta's coins and must therefore have been issued by Candragupta II.

The database also allows us to assess Kumar's claim that there is 'a big divergence' between the weights of the Goddess on Throne coins and the Goddess on Lotus coins. If we compare the weights of these two types,²⁸ we find that there is indeed a small, statistically significant difference in weight. Figure 6 is a scatter diagram showing the weights of the 49 Goddess on Throne coins of the Archer type versus the 291 Goddess on Lotus coins of Candragupta II in the database. Visually, we see from the scatter diagram that there does not appear to be a substantial difference in the weights. To gain a more precise idea of the comparison, Figure 7 shows the results of a t-test on the difference between the average weights for the two groups. We see that the Goddess on Throne coins have a slightly lower average weight (7.74 vs. 7.79 g), and the difference in weights is indeed statistically significant at the 5% confidence level, although the difference is small and the significance is marginal.²⁹ One could hardly call the difference of 0.05g a 'big divergence' in the weights. The slightly lower weight could be explained by the fact that the Goddess on Throne coins were issued earlier in Candragupta II's reign, a point to which I will return.

²⁷ Bahadur Chand Chhabra, *Catalogue of the Gupta Gold Coins of the Bayana Hoard in the National Museum* (New Delhi, 1986).

²⁸ The coins constituting the Goddess on Lotus group exclude the Sun variety coins and the coins that are the subject of this paper, since I will show that these belong to Candragupta III. Even if these coins were issues of Candragupta II, they would be much later issues and therefore it would be inappropriate anyway to compare their weights to the Goddess on Throne coins, which were very early issues.

²⁹ Since the alternative hypothesis here is that the Goddess on Throne coins are lighter, the appropriate test is the one-tail test. The P-value is 4.3%, just below the 5% threshold for significance.

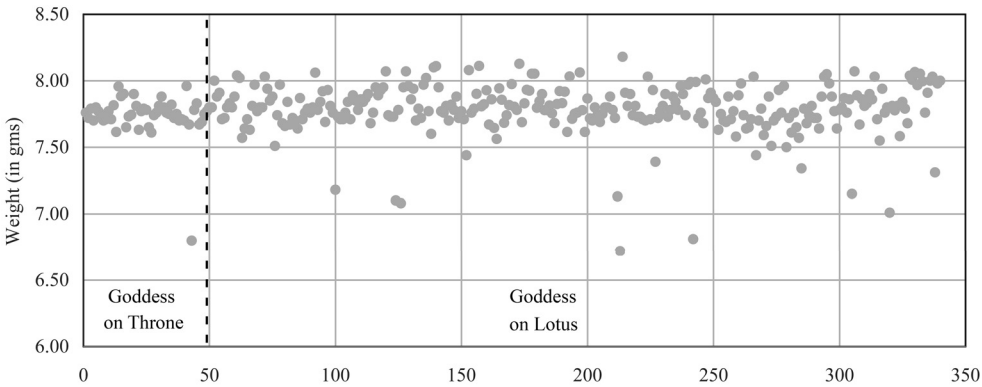


Fig. 6. Weights of Goddess on Throne vs. Goddess on Lotus varieties

	<i>Throne</i>	<i>Lotus</i>
Mean	7.739306	7.789017
Variance	0.025112	0.036778
Observations	49	291
Pooled Variance	0.035121	
Hypothesized Mean Difference	0	
df	338	
t Stat	-1.71781	
P(T<=t) one-tail	0.043374	
t Critical one-tail	1.649374	
P(T<=t) two-tail	0.086747	
t Critical two-tail	1.967007	

Fig. 7. Results of a t-test on the mean weights of Goddess on Throne vs. Goddess on Lotus coins

Although Kumar does not consider this, a more telling comparison would be between the weights of the Goddess on Throne coins, which Kumar considers to be issues of Candragupta I, with the coins of Samudragupta. If the Archer type coins with Goddess on Throne were issued by Candragupta I, we would expect their weights to be slightly *lower* than the weights of Samudragupta’s coins, while we would expect them to weigh *more* than Samudragupta’s coins if they were issued by Candragupta II. Kumar himself used the asserted lower weight of the Throne coins, as compared to the Goddess on Lotus coins, to justify assigning them to Candragupta I. Figure 8 is a scatter diagram comparing the weights of the 53 Goddess on Throne coins³⁰ with the weights of all 426 Samudragupta coins in the database. From the diagram, we see that the Goddess on Throne coins seem to cluster at a level higher than the average for the Samudragupta coins, and this conclusion is confirmed when we look at the quantitative analysis of the data, which is presented in Figure 9.

³⁰ This number is higher than the number in Figures 5 and 6 because those were confined to coins of the Archer type only. Here, I have added coins of the Sceptre (Rajadanda) type too.

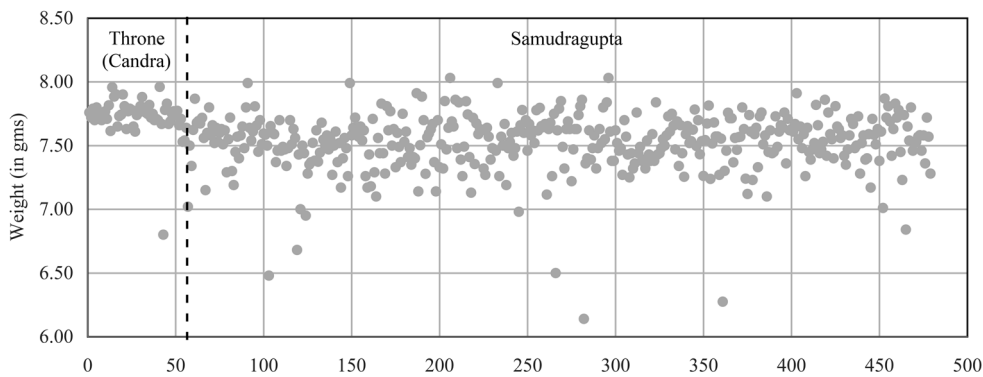


Fig. 8. Weights of Candragupta Goddess on Throne coins vs. all Samudragupta coins

From Figure 9, we see that the average weight of the Candragupta coins with Goddess on Throne is indeed *higher* than the average weight of Samudragupta’s coins (7.74 g vs. 7.52 g). This is a statistically significant difference; from the t-test we would reject a hypothesis that the averages are the same. This difference is fatal to Kumar’s theory. If the Goddess on Throne coins were issued by Candragupta I, we would expect their average weight to be lower, but the opposite is true. The weights are significantly higher. This further confirms the idea, gained from the stylistic analysis and from the analysis of the control mark on some of the coins, that the Goddess on Throne coins are later than the Samudragupta coins, and therefore must be issues of Candragupta II.

	<i>CG Throne</i>	<i>Samudragupta</i>
Mean	7.737849	7.519559
Variance	0.023336	0.059962
Observations	53	426
Pooled Variance	0.05597	
Hypothesized Mean Difference	0	
df	477	
t Stat	6.334807	
P(T<=t) one-tail	2.75E-10	
t Critical one-tail	1.648054	
P(T<=t) two-tail	5.5E-10	
t Critical two-tail	1.96495	

Fig. 9. Results of t-test on the mean weights of Candragupta Goddess on Throne and Samudragupta coins

The comparison of the Goddess on Throne coins with Goddess on Lotus Coins of Candragupta II, illustrated in Figures 5 and 6, shows a small difference in weights, but that small difference suggests that the Goddess on Throne coins were slightly lighter on average. This finding might suggest that the weight of coins issued by

Candragupta II may have been rising over time. One would expect that the Goddess on Throne coins, being closer to the design of Samudragupta’s coins, were issued earlier than the Goddess on Lotus coins. The fact that the Throne coins are slightly lighter would then suggest that there was a tendency for the weight to rise slightly over time, even within the reign of a single king.

In summary, we see that the attribution of any coins to Candragupta I falls down on close scrutiny, both on grounds of style and design and on weight. All the coins which some previous authors have assigned to Candragupta I should be assigned to either Samudragupta (the King and Queen type) or Candragupta II (the Archer and related types with Goddess on Throne). This is the practice adopted in this paper. Note that this is not a new approach; many authors³¹ agree with Allan’s suggestion that Candragupta I did not issue any coins. Kumar’s idea of reattributing Candragupta II’s Goddess on Throne coins to Candragupta I unfortunately does not pass the test of close examination.

Besides assigning no coins to Candragupta I, this study makes a number of other attributions. As these are all conventional, I do not provide any justification for the decisions. All coins with the legend *Kāca* are attributed to Samudragupta; all Archer type coins with an object in front of the king’s face are assigned to Candragupta III; and all coins of Prakāśāditya and the Nameless coins of the Archer type are attributed to the Huns. Since the kings after Skandagupta are consolidated into one group, the ‘Later Guptas’, I do not have to make any assumptions on whether there were one or two kings named Narasimhagupta or how many kings were named Kumāragupta. The distribution of coins in the database of 1,609 coins is summarised in Figure 10. Note that the coins that are the main subject of this paper, to be discussed in the next section, are attributed to Candragupta II for the purposes of the table in the figure. What we see is confirmation of the commonly held view, mentioned earlier, that the average weights of the coins of successive kings rise steadily. We also see that the most numerous coins are those of Candragupta II, followed by Samudragupta, Kumāragupta I, Skandagupta and Candragupta III, in that order. This is all as expected, although in what follows I will propose changes that will somewhat upend this expectation.

<i>King</i>	<i>Avg. wt (g)</i>	<i>Max. wt (g)</i>	<i>Min. wt (g)</i>	<i>No.</i>
Samudragupta	7.520	8.030	5.380	426
Candragupta II	7.817	8.430	6.030	620
Kumāragupta I	8.036	8.500	5.210	285
Candragupta III	8.348	8.730	7.830	41
Skandagupta	8.897	9.420	7.760	74
Huns	9.273	9.470	8.500	36
Later Guptas	9.453	9.860	8.330	127
			TOTAL	1609

Fig. 10. Table of coin distribution and weights across kings in the database prior to the reattributions proposed in this paper

³¹ Notably Ellen Raven, who emphasizes the stylistic similarity (or ‘mint idioms’) of the King and Queen coins to other coins of Samudragupta, indicating that they were contemporaneously produced at the same mints and therefore must all be issues of Samudragupta.

Reattributing some more coins of Candragupta II

The argument for this reattribution starts with the coins of Candragupta III. As I pointed out in my 2013 paper, all coins accepted or even proposed to be those of Candragupta III feature one or the other of only two reverse *tamghas*, which I called the ‘circle *tamgha*’ and the ‘diamond *tamgha*’. The two *tamghas* are illustrated in Figure 11. The Circle *tamgha* is very distinctive and there are no other known *tamghas* that could be confused with it. A notable aspect of this *tamgha* is the presence of a slightly curving line ‘dripping’ from the circle towards the pellet below, which sometimes makes this circle look like a stylized conch shell. The Diamond *tamgha*, however, is similar to other *tamghas*. The critical feature of the *tamgha* in its present use is the presence of pellets on either end of the horizontal line above the diamond. Gupta and Srivastava suggested that the *tamghas* may represent mint marks,³² which is possible, but what is important is that the *tamghas* stand as markers for a variety of stylistic elements that are common to each of the two series, as discussed by Raven in her 1989 paper. Thus coins bearing these *tamghas* are closely related to other coins bearing the same *tamghas*, in much the same way that coins produced at the same mint (or at a specific workshop within a mint) at roughly the same time are closely related.



(a) Circle *tamgha* (b) Diamond *tamgha*

*Fig. 11. The two tamghas or reverse symbols seen on Candragupta III's coins*³³

It is the presence of these *tamghas*, and the attending common stylistic elements, that make the most compelling case for assigning the Sun symbol coins to Candragupta III. These coins form a tight stylistic series, together with the Crescent and *Cakra* coins in particular, and it is therefore highly likely that these form a tight chronological series as well. If the Sun symbol coins were issued by Candragupta II and the Crescent and *Cakra* coins were issued by Candragupta III, there would have to be long parallel sequences of coins using these two *tamghas* during the 30 plus years of the reign of Kumāragupta I to bridge the gap between the two issues of coins. This will be discussed in greater detail later, but suffice it to say at this point that there are no such sequences. Note that all known coins carrying these three symbols (Sun, Crescent and *Cakra*) carry either the circle or the diamond *tamgha*. Figure 12 illustrates the sequences. The stylistic similarities, both on obverse and reverse, are obvious.

³² Gupta and Srivastava, *op. cit.*, p. 16.

³³ This was Figure 4 in my 2013 paper.













	Circle <i>Tamgha</i>	Diamond <i>Tamgha</i>
Sun variety	 	 
Crescent variety	 	 
Cakra variety	 	 

Fig. 12. Chronological sequence of Candragupta III Archer Coins with symbols³⁴

The fact that the Sun symbol coins are lighter than the others, as pointed out by Kumar to justify his giving those coins to Candragupta II, is not at all fatal to the argument. The number of known Sun symbol coins is small (there are five in the database and Kumar reports only one more) and so the results on their weights could be skewed by a few uncharacteristically low weight coins. In any case, as we saw with the Goddess on Throne versus Goddess on Lotus coins of Candragupta II, there may well have been a tendency for coin weights to rise over time within the reign of each king. The Sun symbol coins could then simply have been issued earlier than the Crescent and *Cakra* coins. We will return to this point later, but note that the Crescent variety coins are lighter than the *Cakra* variety coins. Figure 13 shows a scatter diagram of the weights of these coins and Figure 14 summarises the weights of these three varieties of coins in the database. The varieties have been arranged in an order that appears to be the chronological one, considering the weights.

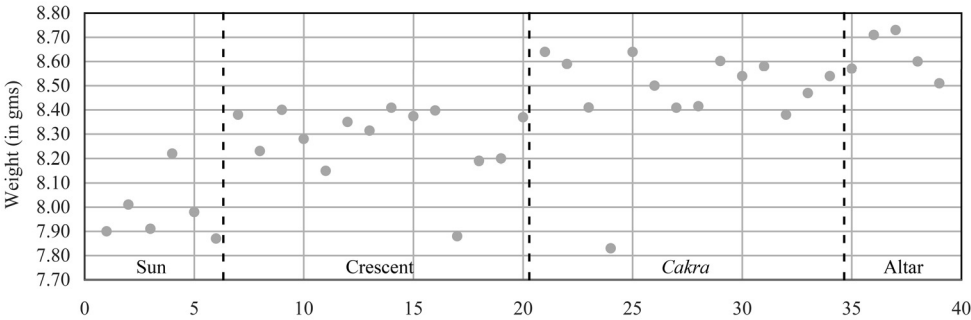


Fig. 13. Scatter diagram of weights of Candragupta III coin varieties

³⁴ This is a modified version of Appendix Table 2 of my 2013 paper. Circle symbol coins (in order): Tandon collection 586.06, Tandon collection 586.05, and British Museum, photo, courtesy Joe Cribb; Diamond symbol coins: Tandon collection 597.1, Shivlee collection, photo, courtesy Sanjeev Kumar, and Tandon collection 570.

<i>Variety</i>	<i>Number</i>	<i>Avg. wt (g)</i>	<i>Max. wt (g)</i>	<i>Min. wt (g)</i>
Sun	6	7.982	8.220	7.870
Crescent	14	8.280	8.409	7.880
<i>Cakra</i>	14	8.468	8.640	7.830
Altar	5	8.624	8.730	8.510

Fig. 14. Weights of Symbol variety coins of Candragupta III³⁵







	Circle <i>Tamgha</i>	Diamond <i>Tamgha</i>
Sword variety		
Sash variety		
Belt variety		

Fig. 15. The three varieties of coins to be reattributed from Candragupta II to Candragupta III³⁶

Now we turn to the new coins that I am arguing need to be reattributed. Apart from the Sun symbol coins of the Archer type, there are several other varieties of Archer type coins, currently attributed to Candragupta II, that also carry these same *tamghas* and have all the same style and design characteristics. I have classified them into three groups. I call the first the Sword variety, in which the king is depicted with a long sword at his left hip (Figure 15, first row). It corresponds to Class III Variety S in Kumar’s catalogue and sub-variety II.9.3 in Raven’s system.³⁷ There are 15 coins of this variety in my database. The second I call the Sash variety; on these coins, there is a curly sash running parallel to the king’s dress instead of the Sword (Figure 15, second row). This corresponds to Kumar’s Class III Variety A.8, although the first coin in Class III Variety A.5.2 also belongs to the group. In Raven’s system, this is sub-variety II.9.2. There are 35 coins of this variety in the database. Finally, there is a group of coins for which I have not been able to determine a specific characterising feature (other than the reverse *tamghas* and the similarity of obverse and reverse

³⁵ Although the Altar coins are included here, as they conventionally are attributed to Candragupta III, there may be a case to attribute them to the Huns.

³⁶ Sources: top row: private collection (anonymous) and Patna Museum 18588; middle row: collection of Akshay Jain and anonymous private collection; bottom row: Jalan collection, coins AJ 20 and MJ 33.

³⁷ As outlined in her original two-volume study of Gupta coins. In her forthcoming work, Raven is revising the groupings and the numbering, so this group number will need to be updated.

styles), although Raven identifies these coins as showing the king wearing a belt, so I will call this the Belt variety. Two coins are shown in Figure 15 and the stylistic similarities to the other coins in the Figure are self-evident. In Kumar's catalogue, coins in Class I Variety B, the second coin in Class III Variety A.5.2, and the coins in Class III Variety A.6.4 all belong to this group. They belong to Raven's sub-variety II.9.1. Because all three varieties show the king wearing a belt, I will call the group of coins collectively the Belted group.

The fact that these coins fall into such different Variety categories in Kumar's catalogue shows clearly a major shortcoming of the Class/Variety approach to the classification of Gupta coins. Fastening on one or two arbitrarily chosen features of the coins, such as 'Goddess has a halo, her left hand rests on her knee', in order to create a grouping can result in coins of wildly different styles being grouped together. At the same time, coins that must evidently have been made in the same mint at roughly the same time can be classified into different Variety, and even different Class, groupings. By contrast, Raven's mint-idiomatic approach yields sensible groupings that correspond closely to the groups I have identified. The coins I have selected constitute her Variety II.9. Thus the selected coins form a coherent group in Raven's system. Unfortunately, she leaves out of her schema the coins that are now assigned to Candragupta III; had she included them, she would probably have noticed their close similarity to the coins of her group II.9.³⁸

Apart from the fact that these coins use the same *tamghas* as the other coins of Candragupta III, there are close similarities in other details which make it quite clear they were produced at the same mint at roughly the same time (in a chronological sequence). I will focus on two such details only: the figure of the king on the obverse and the figure of Lakṣmī on the reverse, particularly the treatment of her head. These can serve as proxies for the many other similarities we see in the designs of the coins. Figures 16 to 19 present detailed images of the coins in Figures 12 and 15, which, I must emphasise, were chosen for their overall clarity and not for the similarity in the designs. The Figures separate the details by whether they carry the Circle or the Diamond *tamgha*, since those were markers for different mints or at least different workshops (if within the same mint) and indeed the coins show some significant differences in style between the coins carrying the different *tamghas*.

The Figures make it clear that coins of these six different varieties are close cousins, forming what appear to be tight chronological sequences at the respective mints or workshops. The king's hair is represented as a series of dots, the necklace consists of a crescent of pellets suspended from an arc below the neck, and the tight-fitting tunic emphasises the pectoral muscles. The presence of the buttons running down the front of the tunic on the Belt variety of the Circle *tamgha* coin (absent from the Sash and Sword coins) points to its being the earliest of these three types. Note also the narrowing of the waist, especially in the Sun, Crescent and *Cakra* varieties, particularly in the coins carrying the Circle *tamgha*. This strongly suggests that the order in which the varieties are arranged below is the chronological one; on grounds

³⁸ Raven mentions the Crescent and *Cakra* (Wheel in her terminology) symbol coins in the text (see page 317, the discussion on Chhabra's Varieties B and C) but excludes them from her catalogue. She mentions that they 'may well have belonged to a later namesake of Candragupta II, namely Candragupta III'.

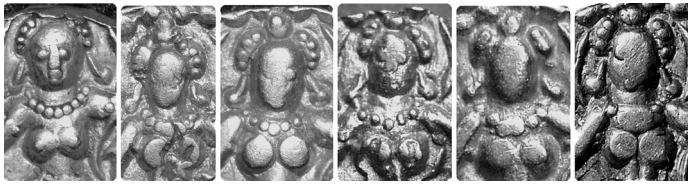
of weight (as we shall see) a case might have been made that the Sun coins came first, but the narrowed waist shows that those coins did indeed follow the Sash and Sword varieties.



(a) Belt (b) Sash (c) Sword (d) Sun (e) Crescent (f) *Cakra*
Fig. 16. King's head and torso on coins with Circle tamgha



(a) Belt (b) Sash (c) Sword (d) Sun (e) Crescent (f) *Cakra*
Fig. 17. King's head and torso on coins with Diamond tamgha



(a) Belt (b) Sash (c) Sword (d) Sun (e) Crescent (f) *Cakra*
Fig. 18. Lakṣmī's head and torso on coins with Circle tamgha



(a) Belt (b) Sash (c) Sword (d) Sun (e) Crescent (f) *Cakra*
Fig. 19. Lakṣmī's head and torso on coins with Diamond tamgha

The continuity of design is even more visible in the figure of the goddess Lakṣmī on the reverse. She wears a beaded necklace on all coins. It is the treatment of her hair and her ear-rings that are highly idiosyncratic. On all coins, the hair is divided into three parts, but on the coins with the Circle *tamgha*, it is represented by rounded dots and there appears to be a crescent and dot at the top. The ear-rings consist of pellets suspended from a long vertical, but the overall direction is outward and slightly curved. On coins with the Diamond *tamgha*, the hair is presented in much flatter segments, while the ear-rings are also less curved and simply hang down in a more linear way (compare Figures 18 and 19).

Given the close stylistic similarity between the Belted group and what we might call the Object group (for the object between the king’s face and the Garuḍa banner), it seems clear that they form a close chronological sequence. Let us consider the likelihood of the existing convention, that the Belted group coins were issued by Candragupta II and the Object group coins by Candragupta III. If this were so, it would have to be the case that coins of substantially the same style and featuring the same *tamghas* were issued throughout the reign of Kumāragupta I, forming a bridge between the coins of the two Candraguptas. But there are very few coins of Kumāragupta I that use the Circle and Diamond *tamghas*. In my database of 1,609 coins, there are 62 coins in the Belted group and 34 coins in the Object group (not counting the five Altar variety coins) but there are only four coins of Kumāragupta I that use these two *tamghas*. Of these, two use the Circle *tamgha* and two use the Diamond *tamgha*. Of course there are other coins of Kumāragupta I, not in my database, that use these two *tamghas*, but there are still only a handful known. There are clearly not enough to bridge the entire gap between the reigns of Candragupta II and Candragupta III, a period certainly of over 30 years.

In addition to the low number of coins, there are also stylistic differences that would be consistent with the Kumāragupta I coins being issued prior to all the Belted and Object coins, but not with them being sandwiched between the other two groups. Figure 20 shows the four coins of Kumāragupta I in the database that carry the two *tamghas*. The coins with the Circle *tamgha* are stylistically very similar to the Candragupta coins, but there are a few notable differences. The bunches of hair on the king are bigger, the bow is held in an inverted position, and Lakṣmī is depicted scattering coins rather than holding a diadem or fillet. The Diamond *tamgha* coins are stylistically even more different, and the form of the *tamgha* is not fully formed, but they are close enough to serve as near predecessors of the Belted coins. The best example is a coin not in my database that is clearly very close to one of the Sash variety coins (see Figure 21). Note particularly the rendition of the king’s head, especially the top knot, the ‘scarf’ on Garuḍa, the rendition of Lakṣmī’s head, and the shape of the *tamgha*. Clearly the same hand cut the dies for these two coins.



Fig. 20. Database coins of Kumāragupta I carrying the Circle and Diamond *tamghas*

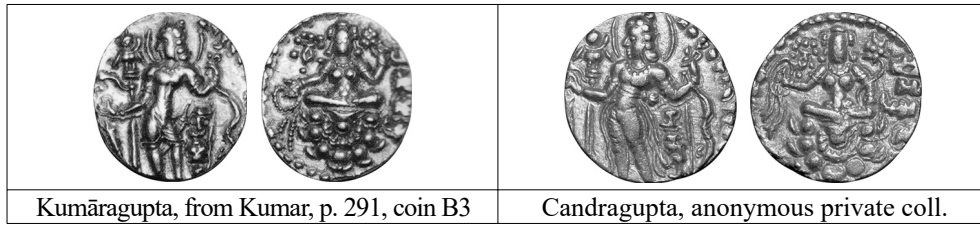


Fig. 21. Stylistically similar coins of Kumāragupta and Candragupta, Diamond *tamgha*

In summary, I believe this shows that the coins of Kumāragupta could not have bridged a 30 plus year gap between the Belted and Object coins, but they could have served as precursors to them. This is strong evidence to support the notion that the Belted and Object coins must be grouped together as the issues of one king, Candragupta III.

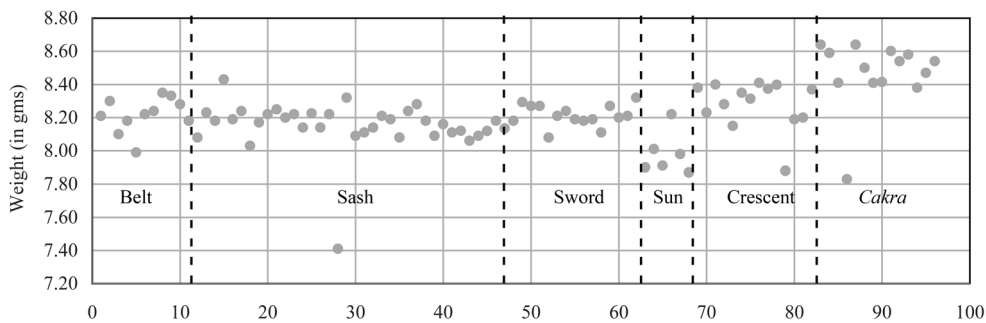


Fig. 22. Weights of Candragupta III Archer type coins, including the newly attributed varieties

The weights of these coins add further evidence for grouping all of them together. Figure 22 shows a scatter diagram of the weights of the 96 coins in the database belonging to these six varieties.³⁹ Note that substantially all the coins in the Belted group weigh between 8.00 and 8.40 grams, which is too high for Candragupta II but compatible with the other coins of Candragupta III. They were probably issued earlier in his reign than the Object coins, accounting for their slightly lower weight.

In addition to the coins in the Belted group, which are all of the Archer type, there are four additional coins in the database, traditionally attributed to Candragupta II, that use the Circle and Diamond *tamghas* and therefore should be included with the Belted group coins in this reattribution exercise. These four coins are illustrated in Figure 23. Three of these coins are of the *Chhatra* type and the fourth is of the Horseman type. In Kumar's catalogue, two coins of the *Chhatra* type, the first coin in Class I Variety C.1⁴⁰ and the second coin in Class II Variety C2⁴¹, would also

³⁹ I have excluded the Altar variety because, as mentioned earlier, I am not sure they are all issues of Candragupta III. Stylistic differences in those coins from all the others suggest the possibility that they are Hun issues. Including them would not change any of the following analysis, however.

⁴⁰ P. 255, Private Coll. 1129, Diamond *tamgha*, 8.18g.

⁴¹ P. 258, Baldwin's (London) auction 47 (25 September 2006), lot 898, Circle *tamgha*, 8.3g.

belong to this group. In her paper on the Lion-slayer coins of Candragupta II,⁴² Raven published two coins of the Lion-slayer type that bear the Circle *tamgha*; as these introduce a new type, I illustrate these two coins also in Figure 23.







	
Chhatra type, Circle tamgha, 8.11g	Chhatra type, Diamond tamgha, 8.19g
	
Chhatra type, Diamond tamgha, 8.16g	Horseman type, Circle tamgha, 8.28g
	
Lion-slayer Type, Circle tamgha, 8.13g	Lion-slayer Type, Circle tamgha, 8.24g

Fig. 23. *Chhatra*, Horseman and Lion-slayer coins with Circle and Diamond *tamghas*⁴³

I have so far shown that grouping the Belted group coins together makes sense and have argued, on the basis of the particular *tamghas* used on the coins and their style, that they belong with the coins of Candragupta III. It is also important to show that these coins do *not* belong with the coins of Candragupta II. Figure 24 presents a scatter diagram showing the weights of all the coins of Candragupta II in the database, followed by the coins in the Belted group. The latter group here includes the four additional coins shown in Figure 23. The Figure dramatically illustrates the difference in weights between the two groups. When seen in this way, one wonders how anyone could ever have thought that the coins of the Belted group belonged with the other Candragupta II coins.

⁴² E. Raven, ‘Candragupta II, the Lion-Slayer’, in C. Jarrige and V. Lefevre (eds), *South Asian Archaeology 2001: proceedings of the sixteenth international conference of the European Association of South Asian Archaeologists, held in College de France, Paris, 2-6 July 2001*, pp. 615–22 (Paris: Editions Recherche sur les Civilisations), Figures 11 and 12. In addition, Raven also included a Horseman type coin from the Bayana hoard that had the same *tamgha* (Figure 14).

⁴³ Top row, left to right: British Museum COC307961, Lucknow Museum 11692; bottom row: Lucknow Museum 11724, Patna Museum 18611. See the previous footnote for the source of the last two images.

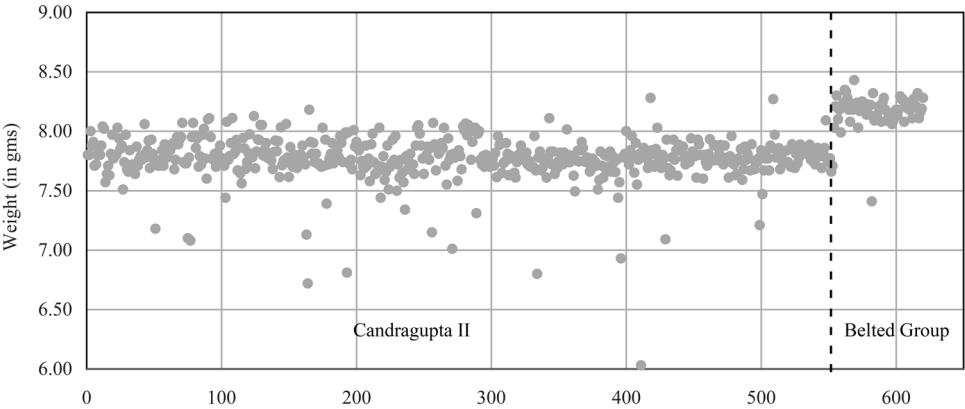


Fig. 24. Scatter diagram showing weights of Candragupta II coins
and of the Belted Group

Figure 25 presents results of a formal statistical test of the null hypothesis that the average weights of the two groups is the same (and that the observed difference is the result of sampling). The average weight of the Candragupta II coins is 7.77 grams, while the average weight of the Belted coins is 8.18 grams. Not surprisingly, the null hypothesis that the averages are really the same is rejected resoundingly. There is simply no way that the Belted coins could be regarded as coins of Candragupta II on the basis of their weights, since they are so much heavier. One could argue that coins of a specific group might on average be heavier than the average for all the coins of a given king if they were issued late in his reign and coins became heavier during each king’s reign. But the dramatic difference we see in Figures 24 and 25 is not consistent with this notion of slowly increasing coin weights.

	<i>Candragupta II</i>	<i>Belted Group</i>
Mean	7.77398	8.178955
Variance	0.034701	0.015866
Observations	554	66
Pooled Variance	0.03272	
Hypothesized Mean Difference	0	
df	618	
t Stat	-17.1929	
P(T<=t) one-tail	9.8E-55	
t Critical one-tail	1.647323	
P(T<=t) two-tail	1.96E-54	
t Critical two-tail	1.96381	

Fig. 25. Results of a two-sample t-test on the average weight of
Candragupta II’s coins versus coins of the Belted Group

Since I am proposing that the Belted group coins be attributed to Candragupta III, who ruled after Kumāragupta I, it would behove me to compare the weights of the Belted group coins with those of the coins of Kumāragupta. Figure 26 presents a scatter diagram of the weights of these two groups of coins. There is not the dramatic difference we saw between the coins of Candragupta II and the Belted group, but the Belted group coins do seem to cluster at a higher average level than the coins of Kumāragupta. In this case, the numerical analysis becomes crucial and Figure 27 presents the results of the t-test. We see that the average weight of the Belted group coins, at 8.18 grams, is indeed higher than the 8.04 grams average weight of the coins of Kumāragupta, and this difference is statistically significant. The t-test is actually very strong, not quite as resounding as in the case of the comparison to Candragupta II’s coins but still very convincing. A critic of this result could argue that it is unfair to compare the weights of the Belted group coins with all of Kumāragupta’s, since the weight of his dinārs was probably rising during his reign. But it is important to remember that the alternative to assigning the coins to Candragupta III would be to assign them to Candragupta II, in which case the average weight of the Belted group coins should be *lower* than the weight of Kumāragupta’s coins. Clearly that is not the case.

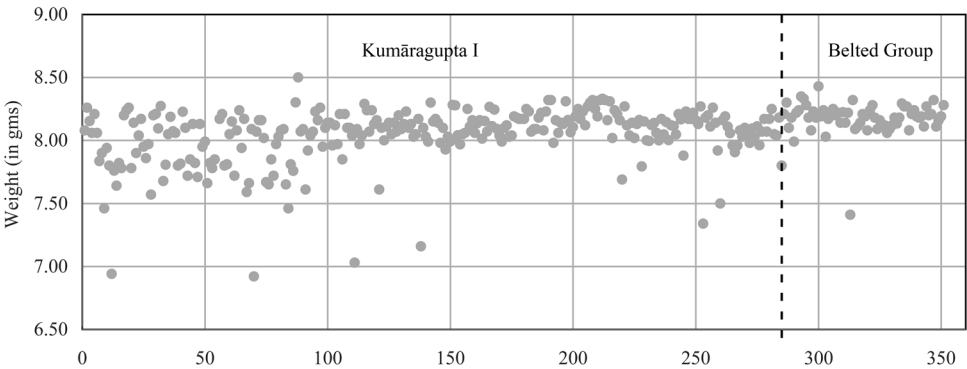


Fig. 26. Scatter diagram showing weights of Kumāragupta I coins and of the Belted Group

	<i>Kumāragupta I</i>	<i>Belted Group</i>
Mean	8.035505	8.178955
Variance	0.075145	0.015866
Observations	285	66
Pooled Variance	0.064105	
Hypothesized Mean Difference	0	
df	349	
t Stat	-4.14757	
P(T<=t) one-tail	2.11E-05	
t Critical one-tail	1.649231	
P(T<=t) two-tail	4.22E-05	
t Critical two-tail	1.966785	

Fig. 27. Results of a two-sample t-test on the average weight of Kumāragupta I’s coins versus coins of the Belted Group

One other point to note relates to the weights of the Kumāragupta coins that carry the Circle and Diamond *tamghas*. There are four such coins in my database, out of a total of 285 coins of Kumāragupta I. These coins were presented in Figure 20. In addition, Kumar’s catalogue produced another four coins carrying these two *tamghas* out of a total of 171 coins of that king listed. The weight for one of these coins is missing. Adding Kumar’s coins, I have the weights of seven coins of Kumāragupta I with the Circle and Diamond *tamghas* (Figure 28).

<i>Coin</i>	<i>Wt (g)</i>
Patna Museum no. 18620 (Circle <i>tamgha</i>)	8.26
Mathura Museum no. 108 (Circle <i>tamgha</i>)	8.15
Akshay Jain collection (Diamond <i>tamgha</i>)	8.06
Tandon collection no. 280.60 (Diamond <i>tamgha</i>)	8.21
Kumar, p 291, Private 1168 (Diamond <i>tamgha</i>)	8.22
Kumar, p 293, Class Num Gall 15-34 (Circle <i>tamgha</i>)	8.23
Kumar, p 293, Private 0204 (Circle <i>tamgha</i>)	n.a.
Kumar, p 293, Private 1369 (Circle <i>tamgha</i>)	8.10
Average Weight	8.1757

Fig. 28. Weights of Kumāragupta I coins with Circle or Diamond *tamgha*⁴⁴

This figure shows that the Kumāragupta I coins with the Circle and Diamond *tamghas* are all relatively heavy. They all weigh more than the average Kumāragupta dinār (which is 8.04g, see Figure 27) and indeed the average weight is very close (albeit slightly below) the average for the Belted group. It is safe to infer from this data that the Circle and Diamond *tamgha* coins of Kumāragupta I must have been issued towards the end of his reign, on the theory that the coins became heavier over time so that the relatively heavy coins would have been issued late in the reign. This completes a coherent story that these two *tamghas*, and the styles associated with them, first came into being late in Kumāragupta’s reign and were then carried forward by his successor Candragupta III. The sequence of coins issued by the latter would have been first the Belted group, followed by the Sun, Crescent, *Cakra* and Altar coins (assuming the last were Candragupta III issues). Within the Belted group, it is not obvious what the order might have been. Looking at the average weights, presented in Figure 29, it appears that the Sash varieties may have been first, followed by either the Belt or the Sword variety, but this ordering is highly uncertain.⁴⁵ Style considerations, as we saw earlier, suggested that the Belt variety coins were the earliest.

⁴⁴ The first four coins are the ones in Figure 20, the last four are from Kumar, *op. cit.*

⁴⁵ The average for the Sash variety coins is heavily influenced by one coin (Patna Museum, number 18594) which weighs 7.41g. If we calculate the average weight of the Sash coins without this coin, the average rises to 8.18g. It is not clear why this coin is so much lighter; it seems genuine.

Variety	Number	Avg. wt (g)	Max. wt (g)	Min. wt (g)
Belt	12	8.21	8.35	7.99
Sash	35	8.15	8.43	7.41
Sword	15	8.21	8.32	8.08
Sun	6	7.98	8.22	7.87
Crescent	14	8.28	8.41	7.88
Cakra	14	8.47	8.64	7.83

Fig. 29. Weights of six varieties of Candragupta III coins⁴⁶

Implications of the reattribution for the distribution of coins among the Gupta kings

The reattribution of the Belted group of coins to Candragupta III changes the distribution of Gupta gold coins quite dramatically. Figure 30 presents the distribution of coins in my database of 1,609 coins after the reattribution and Figure 31 displays a scatter diagram of the weights of all the coins in the sample.

King	Avg. wt (g)	Max. wt (g)	Min. wt (g)	No. coins
Samudragupta	7.520	8.030	5.380	426
Candragupta II	7.774	8.280	6.030	554
Kumāragupta I	8.036	8.500	5.210	285
Candragupta III	8.244	8.730	7.410	107
Skandagupta	8.897	9.420	7.760	74
Huns	9.273	9.470	8.500	36
Later Guptas	9.453	9.860	8.330	127
TOTAL				1609

Fig. 30. Table of coin distribution and weights across kings in the database after the reattributions proposed in this paper

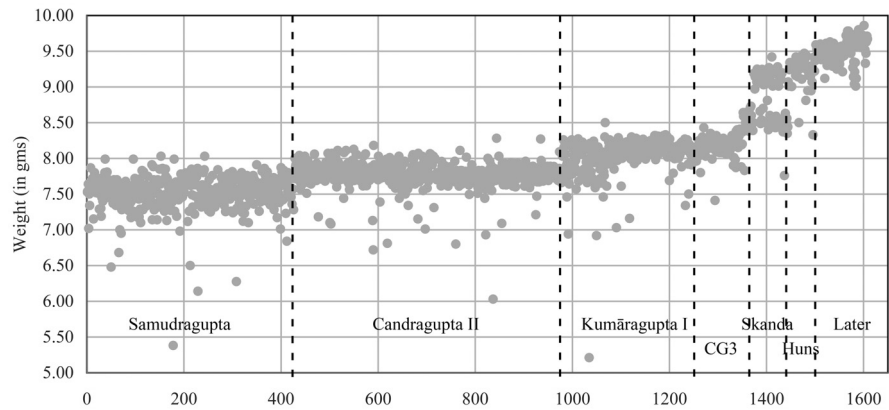


Fig. 31. Scatter diagram of coin weights across kings in the database

⁴⁶ It is worth noting that the numbers for the last three varieties do not match exactly the data I presented in my 2013 paper (see footnote 5). This is because, in the 2013 paper, I attempted to gather for these coins all the information I possibly could and therefore had a larger number of coins to work with. Here, I am using only the coins within my sample database. It would be inappropriate to expand the sample for select varieties (such as the Sun, Crescent and Cakra varieties), as it would render comparisons with other varieties (such as the Belt, Sash, and Sword varieties) statistically incorrect. Therefore, in order to be able to make comparisons, I must confine myself to only the coins within the database of 1,609 coins that are the data for this study.

Figure 31 shows clearly the tendency for the weight of the Gupta gold dinār to rise from one king to the next. This paper presents some evidence that this weight probably rose over time within each king's reign. This is not visible in the diagram because the coins, except for those of Candragupta III, are arranged more or less randomly within each king's panel. Why the Guptas did this has not yet been explained; indeed, no one has even made a serious attempt to explain it. The diagram and the data in Figure 30 also make a strong case for placing Candragupta III chronologically between Kumāragupta I and Skandagupta, since the average weight of his coins fits neatly between the averages for the latter kings.

The reattribution also affects our view and understanding of hoards and collections as discussed below.

Kālīghāt hoard. We see the most dramatic effect of the revised distribution on the Kālīghāt hoard. This hoard consisted primarily of late Gupta and possibly post-Gupta coins. According to the reconstruction of the hoard by Susmita Basu Majumdar,⁴⁷ there were 13 coins of Candragupta II in the hoard. Out of 117 coins in the category which Majumdar 'confirmed' as belonging to the hoard, this would be 11.11%, a high percentage for such an early king in a hoard of late coins. It turns out however that, of these 13 coins, four coins belong to the Object group (two of the Crescent variety and two of the *Cakra* variety) and should have been assigned to Candragupta III. A further seven coins belong to the Belted group. Thus 11 out of the 13 supposed coins of Candragupta II should be assigned to Candragupta III. The presence of such a large number of Belted group coins in the hoard is further evidence that those coins were probably not issued by Candragupta II but by Candragupta III. I list the coins requiring reattribution in Figure 32, identifying them by the coin numbers in Majumdar's Table 2. The average weight of the 11 coins is 8.22 grams. Of this, the four coins from the Object Group had an average weight of 8.35 grams and the seven coins from the Belted Group had an average weight of 8.14 grams.

<i>Coin no.</i>	<i>Variety</i>	<i>Tamgha</i>	<i>Wt (g)</i>
20	Belt	Circle	8.16
21	Belt	Diamond	7.99
22	Sash	Circle	8.12
23	Sword	Circle	8.26
24	Crescent	Diamond	8.22
25	Crescent	Diamond	8.21
26	Cakra	Diamond	8.59
27	Cakra	Diamond	8.38
35	Sash	Diamond	8.08
52	Sash	Circle	8.17
53	Belt	Diamond	8.20
		Average weight	8.22

Fig. 32. Coins from Kālīghāt hoard reattributed to Candragupta III

⁴⁷ Susmita Basu Majumdar. *The Kalighat Hoard: The First Gupta Coin Hoard from India* (Kolkata, 2014).

The result of the reattribution is a significant change in the distribution of coins by king. The new distribution, seen in Figure 33, makes the hoard a far more cohesive and coherent group, with a concentration of later coins, and only a few early coins. Prior to this reattribution, the number of coins assigned to Candragupta II seemed high for a hoard composed primarily of later coins, especially given the low number of coins belonging to Kumāragupta I. In Figure 13 the second column shows the distribution of coins according to Majumdar (Table 4, p. 60) and the third column shows the revised distribution. I have included only the coins regarded by Majumdar as ‘confirmed’ components of the hoard, leaving out the coins she marked as ‘probable’. This exclusion does not change the basic point I am making here. The coin assigned by Majumdar to Candragupta I is a King and Queen type, which I earlier argued should be assigned to Samudragupta. Majumdar does not mention Samudragupta or Candragupta III, marked by an asterisk in the Figure. An interesting aspect of the hoard is the lack of coins of Skandagupta.⁴⁸ This might suggest that Skandagupta’s coins did not circulate widely in the east and supports the idea that Candragupta III and Skandagupta perhaps reigned (and issued coins) simultaneously – the former in the east and the latter in the west.

<i>King</i>	<i>No. of coins in hoard (Majumdar)</i>	<i>No. of coins in hoard (revised)</i>
Candragupta I	1	
Samudragupta	*	1
Candragupta II	13	2
Kumāragupta I	2	2
Candragupta III	*	11
Skandagupta	0	0
Kumāragupta II	36	36
Narasimhagupta	11	11
Vainyagupta	3	3
Viṣṇugupta	51	51
TOTAL	117	117

Fig. 33. Composition of the Kālīghāt hoard before and after reattribution

Bayana hoard. It is difficult to do a study of the full Bayana hoard, as published by Altekar,⁴⁹ because of the lack of illustrations and the somewhat incomplete descriptions. It is possible, though, to study the portion of the Bayana hoard that entered the National Museum as it was published by Chhabra and all the coins were photographed.⁵⁰ Although the photographs are small and in black and white, the overall quality is good enough to enable me to reach a conclusion about which coins would require reattribution⁵¹ (of course an examination in hand, or at least high quality

⁴⁸ Majumdar did, however, place two coins of Skandagupta in the ‘probable’ group.

⁴⁹ Anant Sadashiv Altekar, *Catalogue of the Gupta Gold Coins in the Bayana Hoard* (Bombay, 1954).

⁵⁰ Bahadur Chand Chhabra, *Catalogue of the Gupta Gold Coins of the Bayana Hoard in the National Museum* (New Delhi, 1986).

⁵¹ I am especially grateful to Ellen Raven for looking over my selections and commenting on my choices.

digital photographs, would have been better). In total, 19 coins assigned by Chhabra to Candragupta II required reattribution to Candragupta III. Of these, two are of the Crescent variety and would have needed reattribution anyway. Of the remaining 17 coins, two are of the Horseman type and fifteen of the Archer type belonging to the Belted group (see Figure 34). The average weight of the 19 coins is 8.23 grams. Chhabra had assigned 288 coins to Candragupta II. If we remove the two Crescent variety coins, we would be left with 286 and, of these, I am suggesting that 17 be reassigned to Candragupta III; this is 5.94% of the total. In my sample database, a larger percentage, 10.65% (66 of 620) of the coins originally attributed to Candragupta II were reassigned. The lower proportion in the Bayana hoard may be a reflection of the fact that the hoard was buried while Candragupta III was still reigning. According to their weights, the *Cakra* variety coins were issued after the Crescent variety coins. Further, the hoard contained only one coin of Skandagupta.⁵² If indeed Candragupta III was still on the throne, the presence of a coin of Skandagupta further supports the notion that Candragupta III and Skandagupta issued coins simultaneously, with Skandagupta commencing his issues a few years into Candragupta III's reign.

<i>Coin no.</i>	<i>Plate no.</i>	<i>Variety</i>	<i>Tamgha</i>	<i>Wt (g)</i>
92	VII.2	Sword	Diamond	8.263
93	VII.3	Sash	?	8.106
105	VII.15	Belt	Circle	8.181
140	X.5	Sash	Circle	8.234
141	X.6	Sash	Circle	8.177
150	X.15	Sash	Circle	8.266
156	XI.6	Sash	Diamond	8.307
167	XII.2	Sash	Diamond	8.114
181	XIII.1	Sash	Circle	8.200
186	XIII.6	Belt	Diamond	8.263
187	XIII.7	Sash	?	8.172
204	XIV.9	Sash	Circle	8.224
227	XVI.2	Sash	Diamond	8.211
264	XVIII.9	Crescent	Diamond	8.373
266	XVIII.11	Crescent	Diamond	8.356
271	XIX.1	Sash	?	8.132
285	XIX.15	Sword	Circle	8.261
315	XXI.15	Horseman	Circle	8.288
321	XXII.6	Horseman	Circle	8.280
	19 coins	Average weight		8.232

Fig. 34. Coins for reattribution in Chhabra's catalogue of Bayana hoard coins

⁵² See Altekar, *op. cit.*, p. iii.

Collection of Bharat Kala Bhavan. Five of the 71 coins (7.04%) assigned to Candragupta II in Gupta and Srivasta’s catalogue⁵³ of the Gupta gold coins in the collection of Bharat Kala Bhavan belong to the Belted group and should be reattributed to Candragupta III. The proportion of coins to be reassigned is within the same range as we saw for the coins of the Bayana hoard and the sample database used in this paper. The coins are listed in Figure 35. One coin (an Altar variety of the Archer type) is already attributed to Candragupta III in this catalogue. However, Gupta and Srivastava place this king after Buddhagupta in the chronology. This is a good opportunity to note that the reattribution of the Belted group coins to Candragupta III provides additional support, on grounds of the coin weights, to place this king after Kumāragupta I in the chronology.

<i>Coin no.</i>	<i>Variety</i>	<i>Tamgha</i>	<i>Wt (g)</i>
73	Belt	Diamond	8.18
81	Sash	?	8.17
84	Sash	Diamond	8.18
85	Sword	Circle	8.20
86	Sword	Diamond	8.24
5 coins	Average weight		8.19

Fig. 35. Coins for reattribution in the collection of Bharat Kala Bhavan

Conclusion

In this paper, I have provided a strong argument for the reattribution of a substantial group of coins, traditionally assigned to Candragupta II, to Candragupta III. The reattribution is primarily based on style, but is strongly supported by a close examination of the weights. Using a large sample of 1,609 Gupta gold coins from sixteen different collections, I was able to show that the results based on the weights were statistically robust. I believe this is the first time that statistical techniques have been applied to the study of a large sample of Gupta gold coins.

The reattribution proposed here has important implications for our understanding of Gupta history. Looking at Figure 30, and comparing it to the distribution of weights before the reattribution, displayed in Figure 10, we see that the number of coins attributed to Candragupta II in the sample falls from 620 (38.5% of the sample) to 554 (34.4%), and the number of coins attributed to Candragupta III goes up from 41 (2.5%) to 107 (6.7%). The average weight of Candragupta II coins goes down from 7.817 grams to 7.774 grams, and the average weight of Candragupta III coins goes down from 8.348 grams to 8.244 grams. The most significant change is that the number of coins of Candragupta III now exceeds that of Skandagupta.

Not only has the number of coins of Candragupta III increased significantly, so has the variety. Within the Archer type, the three new varieties within the Belted group have been added to the three (or four) known varieties of the Object group.

⁵³ Parmeshwari Lal Gupta and Sarojini Srivastava, *Gupta Gold Coins in Bharat Kala Bhavan* (Varanasi, 1981).

Additional Horseman type coins have been added to the two known previously. Three coins of the *Chhatra* type have been added and two of the Lion-slayer type, thus adding two new types to the king's issue. With all these additional varieties and types, it becomes clear that Candragupta III was a major king with a significant coin output. I have argued before that Candragupta III was probably none other than Kumāragupta's son Purugupta,⁵⁴ and I believe the case for this identification is strengthened the more significant Candragupta III becomes. We know of no other candidate who could be identified as Candragupta III, and it seems highly unlikely that such a significant king left no trace of his reign other than his coins. While we do not have any inscriptions of Purugupta himself, his name, with the title *mahārājadhirāja*, appears on the seals of his descendants, making it clear that he ruled the Gupta empire after his father. His coins, in the name of Candragupta, seem to provide numismatic evidence of this assertion.

Appendix: The t-test and other statistical details

The paper at several places conducts t-tests. This Appendix briefly explains the t-test and the other terms seen in the Tables provided with each test.⁵⁵

Used here, the t-test is a technique to check for whether or not the average weights of different coin groupings are statistically different or the same. To illustrate how it works, I will take the first case where it is used in the paper: comparing the weights of the King and Queen type coins with all other coins of Samudragupta. In our database, the average weight of the King and Queen coins is 7.527g and the average weight of the other Samudragupta coins is 7.519g; the difference is +0.008g (see Figure 36 below, which reproduces Figure 4, but adds a column explaining the terms in each row). The question we need to ask is the following: is this difference significant or not? Could the difference we see be due to chance, or does it reflect a real difference in the underlying average weights? After all, the coins in the database are only samples of the totality of King and Queen coins and other Samudragupta coins. When we compare the average weight of the King and Queen coins in the database with the average weight of the Samudragupta coins, we run the risk that the samples we happen to have are not representative of the population of coins as a whole. As the sample sizes increase, this risk falls, but it does not go to zero. So the question we ask ourselves is, what is the probability that the difference in the average weights we observe is due to chance, even though the true (i.e., population) averages are the same? The t-test answers this question.

Statisticians have shown that, when comparing the averages from two different samples, it is possible to calculate a number, called the t-statistic, for which we can calculate the probability distribution for our particular case, the chances that the statistic would take on different values. The t-statistic is the ratio of two numbers. The top number (numerator) is the difference between the sample averages or means and the bottom number (denominator) is a measure based on how much spread there

⁵⁴ Pankaj Tandon, 'The coins of Purugupta', *Num Digest* 38 (2014), pp. 88–117.

⁵⁵ For a more detailed exposition, please consult any good introductory book on Statistics, such as David Freedman, Robert Pisani and Roger Purves, *Statistics* (4th edition, New York, 2007), or David R. Anderson, *et. al.*, *Essentials of Statistics for Business and Economics* (8th edition, Boston, 2020).

is in the two samples (i.e., on the variances) and on how many observations we have within each group. The purpose of the denominator is to ‘normalize’ the number in the numerator so that it is not affected in a significant way by the units in which it is measured. For example, we could measure the weights of the coins in grams (as is done in this paper) or in, say, grains. Obviously, the difference in average weights would be quite different in these two cases. The denominator irons out these differences.

	<i>King and Queen</i>	<i>Samudra - others</i>	<i>Explanation</i>
Mean	7.527109091	7.518946	Average weight within the group
Variance	0.046680321	0.062228	A measure of variability in each group
Observations	55	369	The number of coins in each group
Pooled Variance	0.060238915		A measure of combined variability, based on the Variances and the number of observations
Hypothesized Mean Difference	0		The base or null hypothesis that the difference in averages is zero
df	422		Degrees of freedom, an indicator of how reliable the results are, equal to the total number of observations (55+369) minus the number of groups (2)
t Stat	0.230111504		Calculated value of the t-statistic
P(T<=t) one-tail	0.409058314		The probability under the null hypothesis that the t-value would have a value greater than or equal to the observed value under a one-tail test. This needs to be less than 0.05 to reject the null hypothesis
t Critical one-tail	1.648472442		The value that the t-statistic would have to equal or exceed under a one-tail test to reject the null hypothesis
P(T<=t) two-tail	0.818116628		The probability under the null hypothesis that the t-value would have a value greater than or equal to the observed value under a two-tail test. This needs to be less than 0.05 to reject the null hypothesis
t Critical two-tail	1.965601364		The value that the t-statistic would have to equal or exceed under a two-tail test to reject the null hypothesis

Fig. 36. Table from Figure 4 with added column of explanations

Once we have the value of the t-statistic calculated, we can perform our statistical test of significance. We start with a base or ‘null’ hypothesis; in this case, the null hypothesis is that the mean or average weights of the two groups of coins are the same. If the observed difference in means is small (in a statistical sense, to be explained

below), we would find that consistent with the null hypothesis and would be unable to reject it. In this case, the t-statistic would have a value 'close' to zero. On the other hand, if the difference in means is large (in a statistical sense), we would conclude that the chances of this happening when the actual difference is zero are quite small, and we would reject the null hypothesis. In this case, the t-statistic would not be that close to zero. We also need to specify an alternative hypothesis. Generally, this is simply that the means are not the same, and we would conduct what is called a two-tail test. Under a two-tail test, the difference in means could be positive or negative; if the difference is far away (in a statistical sense) from zero, we would reject the null hypothesis. In our case here, however, the logical alternative hypothesis would be that the King and Queen coins on average weigh *less* than the other Samudragupta coins, since Kumar is attributing them to Candragupta I, whose coins should weigh less since they would have been made earlier in time. In that case, we would conduct a one-tail test, since we would reject the null hypothesis only if the difference in means (and hence in the t-statistic) is sufficiently negative.

It remains to define what we mean by 'in a statistical sense' or when a difference in means (or the t-statistic) is 'sufficiently' different from zero. This is also called setting the level of significance of the test, and it is up to the researcher to set this level. The standard level of significance that most researchers use is 5%. That is, if the probability of getting the t-statistic we observe is less than or equal to 5% under the null hypothesis, we reject the null hypothesis. The idea is that, if there is a really small chance of getting the number we do under the null hypothesis, we feel we have strong evidence that the null hypothesis is probably not true. Sometimes researchers use different significance levels, such as 10% or 1%. However, the standard level used by most researchers is 5% and that is the level of significance I have used in this paper.

We can then conduct this test of significance in two ways. One way is to compare the probability that the t-statistic would have a value equal to or more different from zero than it does and compare that with the chosen significance level. In our one-tail test, the P-value calculated by the test is 0.4091 or 40.91%, which is a lot greater than 5% and more than sufficient not to reject the null hypothesis. (Statisticians never say they accept or have proven a null hypothesis, only whether they reject it or do not reject it.) Actually, in this particular case, the test should have been even more favourable than indicated for the null hypothesis, because the P-value furnished by the test is not the correct one. Since the calculated difference of means is positive (the King and Queen coins weigh more, on average, than the other Samudragupta coins), the test assumes in the one-tail case that the alternative hypothesis would be that the King and Queen coins weigh more than the Samudragupta coins. However, the alternative hypothesis really is that the King and Queen coins weigh *less* on average. In that case, the appropriate P-value is 0.5909 ($= 1 - 0.4091$) or 59.09%, which is even greater than 5%.

The second way to conduct the test of significance is to compare the value of the t-statistic to a 'critical' value, a value that constitutes the threshold for a significant test. Here, the critical value for the one-tail test is 1.6485, while the t-statistic is

0.2301. So, once again, we do not reject the null hypothesis, since the t-statistic is so much smaller than the critical value.

We have available the same two methods of testing for significance in the two-tail case, just different values. Although the two-tail test is not the appropriate one in this case, it is the appropriate test in some other tests performed in the paper. Had we been using it here, the test tells us that the P-value is 0.8181 or 81.81%, well in excess of the 5% confidence level, and the critical t-value would be 1.9656, again well in excess of the actual t-statistic of 0.2301. Once again, we would not be able to reject the null hypothesis.

