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PROPORTION SQUARES ON TOMB WALLS IN THE THEBAN NECROPOLIS

By ERNEST MACKAY

It was the custom of the ancient Egyptians, from the time of the Old Kingdom, to draw the human figure upon squares, in order to assure to it its correct proportions. As there are a number of tombs in the Theban Necropolis which are either unfinished or still show traces of these squares beneath the paint of their walls, the writer thought it desirable to collect the various examples with a view to determining the canon of Egyptian figure representation as applied in this part of Egypt during the XVIIIth Dynasty and later.

The first step taken, as a rule, was to plan out the walls with a series of horizontal lines, so as to divide it into the registers and larger areas necessary for the various scenes. Those portions of the walls where the principal figures and scenes were to be painted were then divided into squares. All these preliminary lines were drawn by twanging a reddened cord against the plastered or stone wall, with the result that they are very irregular in thickness and often resemble series of irregular dots.

The general mode of procedure in the work of setting out the squares was, first of all to draw a large square or rectangle on the wall, then divide each side evenly by red division marks and stretch the cord between the corresponding points of division, so as to ensure the squares thus drawn being regular and equal in size.

Good examples of points of division may be seen in Tombs 92, 154 and 229, and in many others. In some tombs it would seem that only the points for the tops of the vertical lines were marked, and in these cases a plumb-bob may have been attached to the reddened cord. Carelessness in marking the points of division sometimes led to the squares being of slightly different sizes or somewhat lozenge-shaped. A good example of this is to be seen in Tomb 229, where the lower ends of the vertical lines are as much as half the side of a square removed from their proper positions¹.

Tomb 93 is peculiar, in that the squares have been drawn in black in certain parts of the tomb. It is rather difficult to account for the different colour and for the fact that the squares are drawn over the paint of the frescoes instead of showing through, as is always the case elsewhere², and it was at first thought that they were drawn in modern times to facilitate the work of a copyist. On careful examination, however, the lines were found to be certainly of ancient date. Thus the interesting question is raised as to whether these squares were the work of an old-time artist or

¹ Plate XV, No. 5.

² In the second chamber of this tomb there are also red squares drawn over the paint of the frescoes.

his pupil who wished to copy the scenes on which the squares were drawn; for, though now much blackened in places, this tomb is one of the finest, if not *the* finest, in the Necropolis for its wealth of careful detail. A series of squares drawn in black is also to be seen in Tomb 81¹, but there is no doubt that these are modern and that they were drawn on the wall for copying purposes.

It has been said that the squares were generally marked out by means of a string dipped in ruddle, but in some of the tombs the larger squares were ruled with the aid of a straight-edge. Ruled squares are rare in the Theban Necropolis, and up to the present the writer has only been able to find six examples², though it is probable that in many more tombs some of the squares were drawn in this way but are now concealed beneath the paint of the frescoes.

In every one of these cases squares were ruled upon only a small portion of the walls. The scene upon which this was done is always an important one, showing that the artist was not satisfied with the squares produced with the aid of a cord for his masterpiece in a tomb³. The lines in every case are extremely delicate and were evidently ruled with a fine brush, or perhaps a reed pen.

Below is a list of the tombs in which examples of the use of squares as an aid in figure-drawing are still to be seen. Such squares must, of course, have been used in many other tombs, but are now obscured or entirely hidden by the colour laid over them. The tombs mentioned in the list have either never been finished, or the superimposed colouring and background wash of the scenes in question have become very transparent or have scaled off.

The measurements of the squares have been taken in every possible case between the vertical lines as likely to be more accurate than the horizontal ones, and from the middle of each line, for, as before mentioned, the colouring-matter left by the cord has splashed in many places leaving indefinite edges to the lines. In many cases adjacent squares differ considerably in size owing to careless manipulation of the string in drawing them, and in consequence as many as possible were measured in order to obtain the average size. All the tombs in the list belong to the XVIIIth Dynasty. No example of a Ramesside tomb in which this system of squaring was employed has as yet been found in the Theban necropolis⁴. That such tombs exist must surely be the case, but they are either still unknown or in the case of those now accessible the superimposed paint of the scenes entirely covers the guiding squares upon the walls.

A noteworthy point in connection with the sizes of the squares measured is the extremely wide range and regular sequence of the lengths of their sides, which vary from fifteen to a hundred and one millimetres. It will also be noticed that squares of the same size have never been found in more than five tombs, which seems to indicate that in most cases no standard of measurement was employed in drawing them. Nor can any relationship be discovered between the measurements given and either the

¹ The tomb of Anena.

² Tombs 22, 81, 82, 93, 154 and 193.

³ Tomb 153 has the smaller scenes drawn on ruled squares.

⁴ Plate XVI, No. 5, shows some squared figures which have been copied from the publication, *Qurneh*, by W. M. Flinders Petrie and J. H. Walker. Prof. Petrie ascribes the tomb from which his illustrations are taken to the XIXth Dynasty, but there is no direct evidence in support of this statement. The costumes of the figures might well belong to the later period of the XVIIIth Dynasty. The tomb in question is situated just above Tomb 154.

small cubit of 44·838 centimetres, which was the standard commonly used in Theban buildings, or the Royal cubit of 52·310 centimetres. This fact is surprising, as it would naturally be expected that the reverse would be the case. It would appear, therefore, that the size of the squares was not pre-arranged, but was decided on by the artist who painted the tomb to suit the dimensions of the walls. This supposition is borne out by the fact that squares of different sizes were used in different parts of the same tomb¹.

Length of side of square	Tomb	Length of side of square	Tomb
15 millimetres	154	48 millimetres	36, 59
16 "	82, 84	50 "	36, 75, 84, 92, 201
17 "	81, 92, 200	52 "	43, 90
18 "	92, 154	53 "	22, 54, 82, 112
22 "	82, 112	56 "	75
23 "	73, 85	57 "	20, 200
28 "	52	58 "	94
30 "	22, 151	60 "	104
32 "	89	62 "	75, 87, 77, 229
33 "	155	63 "	251
35 "	52	66 "	94
37 "	38, 73, 104	68 "	59, 80, 93, 201
38 "	59	69 "	74, 85
39 "	42	70 "	95
40 "	66, 155	74 "	55
42 "	52	75 "	42, 84
43 "	22, 42, 92	80 "	55, 85, 155, 201
46 "	85	88 "	81
47 "	89	101 "	81

The next point to be considered is the method of correlating these squares with the proportions of the figures in the drawing of which they were intended to serve as a guide. Large squares were employed, of course, for the most important scenes in the tomb, namely, the representations of the deceased and his wife, and smaller ones for the figures of their sons, daughters and other relatives who, being less important than the persons for whom the tomb was provided, were after the Egyptian custom painted on a smaller scale. Thus there are often to be seen on a tomb wall a series of large squares for the figure of the owner of the tomb and usually his wife too, and adjoining and on the same register another series of smaller squares for the figures of his relatives and dependants².

Taking the side of a square as the unit, it appears to have been a canon of the paintings of the XVIIIth Dynasty at Thebes that the figure of a man or woman standing in the ordinary conventional attitude should be neither more nor less than nineteen units high, and fifteen when represented as seated on a chair. This rule is always strictly adhered to, and any slight deviation from it is due simply to careless

¹ It is possible that the height of a figure or figures was first decided upon and marked on the wall, and that this height was then divided into nineteen parts for the squares. If this be so, it would account for the great diversity of the sizes of the squares in the different tombs.

² See Plate XV, No. 7.

Tomb 95. 1 : 5

Tomb 251. 1 : 10

Tomb 55. 1 : 13

Tomb 155. 1 : 13

Tomb 229. 1 : 18

Tomb 52. 1 : 13

Tomb 93. 1 : 13

Tomb 89. 1 : 13

or hurried work. The top of the head is always three units above the level¹ of the shoulders, and the proportions of the head are regulated as follows: top of head to base of front portion of wig, one unit, from there to base of nose, one unit, and the remaining unit from the nose to the base of the throat where it joins the shoulder. The body from the base of the throat to the knees extends through ten units, the waistline being four below the shoulder level, and a line intersects the knees in every example that has been found of a figure drawn on squares², with the exception of one in Tomb 89 in which the short kilt is worn. In this exception, the line is a little above the knee, but as the knee-caps are somewhat clumsily drawn, it is difficult to decide the exact position in which the artist intended them to be. The distance from the knees to the soles of the feet is six units, making the height of the figure nineteen units in all.

In every example that has been found of a figure drawn with the help of squares the soles of the feet just rest on the lowest line, any deviation from this rule being very slight and obviously due to want of care on the part of the artist. In most cases the second line from the bottom intersects the ankles, leaving one space for the foot, and the fifth passes through the middle of the calves of the legs.

In well-drawn figures, the clothing also was made to conform with the horizontal lines of the squares in certain respects. In cases where male figures are wearing the short kilt, its lower edge is practically always twelve and a half units below the top of the head³, whereas the hem of a long over-garment is drawn two or, more usually, three units above the soles of the feet.

The depth of the opening at the neck of the vest that male figures are often represented as wearing is as a rule half a unit, as measured from the line which fixes the level of the shoulders. In a few cases the opening is as much as one whole unit deep or as little as a quarter, the latter being the case in the picture of a woman playing the lute in Tomb 93⁴. Some of the figures drawn on squares are adorned with elaborate collars, and it is difficult in these cases to ascertain the depth of the opening of the vest; but in two such figures in the Tomb of Nakht⁵, the opening at the neck in the case of the male figure is one third of a unit deep, and in that of the female behind him the usual half. In the male figure in Tomb 229⁶ the vest opens down to the depth of three-quarters of a unit.

The method of regulating the breadth of the figures by means of the squares is the next point to be dealt with, and here some amount of variation is found. As a rule, in the case of single standing figures a vertical line, which, it should be noted, is not more strongly marked than the other lines, bisects the form unequally lengthways. This line passes in front of the ear, when that organ is shown and not covered by a wig, and in most cases runs down through the body to a point on the base-line one square behind the toe of the hinder foot⁷. This vertical line does not divide the body exactly in half, although it passes through the middle of the head, there being a larger portion of the body in front of it than behind it. In rare instances, which occur even in good work, the ear is placed on this line or even a little in front of it⁸, showing that the Egyptian artist was not always quite certain as to its

¹ Plate XV, Nos. 1, 2, 3, etc.

² Plate XV, Nos. 6 and 8; Plate XVI, Nos. 2 and 3.

³ Plate XV, Nos. 5, 6 and 8.

⁴ Plate XV, No. 7.

⁵ Plate XV, No. 6.

⁶ Plate XV, No. 5.

⁷ Plate XVI, No. 2; Plate XV, Nos. 4 and 6.

⁸ Plate XV, No. 5.

proper position. Another important line was that immediately in front of the one whose position has just been described. In most standing figures it passes through the middle of the iris of the eye and terminates below at the toe of the hinder foot.

The positions of these two lines are as described above in the case of single standing figures; but when two figures are drawn upon the same set of squares in close proximity to one another as, for instance, the owner of a tomb and his wife, although the figure in front, which seems to have been drawn first, was practically always regulated by these two lines, it was often impossible, owing to its position, to conform the figure behind to the same rules. In such cases, the artist probably measured from the two chief vertical lines to obtain the proper proportions for the second figure. In the majority of cases where one figure is shown standing behind another, there is a space equal to six units between the vertical lines through the eyes¹.

The vertical line two squares behind the line bisecting the head was also of considerable importance, for in most cases it regulated the position of the calf of the hinder leg and thus assured the proper balance of the figure. In some instances, the back of the hinder leg, from a point in the middle of the calf to the level of the soles of the feet², follows this line down through four units.

The length of the foot from heel to toe is in most cases exactly three units, *i.e.* it is equal to the height of the head and neck. The toe of the hinder foot of a figure touches the line which passes through the eye, while the heel, the width of three squares behind, touches the line which fixes the position of the calf of that leg. In most examples of standing figures there is a space equal to the width of a square and a half between the heel of the foot in front and the toe of the one behind. This is, however, subject to a little variation, even in the same tomb, the space between the limbs being a little more or a little less according to the whim of the artist; but it was a canon of the Egyptian art of figure-drawing in the XVIIIth Dynasty at Thebes that the space between the feet should be as stated, one and a half units³, as is proved by many examples of carefully drawn figures.

As for the position of the arms with regard to the squares, we meet with the difficulty that there are not sufficient examples showing them in the same pose to make it possible to formulate any rules; for the arms are naturally more rarely in the same attitude than is the case with the lower limbs. If, however, the arm is drawn in front of the figure and sharply bent, its elbow, as a rule, touches a point four squares in front of the central vertical line and seven squares below the top of the head⁴. When the arm is drawn in this position, the width of the elbow joint varies considerably, ranging from one or one and a quarter units to one and a half, or even slightly more. When both arms are drawn with the same degree of flexion, it appears from Plate XV, No. 5, that the position of the elbow in front is fixed by the point already mentioned and that the other elbow rests on the line passing through the middle of the head. Unfortunately, the example given with the arms in this position is the only one that the writer has been able to find with its original squares showing. There is, therefore, no means of comparing it with similar squared figures in order to

¹ Plate XV, Nos. 5 and 6.

² Plate XV, No. 6 and Plate XVI, Nos. 2 and 3.

³ Plate XV, No. 4 and Plate XVI, No. 1.

⁴ Plate XV, Nos. 2, 5 and 6; Plate XVI, No. 3.

1

Tomb 55. 1 : 20

2

Tomb 92. 1 : 13

3

Tomb 92. 1 : 5

4

Tomb 104. 1 : 20

5

Tomb just above 154. 1 : 21

6

Tomb 22. 1 : 8

7

Tomb 154. 1 : 10

test the reliability of the position, but the relative positions of the arms and body agree with those in figures that have been finished and whose guiding squares are covered over.

The open hand, measured from the wrist to the tips of the fingers¹, is usually two units in length, and, although always subject to a little variation, in good work is never under two units. When the hand is closed, as in the act of holding something, its length is usually a unit or a trifle over.

It is well nigh impossible to ascertain the rules governing the drawing of standing female figures with the aid of squares, owing to the few examples in the Necropolis in which the squares are still distinguishable. Another difficulty is that women were always drawn with one foot slightly in advance of the other, and in the later part of the XVIIIth Dynasty a long robe falling to the heels frequently obscures the form of the figure. Perhaps the most complete example of a female figure drawn on squares is the wife of Nakht, who is shown standing behind her husband². She is drawn the same height as her husband, and as regards the horizontal lines her proportions exactly correspond, except that her waist-line is one unit higher than that of her husband. The lady standing behind her husband in Plate XV, No. 5, is incomplete, the lower part of the figure having been left unfinished. Owing to the obliqueness of the upright lines, the position of the body in relation to them is not the same as in the case of the wife of Nakht. It should also be noticed that, if the lower portions of the figures of this lady and her husband were completed, they would be only eighteen units high instead of nineteen. The artist evidently started the heads from the line below the one at which he should have done, and in consequence of this mistake would have had to add an extra line below what is now the base line, if he had completed these figures. From other evidence, into which it is needless to enter here, it was clearly desired to finish this tomb as quickly as possible, but it was eventually left entirely uncompleted, owing perhaps to the early death of the man for whom it was intended.

It will be seen on comparison that the position of Nakht's wife in relation to the vertical lines differs somewhat from that of Nakht himself, and that the difference is probably due to convention. It should be noticed that the vertical line, which, in the case of male figures, divides the body nearly equally, in the female figure runs down well towards the back, owing to the attitude in which women are always represented in Egyptian tomb paintings, with feet close together and the hinder foot projecting slightly, thus making them appear slightly top-heavy as compared with male figures.

It has been suggested that the Egyptian method of squaring may have been employed solely as a means of transferring to a wall figures that had already been drawn on a smaller scale upon some such material as papyrus. Even if this were the case, which seems hardly probable, the fact that the figures always occupy the same positions with regard to the squares proves that the latter were prepared by the artist as a means of obtaining the proper proportions for his figures, whether they were drawn first on a smaller scale or not. Added to this, no example is known to the writer of a squared figure or figures drawn upon papyrus, though they are found upon small limestone plaques which have been identified as the work of artists' pupils.

¹ Plate XV, No. 5.

² Plate XV, No. 6.

The squares on these plaques are scored in the stone, while the figures upon them are drawn with an easily removeable paint.

In many tombs it is quite certain that the artist had no guiding lines at all to assist him in his work, and that he fixed all the proportions entirely by eye. Some of the finest work was carried out without the aid of squares, and the outlines of the figures are as surely drawn as if squares had been employed. An example of such good work is to be seen in the Tomb of Ramōse¹, where some of the walls have been squared in the usual way, and yet on others, principally the north-western wall, the figures have been wonderfully outlined without any mechanical aid whatever².

In most of the common scenes which are to be seen in all the tombs, such as a long row of offering-bearers, bringing gifts and produce to the deceased or carrying articles in a funeral procession, the figures were not drawn upon squares. In many cases five horizontal lines were alone employed to fix the proportions of such figures. The space between the two top lines in such examples always marks the position of the head, and is, therefore, equal to three units in breadth. The next line below cuts the figures through the buttocks, and leaves a space equal to nine squares in width from the top of the head, or six units from the second line. Below this is a line which runs through the knees, and is thus a distance equal to four squares in width below the line immediately above it, and, lastly, there is the base-line upon which the figures stand³. In the second chamber of Tomb 92 there is a very good example of horizontal lines being thus employed; but in this case only four lines were used, of which the top and bottom ones fix the height of the figures, and the two in the middle the levels of the head and the lower part of the body. It will be noticed that the third line from the top varies slightly in position in the three registers, but it appears to have been intended to mark the position of the knees⁴. On measuring the vertical distances between these lines, it is found that little or no attention was paid to proportioning small figures such as these according to the methods described above.

In Tomb 108 six lines were used to fix the proportions of a row of small figures. The topmost line is well above the heads of the figures, the second line runs through the necks, the third is just below the buttocks, the fourth intersects the knees, the fifth passes through the ankles of the figures, and the sixth is the base line on which they stand. It is, incidentally, worthy of note that in this case the artist, after drawing his guiding lines, decided that the space between the two top lines was much too wide; he therefore left a gap of about 18 millimetres between the upper line and the tops of the heads of the figures. Though the number of horizontal lines which are used may vary, there is always a line to fix the height of the head, and also one passing through the knees. In two tombs (Nos. 42 and 92) there is also a line intersecting the buttocks of the figures, and these lines are of great interest as they evidently give us the principal segments into which the Egyptian artist divided the human figure horizontally.

¹ Tomb 55.

² For fine work drawn without the use of squares, note the donkeys and men on the north wall of Tomb 143, and also the preliminary work on the north and end walls. All these drawings are in red outline.

³ Tomb 42, inner chamber.

⁴ Plate XVIII, No. 2.

This method, however, seems to have been employed only rarely in the Theban Necropolis, as the minor figures were usually drawn without guides of any kind, with the exception that occasionally lines were used solely to mark the height of the figures and the position and height of the head. It is quite conceivable, of course, that a very powdery colour was sometimes employed for drawing these guiding lines, and that this was brushed off after the outlines of the figures had been painted. It has not, however, been possible as yet to detect any trace of this having been done, for the lines forming the squares now to be seen were invariably drawn with a fast colour, which even bears without disturbance the test of another colour being applied over it.

In those examples of seated figures where guiding squares are still to be seen, the same method of proportioning was employed as for standing figures, but the height is four squares less on account of their attitude, seated figures being in all cases (except those sitting on the ground) fifteen instead of nineteen units in height¹. In nearly every one of these cases, the seat of the chair or stool is exactly five units above the line on which rest the soles of the feet, and the knees therefore occupied one square above the seat in order to make their height above the base-line the required six units.

Owing to the scarcity of good examples of seated figures where the guiding squares still remain, it is difficult to formulate any very exact rules concerning their drawing, but there are certain points of agreement in those examples which have been examined, suggesting that their proportions were regulated by definite rules.

Figures seated in couples are generally very close to one another, the knees of the figure behind slightly overlapping (practically always by one unit) the body of the figure in front, the object of which was to allow of the figure behind, which is nearly always that of the wife of the owner of the tomb, clasping her husband either by the shoulders or by the waist. In some cases, however, the woman is sitting just clear of the man in front of her, and her arm is then less flexed to allow for the extra unit which is then required in its length. A good example is to be seen in Tomb 154², but seated figures that do not overlap slightly are comparatively rare in the Theban Necropolis.

When two persons are seated close to one another, as in Tombs 22 and 104³, the vertical line which is one unit behind the line bisecting the eye of the figure in front touches, or nearly touches, the knees of the figure behind. The line behind this again gives the correct width of the leg just below the knee, and in all the known examples of seated figures the bottom of the vertical line passing through the middle of the eye is practically three and three-quarter units behind the heel of the hinder foot.

The two women seated on the ground behind the four figures on chairs in Tomb 154⁴ are practically eleven units high, that is, four units less than the height of the figures seated on chairs, owing to the width of the leg at the calf being substituted for the height of the chair. It is worthy of note that in the Theban tombs the figures of men and women seated on the ground were very rarely drawn with the help of squares, the probable reason being that such a position was regarded as reserved for inferiors at banquets and other festivals, and that, in consequence, less care was taken in the drawing of such figures than in drawing the more important

¹ Plate XVI, Nos. 4, 6 and 7.

² Plate XVI, No. 7.

³ Plate XVI, Nos. 4 and 6.

⁴ Plate XVI, No. 7.

personages¹. The writer is, therefore, fortunate in being able to give an illustration of the drawing of such figures with the aid of squares.

The figure of the little daughter seated on the ground between her father's feet in Tomb 22² is little more than five and a half units high, owing of course to the large size of the squares upon which she is drawn.

Scenes in which the owner of the tomb is engaged in hunting or fishing are very common in the Necropolis, but in only three tombs are there such scenes with enough remaining of the guiding squares for comparisons to be made. In only one of these tombs³ are these scenes completely finished, in the remaining two⁴ they are merely sketched in outline and roughly washed in with red. It will be noticed in Plate XVII, that the figures in these scenes are nineteen units high, despite the fact that, standing as they are with feet wide apart, their height should be reduced by at least one unit. The raising of the body, however, by means of the hinder foot is made to rectify the loss and restore the conventional nineteen units, and it should be noted that the proportions of the body from the knees are exactly the same as in a male figure standing in the ordinary position.

As regards the placing of the feet in such figures, the heel of one foot is exactly eight and a half units in front of the toe of the other in one of the figures in Tomb 22. The distances between the feet of the men in fishing and hunting scenes in Tomb 92 are seven and seven and a half units respectively. Other such figures in Tombs 22 and 104 are, unfortunately, far from complete, owing to the breaking away of the plaster upon which they are drawn. They cannot, therefore, be satisfactorily compared with the complete figure in Tomb 22, but this difficulty can be partially overcome by counting the number of units between the vertical line which passes through the middle of the eye and the heel of the hinder foot. This distance is seven and a half units, as is the case in the other figures of men hunting and fishing.

As, according to the Ancient Egyptian canons of art, the human foot should be three units long, a third of the hinder foot of such figures is drawn flat on the ground and the other two-thirds raised, so as to bring the heel two units above the ground level, as is to be seen in Tombs 22 and 92; but in Tomb 104 the raised heel is rather below the unit line, probably owing to the fact that the figure is only roughly sketched in and the heel left unshaped. With regard to the position of the arms, there are very slight differences between the figures illustrated⁵. It will be noticed that the elbow of the arm holding the throwing-stick rests practically on the line which is three units below the top of the head and is six and a half units to the left of the vertical line through the eye. The elbow of the arm holding the captured bird in two of the pictures is situated exactly seven units below the top of the head and three from the line through the eye.

There is some variation in the positions of the hands in these illustrations. The point of the thumb of the raised hand is exactly two units above the head in the case

¹ This position was more common in banquet and other such scenes in the early XVIIIth Dynasty, owing to the simplicity of the life of that period. During the middle and end of that Dynasty most of the guests are represented as seated on chairs or stools.

² Plate XVII, No. 5.

³ Tomb 22.

⁴ Tombs 92 and 104.

⁵ Plate XVII, Nos. 1, 3 and 5.

1

Tomb 92. 1 : 13

2

Tomb 92. 1 : 13

3

Tomb 104. 1 : 11

4

Tomb 104. 1 : 13

5

Tomb 22. 1 : 10

6

Tomb 22. 1 : 10

of No. 3, and one and a quarter units in Nos. 1 and 5. In all three cases, however, the fists are placed in the seventh square behind the line passing through the eye.

The elbows of the raised arms of the figures holding harpoons in Tombs 22 and 92¹ are exactly three units below the top of the head and six units from the line through the eye. In Tomb 104² the elbow is four units from the top of the head, owing to the arm being more sharply flexed; but, despite this difference, the fingers of the partially closed hand are the same distance above the head as in the other two figures.

Unfortunately, little can be gathered in this Necropolis as to what were the recognised rules for the use of squares as guides to proportion during the XXVth Dynasty, for the majority of the tombs of this period are still covered by heaps of *débris* in that part of the cemetery known as the Asâsîf, and are quite inaccessible. One fine sculptured tomb has, however, been excavated in the Asâsîf, that of Aba³, in which squares were drawn on a part of one of the walls with red lines just as in the earlier tombs. These lines still remain on the portions of the wall immediately surrounding the figures, where they were left untouched by the sculptor, and, though they have been redrawn in black in modern times, the original red still shows in most places beneath the black. Only the black lines now run across the figures, where the original red lines must have been cut away by the sculptor in the course of his work.

The number of units or squares which go to make up the height of the figure of Aba is twenty-two and a third, which is an increase of three and a third over the nineteen units universally employed in the XVIIIth Dynasty and earlier times. This agrees very closely with the observations made by Mr C. C. Edgar⁴, though Mr Edgar found that in the best examples of the figures he studied the fraction was almost exactly one quarter, whereas in the figure of Aba it is certainly a third.

The question naturally arises as to the period at which this change in the established canon of Egyptian Art took place; and here we are confronted with the fact that the system of drawing on squares was apparently not used in the XIXth and XXth Dynasties, in this Necropolis at all events, for there is no tomb of that period in which squares are to be seen, either on unpainted walls or below the paint of the background on finished walls. It seems very probable, however, that the change took place at the beginning of the XXVth Dynasty, as this period saw a renaissance in Egyptian Art, during which the styles of sculpture and painting were mainly derived from the work of the Old Kingdom.

In that figure of Aba which was drawn with the aid of squares, the increase of three and a third units over the nineteen employed in the XVIIIth Dynasty is distributed as follows: the head is three and a third units high⁵, being an increase of a third of a unit over the three units employed in the earlier period. The unit in this figure, it should be mentioned, measures from 48 to 50 millimetres. The average number of units from the base of the neck to the waist in figures of the XVIIIth Dynasty, it will be remembered, is four; but in the figure of Aba there are six, an increase of two units that makes him long-waisted, as will be seen in the illustration.

¹ Plate XVII, Nos. 2 and 6.

² Plate XVII, No. 4.

³ Tomb 36.

⁴ *Catalogue Général des Antiquités Égyptiennes du Musée du Caire: Sculptors' Studies and Unfinished Works*, p. 3.

⁵ Plate XVIII, No. 3.

The remaining extra unit is allotted to the legs, which measure seven units from the level of the knees to the soles of the feet, instead of the six which were the rule in the XVIIIth Dynasty. The horizontal measurements also show a change in proportion which, however, is not so easily expressed as in the case of the vertical measurements. The waist of a male figure of XVIIIth Dynasty work averages two and a quarter units in breadth, and, as the waist of Aba is two and two-third units, there is an increase of rather less than half an unit. A casual glance at the illustration of the figure of Aba would lead one to think that it shows a decrease rather than an increase in the size of the waist, but this effect is entirely due to the extra two units in the distance of the waist-line from the base of the neck.

The average width of the neck of a male figure of the XVIIIth Dynasty, measured along the line of the shoulders, is one and a quarter units, but in the figure of Aba the width is one and a half units. Again the average breadth of the calf in XVIIIth Dynasty figures is one and a quarter units, whereas in the case of Aba it is one and two-third units, nearly half an unit more, with the result that the calves are, and appear to be, much more prominent than those of figures of the XVIIIth Dynasty.

A striking feature about this XXVIth Dynasty figure is the apparent shortness of the lower part of the body, measured from the waist to the knees, but this is entirely due to the extra length of the figure above and below these limits. As a matter of fact, the length of this portion of the body is the same as in the figures of the XVIIIth Dynasty.

It seems certain that animals were not sketched in with the help of squares, but drawn direct upon the walls without guiding lines of any description. This is remarkable, for animals, with the possible exception of the horse, are in good tombs drawn with considerable skill and fidelity¹. The evidence available up to the present, therefore, tends to show that the system of squaring was used in the Theban tombs only in the case of the principal figures, such as representations of the deceased and his wife and near relatives. All other figures were treated as of much less importance, and either drawn without any artificial aid or with the help of four or six horizontal lines, as has been described.

It should be clearly understood that the majority of the squares in the illustrations of the more complete figures are in the originals no longer in the perfect state in which they are here represented. They are often entirely obliterated by the figures drawn on them, and merely show faintly through the wash of the surrounding background. These traces of the lines on either side of the figures and above and below them are often quite distinct enough to justify the use of a straight-edge to link them up for the purposes of illustration. In every case, however, where a line could not be clearly traced, it has been denoted by a dotted line the position of which was found by measurement.

The general conclusion to be gathered from the study of figures drawn with the aid of squares is that great care was taken in the majority of cases to assure to them

¹ In Tomb 93 there is a series of squares over some of the animals painted on the walls of the inner chamber. It is evident that these squares were used only for copying purposes and not for preliminary work.

Tomb 92

Tomb 92

Tomb 36

Tomb 92

Proportion Squares on Tomb Walls (4)

their proper height with regard to the other proportions of the body. The distance between the feet and the proper poise of the body were matters that were carefully looked after. Equal care was not, however, taken that the arms in certain attitudes should always lie on certain squares; the reason for this was probably hurried or careless work.

Lines were extensively used to guide the artist in drawing the friezes, skirtings, and ornamental borders which decorate tomb-chapels in this Necropolis. As in the case of the squares, such lines were marked out with a reddened cord. The lines separating the vertical rows of hieroglyphs which are placed above the heads of the principal figures in a tomb-chapel, and usually give the names and titles of the deceased, were in most cases drawn with the aid of a straight-edge, points equidistant from one another being marked beforehand at the top of the wall or register. In the case of long inscriptions the lines were marked out with a cord; a good example of this may be seen on the west wall of the second chamber of Tomb 92¹. In this and many other tombs where the work is very accurate, horizontal lines also were drawn between the vertical ones so as to form partitions for the characters and thus ensure that their proportions should be correct. It will be seen in the illustration that two horizontal lines were even used to guide the drawing of each of the *n*-signs just above and below the figure of the hare. Such horizontal lines for aiding the drawing of hieroglyphs were always ruled by brush or pen with the aid of a straight-edge.

¹ Plate XVIII, No. 4.