

EGYPTIAN CULTURE AND SOCIETY

STUDIES IN HONOUR OF NAGUIB KANAWATI



Preface by

ZAHİ HAWASS

Edited by

**ALEXANDRA WOODS
ANN MCFARLANE
SUSANNE BINDER**



VOLUME I

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SUPPLÉMENT AUX ANNALES DU SERVICE
DES ANTIQUITÉS DE L'ÉGYPTE

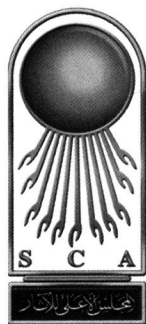
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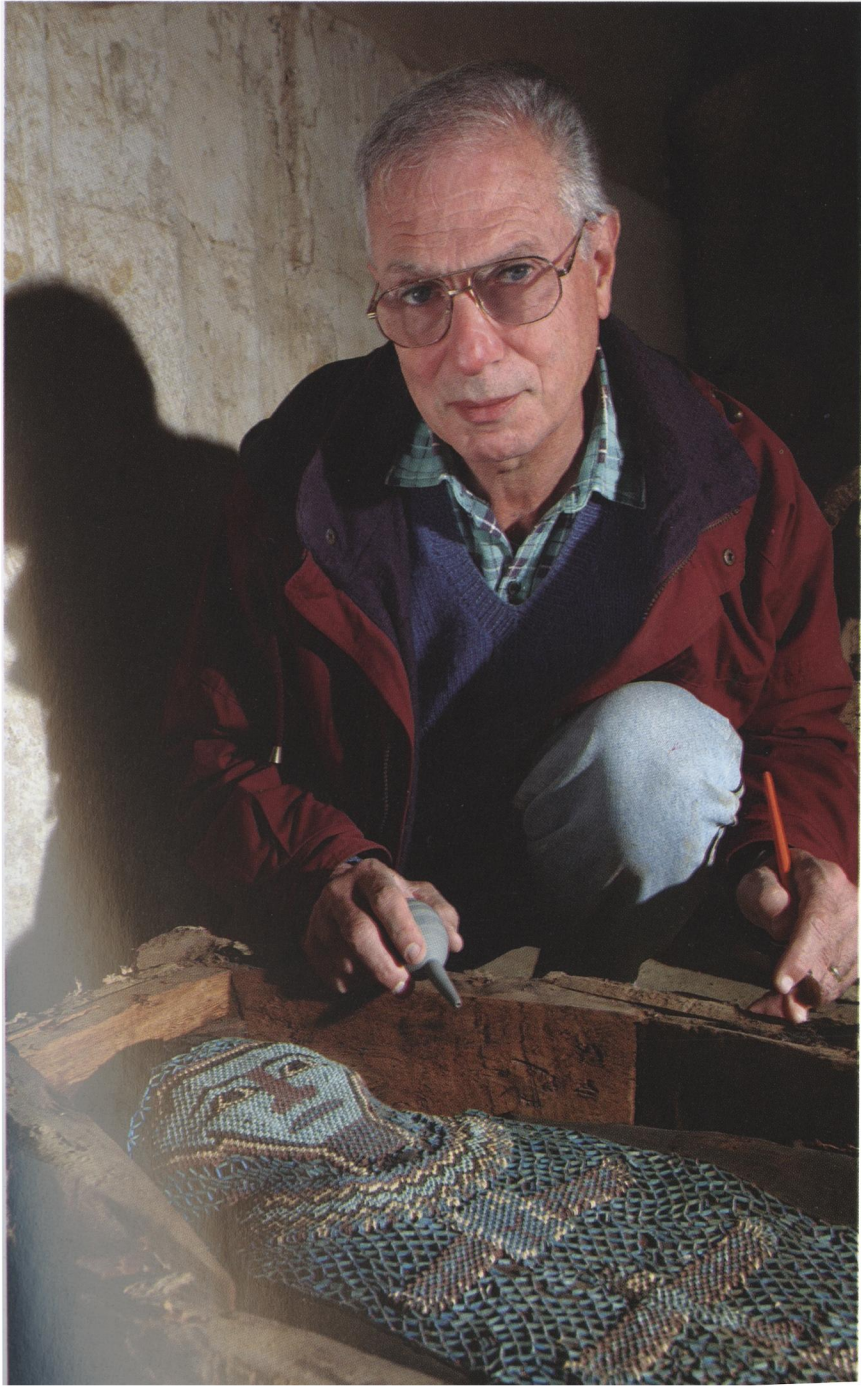
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Presented to

NAGUIB KANAWATI AM FAHA

Professor, Macquarie University, Sydney
Member of the Order of Australia
Fellow of the Australian Academy of the Humanities

by his
Colleagues, Friends, and Students

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'EXPERIMENTING WITH THE NEW': INNOVATIVE FIGURE TYPES AND MINOR FEATURES IN OLD KINGDOM WORKSHOP SCENES*

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Macquarie University

In discussing the work of the ancient Egyptian artist, Naguib Kanawati observed in 2001: "There is a general tendency to consider the 'artist' who decorated the tombs as a 'craftsman', whose worth was based on his technical skills rather than on his individuality. While this view may apply to the majority of men in this profession, we should not stop searching for those mostly anonymous individuals who despite the rigid rules and canons of Egyptian art, succeeded in leaving a personal touch here and there in their work..."¹ With reference to the theme of workshop activity, this paper will focus on a selection of unusual and innovative figure types and scene details catalogued from a corpus of 54 Old Kingdom tombs, providing a representative sample from which the creative ability of some of these artists may be judged.

Egyptian tomb art was to a large extent governed by strict traditions and principles in keeping with its funerary purpose, as has been articulated and anatomised in innumerable studies.² However, as Kanawati notes, 'it would be very wrong to think of the Egyptian artist as slavishly tied to the existing conventions'.³ Accordingly, originality in many compositions is still to be found, particularly those in which the minor figure predominates and has proven to be the case with the present theme under discussion, namely workshop activities.

Commencing in 2001, a systematic analysis of scenes of workshop activity in tombs dated from the Fourth to Seventh Dynasties in both Memphite and Provincial cemeteries has been undertaken by the author.⁴ This study has resulted in the compilation of a comprehensive database of diverse iconographic elements, encompassing 159 scenes, 957 figures and 859 minor features. Seven workshop industries are represented in both elite tombs and those belonging to members of the royal family and include scenes of metalwork, carpentry, sculpture, jewellery making, boat building, stone vessel making and leatherwork in order of frequency. Within each industry or sub-theme a further classification of the scenes into 111 specific tasks or procedures has also been made. From this data it has been concluded that for each industry or sub-theme a *core motif* was used as an iconographic abbreviation for the industry as a whole, for example metalwork consistently shows the melting of the crude metal and boat building the trimming of the hull. In addition, for each task or procedure, a standard or generalised form of representation applied. Variety could be achieved by: altering the disposition of

the arms or legs of the figure; the orientation and style of the tool; or the nature of the object being worked. Other devices also employed by the artist include distinctive rendering of internal details such as the hands, feet and genitals; the addition of clothing and accessories and the individualisation of the figures by means of different facial expressions and wigs. On occasion however an entirely new interpretation of a movement or procedure was attempted by an artist or an adaptation of an existing movement was applied in a different context. Innovation might also be the result of an artist introducing an additional procedure in the manufacturing sequence to expand the scene. To date, 14 experimental movements and 37 atypical procedures have been established by the current study, the majority of which (in both categories) derive from Memphite elite tombs. Provincial tombs however account for a surprisingly significant proportion of the examples (30%) being most notable for originality in scenes of leatherwork, jewellery making and carpentry. The above findings are summarised in Tables 1-3,⁵ from which a number of examples have been selected for further discussion.

Boat Building

Boat building is frequently represented in Old Kingdom workshop scenes. This scene type features the most extensive number of procedures of the seven industries in the corpus and largest cohort of workmen on task, in keeping with the size and complexity of the object under construction. A wide variety of figure types is thus able to be documented and described. Of particular interest however are the scenes recorded in the late Fourth Dynasty tomb of *Hw-n-R^c* at Giza, in which the artist frequently and dramatically deviates from what analysis has shown to be a conventional or standard pose. The raising of the hull on props to support the construction for example is depicted on five occasions in the corpus,⁶ all but one of which illustrates the figure in a kneeling or crouching position underneath the bow or stern. Typically a stake or the back of the body is utilised to perform the operation or, as observed in the tomb of *Jntj* at Deshasheh, a combination of both (Figure 1a-b).⁷ In a notable exception however, the *Hw-n-R^c* artist depicts a workman stretching towards the middle of the hull with inner arm fully extended and his hand pushing what appears to be a stone or log section into place (Figure 1c).⁸ A similar pose, the only one of its kind and possibly influenced by the *Hw-n-R^c* model, is able to be recognised in the mid-Fifth Dynasty tomb of *Nfr* and *K3-h3.j* at Saqqara, but in the context of a completed boat being launched.⁹

Innovative figure portrayal is also evident in the tomb of *Hw-n-R^c* in scenes pertaining to the trimming of the hull. As the most frequently recorded boat building procedure, attested in 14% of the corpus scenes,¹⁰ a total of nineteen varieties of posture have been observed. These uniformly depict the workman using a long or short handled adze to smooth the completed plank work. The majority of the actions being performed are on the upper external or internal areas of the hull from one of four predictable and chronologically consistent lower body positions i.e. lunging, bending, kneeling or crouching (Figure 2a-b).¹¹ The *Hw-n-R^c*

artist however is again instrumental in introducing a new and more dynamic interpretation of the movement. In this scene the figure is placed underneath the hull, with back arched to reach the highest point of the stern (Figure 2c).¹² This contortion of the body has been adapted to effect by the artist working in the tomb of *Tjj* at Saqqara dated some 150 years later (V.8-9), in which two variations of the same pose may be observed.¹³ The tomb of *Tjj* itself contains several of its own innovative contributions to the boat building repertoire and is the first to depict the hammering of the planks together with two handled rammers and the only tomb, based on present evidence, to depict the checking of the plank seams as the operation proceeds.¹⁴ The tomb of *Mrrw-k3.j: Mrj* (Saqqara, VI.1M-L) further expands the construction sequence by including a unique scene in which the measuring of the hull's dimensions is shown.¹⁵

Carpentry

Scenes of carpentry also exhibit significant attempts at artistic experimentation and dominate the corpus in recording the highest number of procedures that, on comparison, may be classified as atypical (Table 2). These scenes are most often associated with the preparation of the raw materials (for example, the treating, dividing and stocking of the timber) or with the finishing process. Innovation in figure portrayal is generally linked to the position of the workman relative to the object being produced. For instance, polishing or sanding of a completed item of furniture or wooden fitting is the most frequently depicted procedure in the carpentry corpus, performed by up to 60 individual figures, and occurring in 79% of relevant scenes.¹⁶ Consistently documented in all representations is the action of rhythmically rubbing the timber using a variety of one or two-handed strokes with the figure leaning, crouching or bending over the object as determined by its size and shape (Figure 3a-b).¹⁷ From the mid-Fifth Dynasty however, experimentation in these positions becomes increasingly common, with kneeling, squatting or sitting postures being introduced. The most marked deviation occurs in the tomb of *Jtj:Šdw* (Deshasheh, VI.1) where the artist places symmetrically paired polishers on top of a central bed frame, in contrast to the customary side position attested in a majority of scenes and is the only preserved use of this presentation in a carpentry context (Figure 3c).¹⁸ Similarly, the working of a door¹⁹ (whether in the process of being polished) trimmed or chiselled through to join additional panels or attach reinforcing battens,²⁰ is on occasion subject to a new and interesting interpretation. Typically, such depictions represent participating figures at either end of a door leaf kneeling, standing or sitting as they apply their tool (Figure 4a-b).²¹ Variety is added in isolated cases, with the squatting of the figure on the door leaf's outer edge (see the tomb of *Mrrw-k3.j: Mrj*)²² or the figure shown perched on a stool to work the panel (see the tomb of *Jtj:Šdw*).²³ Of particular significance however is the dynamic rendering of the workman in the tomb of *Hw-n-R* with one leg drawn up tightly against the chest and resting on the panel (Figure 4c).²⁴ The deep stretching movement, conveying a greater sense of energy, has only one extant corpus parallel.²⁵

Sculpture

In the tomb of *Hw-n-R^c*, the procedure of carving a statue, the most common of sculpture illustrations, also shows evidence of innovative treatment (Figure 5c).²⁶ The athletic execution of the action with the workman's inner foot steadying the base of the statue as the blow is delivered²⁷ and the dramatic over arm movement of the mallet against the chisel are to date unattested in other statue making scenes. Such activities are typically characterised by static standing or seated poses with the mallet and chisel held at the front of the body (Figure 5a)²⁸ or less frequently with the mallet positioned behind the head (Figure 5b).²⁹ A reluctance on the part of the *Hw-n-R^c* artist to repeat the same or similar movement on successive figures, given that another sculptor in the register is drawn in conventional form, may have resulted in this bold and original interpretation. In the tomb of *Ppjj-^cnh:Hnj-km* (Meir, VI.4-5) the equally ubiquitous procedure of painting a statue is likewise depicted in an unorthodox manner, whereby the artist paints a 1/3 life size statue from a seated position with the paint palette supported on his knee (Figure 6c).³⁰ This contrasts immediately with all other representations, which consistently show the attendant artist standing (Figure 6a)³¹ or sitting on a block or stool (Figure 6b)³² with the palette resting on his lap or cupped in his free hand and held level with the waist. While the posture in question has been dictated by the small scale of the statue (itself an unusual feature) and a desire to keep both figures approximately isocephalic,³³ the use of the baseline position in this context, also employed in the painting of an adjacent shrine, marks a break with tradition. Scenes of the remaining industries of metalwork, jewellery making, leatherwork and stone vessel making contain further examples of innovative postures and activities and are outlined in Tables 1-3.

Minor Features

Experimentation in workshop scenes has often been found to take the form of novel interpretations of standard objects or in the appearance of attendant personnel, frequently with respect to the smallest of details as observed in Tables 4-6. In boat building for instance the personal touch of individual artists can be seen in the different shapes of the hull, multiple variations of prop type, the accessories worn by the boat builders and the presentation of equipment such as the sawing post, carry sling and plumb. In scenes of carpentry, the sawing post and vice are also subject to subtle variation, together with small elaborations made to boxes, chairs and beds. Alternative methods of displaying completed collars and chokers are common in jewellery making scenes, as well as in the design and detailing of their component parts. To a lesser extent this also applies to scenes of leatherwork. The presentation of weighing devices, furnaces and metal blowing equipment in scenes of metalwork has been found to exhibit numerous variations, as have the appearance of brushes and palettes and the outfitting of statues in sculpture and painting scenes. The design of the drill and decorative elements on completed jars are the principal areas for experimentation in scenes pertaining to the manufacture of stone vessels.

Conclusion

While it can only be conjectured the extent to which the tomb owner himself encouraged an artist's creativity or whether other factors played a more important role,³⁴ from a study of the evidence outlined in this paper one fact is clear: Although sharing a common purpose, no two tomb scenes are identical as the Egyptian artist was both willing and able to 'deviate from tradition and experiment with the new'.³⁵ Naguib Kanawati, having left his own distinctive mark on the field of Egyptology and to whom this paper is dedicated, would no doubt approve.

* I would like to thank Mary Hartley for completing several drawings accompanying the text (Figures 2a, 3a-b, 4a-b, 5a, 6a, 6c) as well as the Australian Centre for Egyptology for allowing me to re-produce selected motifs from the tombs of *Jntj* and *Jtj:Šdw* at Deshasha (Figures 1b and 3c).

¹ N. Kanawati, *The Tomb and Beyond. Burial Customs of Egyptian Officials* (Warminster, 2001), 72.

² See for example H. von Balcz 'Symmetrie und Asymmetrie in Gruppenbildungen der Reliefs des Alten Reiches' *MDAIK* 1 (1930), 137-152; W. Davis, *The Canonical Traditions In Ancient Egyptian Art* (Cambridge, 1989); W. Davis, 'The Canonical Theory Of Composition In Egyptian Art', *GM* 56 (1982), 9-26; J. Malek, *Egyptian Art* (London, 1999); G. Robins, *Proportion and Style In Ancient Egyptian Art* (Austin, 1994); H. Schäfer, *Principles of Egyptian Art*, translated by J. Barnes (Oxford, 1974); L. Donovan and K. McCorquodale (eds), *Egyptian Art. Principles and Themes In Wall Scenes* (Guizeh, 2000); M. Fitzenreiter and M. Herb (eds), *Dekorierte Grabanlagen im alten Reich. Methodik und Interpretation*, IBAES VI (London, 2006); Y. Harpur, *Decoration In Egyptian Tombs Of The Old Kingdom* (London, 1987).

³ Kanawati, *Tomb and Beyond*, 74.

⁴ To be presented in the author's forthcoming Ph.D. thesis entitled *Men At Work. A Comparative Study of Workshop Scenes In Tombs Of The Old Kingdom* (Macquarie University).

⁵ The abbreviations used in Tables 1-3 in the column entitled *Date* and in the text refer to the king's reigns, after Harpur, *Decoration*, 34.

⁶ MFA Giza Archives www.mfa.org/giza Photo ID. A1035_NS; W. S. Smith, *A History Of Egyptian Sculpture And Painting In The Old Kingdom* (London, 1946), pl. 49b; N. Kanawati and A. McFarlane, *Deshasheh. The Tombs of Inti, Shedu and Others* (Sydney, 1993), pl. 28.

⁷ For the purpose of this paper all the figures have been drawn by the author or Mary Hartley after the original publications. The references for the figures will be provided after each citation in the text. Figure 1a) After MFA Giza Archives www.mfa.org/giza Photo ID A1035_NS; Figure 1b) Kanawati and McFarlane, *Deshasheh*, pl. 28.

⁸ Y. Harpur, *The Tombs of Nefermaat and Rahotep At Maidum. Discovery, Destruction and Reconstruction* (Oxford, 2001), 87. Image reference for Figure 1c) After MFA Giza Archives www.mfa.org/giza Photo ID A1035_NS.

⁹ A. Moussa and H. Altenmüller, *The Tomb Of Nefer and Ka-hay* (Mainz am Rhein, 1971), pl. 19.

¹⁰ See for example the tombs of *Šhm-k3-R^c* (S. Hassan, *Excavations at Giza*, 10 vols. (Cairo, 1932-1960), IV, fig. 57); *Nj-^{nh}-Hnmw* and *Hnmw-htp* (A. Moussa and H. Altenmüller,

Das Grab des Nianchchnum und Chnumhotep (Mainz/Rhein, 1977), fig. 8); *R^c-špss* (C. R. Lepsius, *Denkmäler aus Aegypten und Aethiopien*, II (Berlin, 1849-1859), 61b); *R^c-ḥtp* (W. M. F. Petrie, *Medum* (London, 1892), pl. 11); *Hw-ns* (LD II, 108).

Image reference for Figure 2a) After Petrie, *Medum*, pl. 25; Figure 2b) After P. Duell, *The Mastaba of Mereruka*, 2 vols. (Chicago, 1938), II, pl. 149.

An earlier example of a figure working underneath the hull (the tomb of *Hm-jwnw* at Giza) is likely to be depicted in a more static pose when reconstructed. See MFA *Giza Archives* Photo ID. B9107_NS; W. S. Smith, 'The Origin Of Some Unidentified Old Kingdom Reliefs', *AJA* 46 [4] (1942), fig. 14 (25-12-301). Image reference for Figure 2c) After MFA *Giza Archives* www.mfa.org/giza Photo ID A1035_NS.

G. Steindorff, *Das Grab des Ti* (Leipzig, 1913), pl. 119.

Steindorff, *Ti*, pl. 119

Duell, *Mereruka* II, pl. 149.

See for example the tombs of *Jj-mrjj* (K. R. Weeks, *Mastabas of Cemetery G6000. G 6010 (Neferbaupth); G 6020 (Iymery); G 6030 (Itj); G 6040 (Shepseskafankh)* (Boston, 1994), fig. 30); *Wp-m-nfrt:Wp* (Hassan, *Giza* II, fig. 219); *Mrs-^cnh III* (D. Dunham and W. K. Simpson, *The Mastaba Of Queen Mersyankh III G7530-7430* (Boston, 1974), fig. 5); *Nfr* and *K3-h3:j* (Moussa and Altenmüller, *Nefer and Ka-hay*, pl. 20); *Sšst:Jdwt* (R. Macramallah, *Le Mastaba d'Idout* (Caire, 1953), pl. 10c); *D^cw* and *D^cw:Šm3j* (N. de G. Davies, *The Rock Tombs Of Deir el-Gebrawi*, 2 vols. (London, 1902), II, pl. 10).

Image reference for Figure 3a) After Weeks, *Cemetery G6000*, fig. 30; Figure 3b) After J. De Morgan, *Fouilles à Dahchour*, II (Vienna, 1895-1903), fig. 6.

Image reference for Figure 3c) After Kanawati and McFarlane, *Deshasheh*, pl. 49.

See tombs of *Jj-mrjj* (Weeks, *Cemetery G6000*, fig. 30); *Wp-m-nfrt:Wp* (Hassan, *Giza* II, fig. 219); *Mrs-^cnh III* (Dunham and Simpson, *Mersyankh III*, fig. 5); *Mrrw-k3:j:Mrj* (Duell, *Mereruka* I, pl. 30); *Jtj:Šdw* (Kanawati and McFarlane, *Deshasheh*, pl. 49).

For process see H. G. Fischer, 'Egyptian Doors, Inside and Out', *Egyptian Studies*, III. *Varia Nova* (New York, 1996), 91ff.

Image reference for Figure 4a) After Weeks, *Cemetery G6000*, fig. 30; Figure 4b) After Duell, *Mereruka* I, pl. 30.

Duell, *Mereruka* I, pl. 30.

Kanawati and McFarlane, *Deshasheh*, pl. 49.

Image reference for Figure 4c) After MFA *Giza Archives* www.mfa.org/giza Photo ID A1035_NS.

Being contextually unrelated however, appearing in a scene of staff making. See Kanawati and McFarlane, *Deshasheh*, pl. 49.

Image reference for Figure 5c) After MFA *Giza Archives* www.mfa.org/giza Photo ID A1035_NS.

This detail may be repeated in the statue making scenes found in the tombs of *Mrs-^cnh III* (Dunham and Simpson, *Mersyankh III*, fig. 5) and *Sndm-jb:Mhj* (C. R. Lepsius, *Denkmäler aus Aegypten und Aethiopien Text*, I (Leipzig, 1913), fig. p. 52 (lower) but their fragmentary nature together with the possibility of copyist's error prevents conclusive identification

See for example the tombs of *Wp-m-nfrt: Wp* (Hassan, *Giza* II, fig. 219); *K3,j-m-rhw* (M. Mogensen, *Le Mastaba Egyptien de la Glyptothèque Ny Carlsberg* (Copenhagen, 1921), fig. 44); *Jbj* (Davies, *Deir el-Gebrawi* I, pl. 14); *D^cw* and *D^cw:Šm3j* (Davies, *Deir el-Gebrawi* II, pl. 10). Image reference for Figure 5a) After Hassan, *Giza* II, fig. 219.

See for example the tombs of *Nj-^cnh-Hnmw* and *Hnmw-ḥtp* (Moussa and Altenmüller, *Nianchchnum und Chnumhotep*, pl. 63); *Tjj* (H. Wild, *Le Tombeau de Ti*, III. *La Chapelle* (Cairo, 1966), pls. 170-174); *Špsj-pw-Mnw:Hnj* (N. Kanawati, *The Rock Tombs of El-*

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- Hawawish. *The Cemetery of Akhmim*, 10 vols. (Sydney, 1980), II, fig. 19). Image reference for Figure 5b) After Moussa and Altenmüller, *Nianchchnum und Chnumhotep*, pl. 63.
- ³⁰ For analysis of scene see M. Eaton-Krauss, *The Representations of Statuary In Private Tombs Of The Old Kingdom* (Wiesbaden, 1984), 40-41. Image reference for Figure 6c) After A. M. Blackman and M. R. Apted, *The Rock Tomb of Meir*, V (London, 1953), pl. 28.
- ³¹ See for example the tombs of *Jj-mrjj* (Weeks, *Cemetery G6000*, fig. 30); *Mrs-ḥnh III* (Dunham and Simpson, *Mersyankh III*, fig. 8); *Nb.j-m-ḥtj* (LD II, pl. 13); *Ḥwfw-ḥḥf II* (W. K. Simpson, *The Mastabas of Kawab, Khafkhufu I and II. G7110-20, 7130-40 and 7150 and Subsidiary Mastabas of Street G7100* (Boston, 1978), fig. 50). Image reference for Figure 6a) After Dunham and Simpson, *Mersyankh III*, fig. 8.
- ³² See for example the tombs of *Jbj* (Davies, *Deir el-Gebrawi I*, pl. 14); *Dḥw* and *Dḥw:Šmꜣj* (Davies, *Deir el-Gebrawi II*, pl. 10); *Kꜣ.j-jrr* (J-P. Lauer, *Saqqara. Die Königsgräber von Memphis* (Lübbe, 1979), pl. 68). Image reference for Figure 6b) After Moussa and Altenmüller, *Nianchchnum und Chnumhotep*, pl. 63.
- ³³ See Eaton-Krauss, *Statuary*, 41.
- ³⁴ See Kanawati, *Tomb and Beyond*, 83-84.
- ³⁵ Kanawati, *Tomb and Beyond*, 74.

Industry	Movement / Action	Tomb	Site	Date
<i>Boat building</i>	Stretching underneath the hull to position a prop	<i>Hw-n-R^c</i> (MQ1)	Giza	IV.5
	Trimming the hull from below in a kneeling position with back arched	<i>Hw-n-R^c</i> (MQ1)	Giza	IV.5
	Dressing a log in a seated position	<i>Tjj</i> (D22)	Saqqara	V.8-9
	Kneeling underneath the hull to square off from below	<i>Tjj</i> (D22)	Saqqara	V.8-9
<i>Carpentry</i>	Cutting holes in a door with one leg raised and resting on outer edge	<i>Hw-n-R^c</i> (MQ1)	Giza	IV.5
	Polishing a bed frame from above seated on top	<i>Jtj:Šdw</i>	Deshasheh	VI.1
	Trimming a plank positioned horizontally between legs	<i>Ppjj-ṣnh:Hnj-km</i> (A2)	Meir	VI.4-5
	Dampening a stick/staff in a seated position	<i>Špsj-pw-Mnw:Hnj</i> (H24)	El-Hawawish	VI.6L-7
<i>Jewellery making</i>	Twisting threading string held between the feet	<i>Ppjj-ṣnh:Hnj-km</i> (A2)	Meir	VI.4-5
<i>Leather-work</i>	Stretching a piece of leather over a stand from an upright position	<i>ṣnh-m-ṣ-Hr:Šsj</i>	Saqqara	VI.1L
<i>Sculpture/ Painting</i>	Carving a statue with a mallet and chisel used in an over arm movement	<i>Hw-n-R^c</i> (MQ1)	Giza	IV.5
	Rough shaping of a statue with a stone from a lunging position	<i>Nj-ṣnh-Hnmw</i> and <i>Hnmw-ḥtp</i>	Saqqara	V.6L-7
	Trimming a statue in a seated position with legs astride the back of the stool	<i>K3,j-jrr</i>	Saqqara	VI.1-2
	Painting a statue from a seated position resting the paint palette on the knee	<i>Ppjj-ṣnh:Hnj-km</i>	Meir	VI.4-5

TABLE 1. Innovative Movements and Postures in Scenes of Workshop Activity (Dynasties IV-VI).

Industry	Procedure	Tomb	Site	Date
Boat building	Measuring the curvature and depth of the hull	<i>Hw-n-R^c</i> (MQ1) <i>Mrrw-k3.j:Mrj</i>	Giza Saqqara	IV.5 VI.1M-L
	Assisting the sawing of a log section by controlling the binding rope	<i>K3.j-hnt</i> II (A3)	El-Hammamiya	V.8-9
	Hammering planks together with rammers	<i>Tjj</i> (D22) <i>Mrrw-k3.j:Mrj</i>	Saqqara Saqqara	V.8-9 VI.1M-L
	Checking the plank seam to ensure that planks have been beaten down evenly	<i>Tjj</i> (D22)	Saqqara	V.8-9
	Measuring the length of the hull	<i>Mrrw-k3.j:Mrj</i>	Saqqara	VI.1M-L
Carpentry	Carrying a plank from the sawing post	<i>Jj-mrjj</i> (G6020) <i>Sn^{dm}-jb:Jntj</i> (G2370)	Giza Giza	V.6 V.8M-L
	Applying abrasive to a bed frame before polishing	<i>Jj-mrjj</i> (G6020) <i>Sn^{dm}-jb:Jntj</i> (G2370)	Giza Giza	V.6 V.8M-L
	Fitting the lid of a sarcophagus	<i>Nj-^cnh-Hnmw</i> and <i>Hnmw-htp</i>	Saqqara	V.6L-7
	Stacking planks to dry	<i>Hw-ns</i> (LD2)	Zawyet el-Amwat	V.8-9
	Drilling a hole in the lid of a box	<i>Tjj</i> (D22)	Saqqara	V.8-9
	Heating a stick in preparation for shaping	<i>Srf-k3.j</i> (24)	El-Sheikh Said	V.8-9E
	Splitting a sawn plank with an axe	<i>Jttj:Šdw</i> <i>D^cw/D^cw:Šm3j</i> (12) <i>Ppjj-^cnh:Hnj-km</i> (A2) <i>Špsj-pw-Mnw:Hnj</i> (H24)	Deshasheh Deir el-Gebrawi Meir El-Hawawish	VI.1 VI.4-5 VI.4-5 VI.6L-7
Jewellery making	Making a diadem	<i>Nj-^cnh-Hnmw</i> and <i>Hnmw-htp</i>	Saqqara	V.6L-7
	Chasing detail onto a pectoral	<i>Mrrw-k3.j:Mrj</i>	Saqqara	VI.1M-L
	Attaching pendants to a counterpoise	<i>^cnh-m-^cHr:Šsj</i>	Saqqara	VI.1L
	Drying a collar	<i>Hm-R^c:Jsj</i> (72) <i>Hnk^w:Jj.f</i> (67)	Deir el-Gebrawi Deir el-Gebrawi	VI.1L-2E VI.2E-M
	Drilling a bead	<i>Jbj</i> (8)	Deir el- Gebrawi	VI.4E
	Polishing a bead	<i>Jbj</i> (8)	Deir el- Gebrawi	VI.4E

TABLE 2. Atypical Procedures in Scenes of Workshop Activity: Carpentry and Jewellery making (Dynasties IV-VI).

Industry	Detail	Tomb	Site	Date
Leather-work	Stretching a hide	<i>Hw-n-R^c</i> (MQ1)	Giza	IV.5
	Tanning a piece of leather	<i>Jj-mrjj</i> (G6020)	Giza	V.6
	Threading together leather sandal pieces	<i>Jntj</i>	Deshasheh	V.9
	Holding or stretching a completed garment	<i>Jntj</i> <i>Jttj:Sdw</i>	Deshasheh Deshasheh	V.9 VI.1
	Sewing a leather sack	<i>nh-m-^c-Hr:Ssj</i>	Saqqara	VI.1L
	Soaking a hide	<i>Ppjj-nh:Hnj-km</i> (A2)	Meir	VI.4-5
	Smoothing a hide	<i>Ppjj-nh:Hnj-km</i> (A2)	Meir	VI.4-5
Metal-work	Carrying a crucible of molten metal	<i>Nb.j-m-3htj</i> (G8172)	Giza	IV.6-V.1
	Heating a small quantity of precious metal	<i>Nj-nh-Hnmw</i> and <i>Hnmw-htp</i> <i>Hw-ns</i> (A6)	Saqqara Qubbet el-Hawa	V.6L-7 VI.7
	Clearing a blocked blowpipe	<i>Sndm-jb:Mhj</i> (G2378)	Giza	V.9M-L
	Polishing a metal vessel	<i>Jntj</i>	Deshasheh	V.9
	Controlling the flow of molten metal being poured from a crucible	<i>Mrrw-k1.j:Mrj</i>	Saqqara	VI.1M-L
	Cooling molten metal in water	<i>Ppjj-nh:Hnj-km</i> (A2)	Meir	VI.4-5
Sculpture/ Painting	Rough cutting of a wooden statue with an axe	<i>Nj-nh-Hnmw</i> and <i>Hnmw-htp</i>	Saqqara	V.6L-7
	Carving the navel of a statue	<i>Nj-nh-Hnmw</i> and <i>Hnmw-htp</i>	Saqqara	V.6L-7
Stone vessel making	Polishing the interior of a vessel	Unknown	Saqqara	V
	Shaping the exterior of a vessel	<i>nh-m-^c-Hr:Ssj</i>	Saqqara	VI.1L
	Painting a vessel	<i>Ppjj-nh:Hnj-km</i> (A2)	Meir	VI.4-5

TABLE 3. Atypical Procedures in Scenes of Workshop Activity:
Leatherwork, Metal-work, Sculpture/Painting and Stone vessel
making (Dynasties IV-VI).

Industry	Detail	Tomb	Site	Date
Boat building	Leaning tree	<i>Shm-k3-Rc</i> (G8154)	Giza	V.1-2
	Tree with lower branches removed	<i>Nj-nc-Ppjj</i> <i>Hnmw-htp-hpj</i> (LD14)	Zawyet el-Amwat	VI.2
	Saw cut visible on plank	<i>Tjj</i> (D22)	Saqqara	V.8-9
	Contoured beam on carrying sling	<i>Hw-ns</i> (LD2)	Zawyet el-Amwat	V.8-9
	Loosely wound bindings on sawing post	<i>K3.j-hnt</i> II (A3)	El-Hammamiya	V.8-9
	Hull with pointed bow and stern	<i>Dcw</i> and <i>Dcw:Sm3j</i> (12)	Deir el-Gebrawi	VI.4-5
	Hull with keel (?)	<i>K3.j-hnt</i> II (A3)	El-Hammamiya	V.8-9
	Hull support posts with cross beam	Unknown (BM994)	Giza	V.6-9
	Hull support posts tied to hull	<i>Rc-spss</i> (LS16)	Saqqara	V.8M
	Hull secured to ground with hobble and tie	<i>Hw-ns</i> (LD2)	Zawyet el-Amwat	V.8-9
	Wedge shaped prop under hull	<i>Nfr</i> and <i>K3-h3,j</i>	Saqqara	V.6L-7
	Multiple coils on plumb	<i>Tjj</i> (D22)	Saqqara	V.8-9
	Cloth over shoulder of boat builder and tied underarm	<i>Hw-ns</i> (LD2)	Zawyet el-Amwat	V.8-9
	<i>smsw-whr.t</i> wearing an amulet on a cord	<i>Tjj</i> (D22)	Saqqara	V.8-9
Jewellery making	Bell or flower shaped beads	<i>Wp-m-nfrt:Wp</i> (G8882)	Giza	V.5-8
	Choker with beaded or textured fastening string	<i>Tjj</i> (D22)	Saqqara	V.8-9
	Collar with fastening string hanging down	<i>Nj-nc-Hnmw</i> and <i>Hnmw-htp</i>	Saqqara	V.6L-7
	Collar oriented horizontally on display table	<i>nc-m-c-Hr:Ssj</i>	Saqqara	VI.1L
	Choker oriented vertically and overhanging display table	<i>Hw-n-Rc</i> (MQ1)	Giza	IV.5
	Jewellery displayed in a box on a table	<i>Pth-htp</i> II: <i>Tjj</i> (D64)	Saqqara	V.9M-L
	Table used as a seat	<i>K3.j-jrr</i>	Saqqara	VI.1-2
	Dwarf jeweller using a footrest	<i>K3.j-jrr</i>	Saqqara	VI.1-2
	Patterned <i>dbn</i> – jewellery box	<i>Hw-n-Rc</i> (MQ1)	Giza	IV.5
	Corpulent jeweller	<i>Mrrw-k3.j:Mrj</i>	Saqqara	VI.1M-L

TABLE 4. Unique Details in Scenes of Workshop Activity:

Boat building and Jewellery making (Dynasties IV-VI).

Industry	Detail	Tomb	Site	Date
Carpentry	Sawing post with cutaway top	<i>Hw-ns</i> (LD2)	Zawyet el-Amwat	V.8-9
	Sawing post with weighted supports	<i>Jttj:Šdw</i>	Deshasheh	VI.1
	Sawing post with no bindings present	<i>Nfr</i> and <i>K3-h3.j</i>	Saqqara	V.6L-7
	Weighted stick oriented horizontally on sawing post	<i>Ppjj-ᵑḥ:Hnj-km</i> (A2)	Meir	VI.4-5
	Counterweight secured in a rope bag	<i>Jttj:Šdw</i>	Deshasheh	VI.1
	Hemispherical prop supporting planks	<i>Hw-ns</i> (LD2)	Zawyet el-Amwat	V.8-9
	Vice with forked stand	<i>Pth-špss</i>	Abusir	V.6L-8E
	Vice with block stand	<i>Srf-k3.j</i> (24)	El-Sheikh Said	V.8-9E
	Vice with curved support post	<i>Jttj:Šdw</i>	Deshasheh	VI.1
	Carpenter using a wicker back support	<i>Ppjj-ᵑḥ:Hnj-km</i> (A2)	Meir	VI.4-5
	Shrine with doors open	<i>Hw-n-Rᶜ</i> (MQ1)	Giza	IV.5
	Sarcophagus on platform or plinth	<i>Hw-n-Rᶜ</i> (MQ1)	Giza	IV.5
	Door leaf oriented vertically	<i>Jttj:Šdw</i>	Deshasheh	VI.1
	Bed frame with mattress	<i>Hw-n-Rᶜ</i> (MQ1)	Giza	IV.5
	Chair with backrest	<i>Nb.j-m-3htj</i> (G8172)	Giza	IV.6-V.1
	Sedan chair on battens	<i>Nj-ᵑḥ-Hnmw</i> and <i>Hnmw-htp</i>	Saqqara	V.6L-7
	Box tied with cord	<i>K3.j-jrr</i>	Saqqara	VI.1-2
Leather-work	Hide with residual hair	<i>Ppjj-ᵑḥ:Hnj-km</i> (A2)	Meir	VI.4-5
	Leather piece balanced on top of a three legged stand	<i>ᵑḥ-m-Ḥr:Ssj</i>	Saqqara	VI.1L
	Paired sandals oriented horizontally	<i>Ppjj-ᵑḥ:Hnj-km</i> (A2)	Meir	VI.4-5
	Sandal with strap	<i>Jttj:Šdw</i>	Deshasheh	VI.1
Stone vessel making	Drill with markedly long shaft	<i>Tjj</i> (D22)	Saqqara	V.8-9
	Drill with curved handle	<i>Tjj</i> (D22)	Saqqara	V.8-9
	Drill with three counter weights	<i>Tjj</i> (D22)	Saqqara	V.8-9
	Drill weights secured in a rope bag	Unknown (S920)	Saqqara	V
	Stone jug with band decoration	<i>Jbj</i> (8)	Deir el-Gebrawi	VI.4E
	Stone jug with decorative handle	<i>ᵑḥ-m-Ḥr:Ssj</i>	Saqqara	VI.1L

TABLE 5. Unique Details in Scenes of Workshop Activity:
Carpentry, Leatherwork, Stone vessel making (Dynasties IV-VI).

Industry	Detail	Tomb	Site	Date
Sculpture/ Painting	Defined brush stroke	<i>Ppjj-ᵑḥ:Hnj-km</i> (A2)	Meir	VI.4-5
	Two brushes behind artist's ear	<i>Jntj</i>	Deshasheh	V.9
	Shell palette with pigments visible	<i>Nj-ᵑḥ-Hnmw</i> and <i>Hnmw-ḥtp</i>	Saqqara	V.6L-7
	Statue in recumbent position	<i>Nj-ᵑḥ-Hnmw</i> and <i>Hnmw-ḥtp</i>	Saqqara	V.6L-7
	Statue wearing broad collar and pendant	<i>Pth-šps</i>	Abusir	V.6L-8E
	Statue with striated wig	<i>Tjj</i> (D22)	Saqqara	V.8-9
	Painter wearing echelon wig	<i>Mrs-ᵑḥ</i> III (G7530 +7540)	Giza	IV.5-6E
Metal-work	Irregularly shaped metal ingot	<i>K3.j-m-rḥw</i> (D2)	Saqqara	V.8-9
	Cast metal in shape of a flat block	<i>Ppjj-ᵑḥ:Hnj-km</i> (A2)	Meir	VI.4-5
	Joist attached to scales by a rope	<i>Ḥm-Rᶜ:Js</i> (72)	Deir el-Gebrawi	VI.1L-2E
	Joist in form of a human figure	<i>K3.j-jrr</i>	Saqqara	VI.1-2
	Scales with a curved beam	<i>Sndm-jb:Mhj</i> (G2378)	Giza	V.9M-L
	Multiple cords on the weighing basket	<i>Srf-k3.j</i> (24)	El-Sheikh Said	V.8-9E
	Storage box containing weights	<i>ᵑḥ-m-ᶜ-Ḥr:SSj</i>	Saqqara	VI.1L
	Blowpipe without tuyere	<i>Sndm-jb:Mhj</i> (G2378)	Giza	V.9M-L
	Furnace embedded in stones	<i>Tp-m-ᵑḥ</i> II (D11)	Saqqara	V.2
	Furnace supported by wooden post	<i>Ppjj-ᵑḥ:Hnj-km</i> (A2)	Meir	VI.4-5
	Furnace with flue	<i>K3.j-m-rḥw</i> (D2)	Saqqara	V.8-9
	Metal worker with beard	<i>Mḥw</i>	Saqqara	VI.2

TABLE 6. Unique Details in Scenes of Workshop Activity: Sculpture/Painting, Metal-work (Dynasties IV-VI).

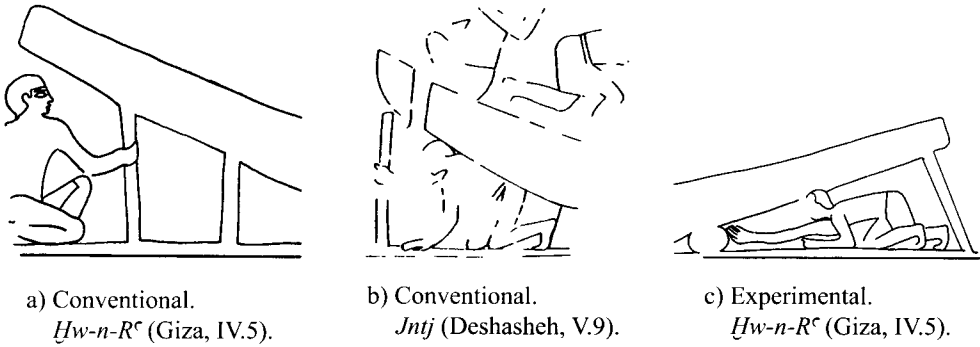


FIGURE 1. Boat building: Comparison of propping actions.

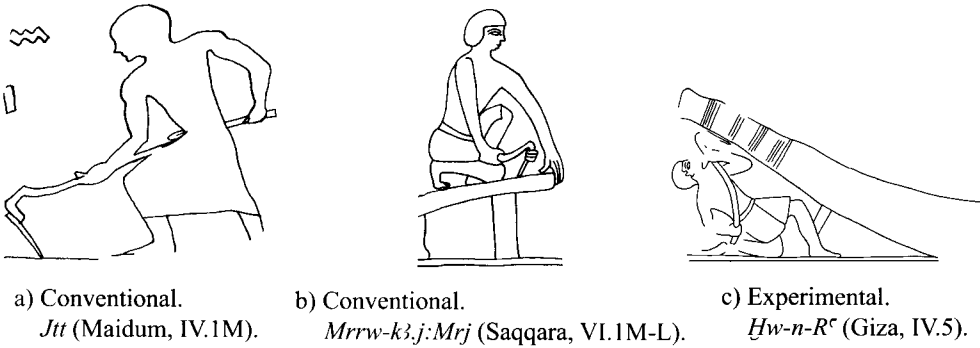


FIGURE 2. Boat building: Comparison of trimming actions.

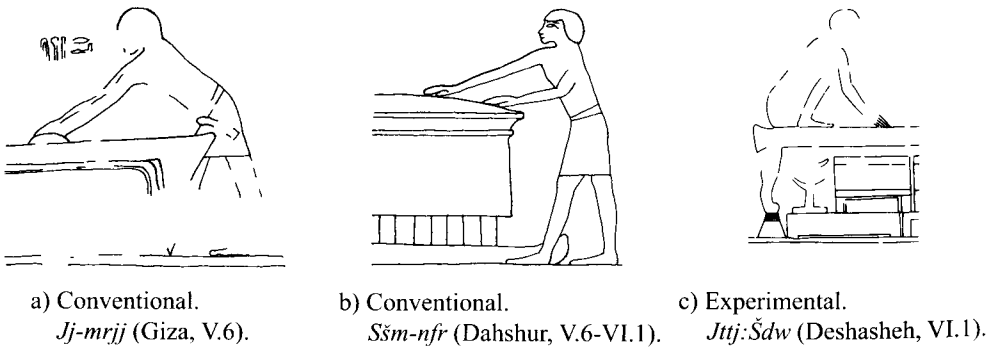
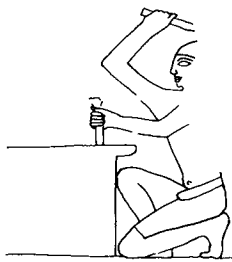


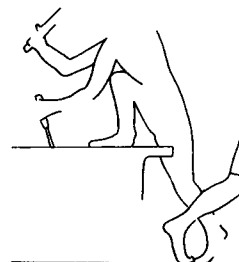
FIGURE 3. Carpentry: Comparison of polishing actions.



a) Conventional.
Jj-mrj (Giza, V.6).

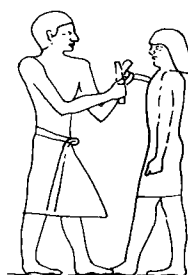


b) Conventional.
Mrrw-k3.j:Mrj (Saqqara, VI.1M-L).

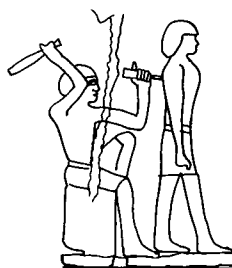


c) Experimental.
Hw-n-R^c (Giza, IV.5).

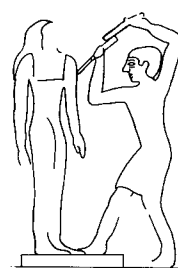
FIGURE 4. Carpentry: Comparison of chiselling/trimming actions.



a) Conventional.
Wp-m-nfrt:Wp
(Giza, V.5-8).



b) Conventional.
Nj-^cnh-Hnmw/Hnmw-htp
(Saqqara, V.6L-7).

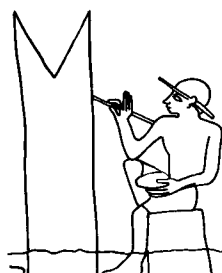


c) Experimental.
Hw-n-R^c (Giza, IV.5).

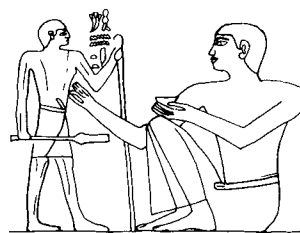
FIGURE 5. Sculpture: Comparison of carving actions.



a) Conventional.
Mrs-^cnh III
(Giza, IV.5-6E).



b) Conventional.
Nj-^cnh-Hnmw/Hnmw-htp
(Saqqara, V.6L-7).



c) Experimental.
Ppjj-^cnh: Hnj-km
(Meir, VI.4-5).

FIGURE 6. Sculpture: Comparison of painting actions.