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REUSE AND RESTORATION
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Peter Brand

Wiederverwendung und Restaurierung
Réemploi et restauration

Like members of all pre-modern societies, ancient Egyptians practiced various forms of recycling. The reuse of building materials by rulers is attested throughout Egyptian history and was motivated by ideological and economic concerns. Reuse of masonry from the dilapidated monuments of royal predecessors may have given legitimacy to newer constructions, but in some cases, economic considerations or even antipathy towards an earlier ruler were the decisive factors. Private individuals also made use of the tombs and burial equipment of others—often illicitly—and tomb robbing was a common phenomenon. Ultimately, many monuments were reused in the post-Pharaonic era, including tombs. Restoration of decayed or damaged monuments was a pious aspiration of some rulers. In the wake of Akhenaten's iconoclastic vendetta against the god Amun and the Theban triad, his successors carried out a large-scale program of restoring vandalized reliefs and inscriptions. Restorations of Tutankhamun and Aye were often usurped by Horemheb and Sety I as part of the damnatio memoriae *of the Amarna-era pharaohs. Post-Amarna restorations were sometimes marked by a formulaic inscribed "label." Restoration inscriptions and physical repairs to damaged reliefs and buildings were also made by the Ptolemaic kings and Roman emperors.*

قام المصريون القدماء مثل كل المجتمعات القديمة بإعادة تدوير المواد بطرق مختلفة. قام الملوك المصريون بإعادة استخدام مواد البناء لأسباب أيديولوجية او إقتصادية، واعتادوا على اعادة استخدام الاحجار الموجودة بمباني وشواهد من جاء قبلهم، ربما لإضفاء شرعية على المنشآت الحديدة أو مجرد لاسباب اقتصادية أو حتى بسبب كراهية للحكام السابقين. ولم تقتصر اعادة الاستخدام تلك على الملوك فقط ولكن قام الأفراد غير الملكيين باعادة استخدام مقابر وتجهيزات بطريقة هذا يتم وأحياناً بالغير الخاصة المقابر اعادة تم وبذلك. ،للغاية شائع المقابر نهب كان حيث قانونية غير العصور في الفرعونية والمباني المقابر من العديد استخدام اللاحقةواعتبر الملوك المصريين ان ترميم المباني المدمرة كان تطلع تقي، فمثلاً بعد وفاة الملك أخناتون وانتهاء حربه الدينية ضد الإله امون وثالوث طيبة قام خلافئه بترميم جميع النقوش والكتابات التي دمرت خلال حكمه حيث قام حورمحب وسيتي الأول باغتصاب و بإعادة استخدام أثار توت عنخ آمون وآي لمحي ملوك عصر العمارنة من الذاكرة. واحياناً يظهر نص ذو صيغة محددة بجوار الترميمات. قام الملوك البطالمة والأباطرة الرومان بترميم العديد من النقوش والمباني المدمرة.

In ancient Egyptian society, as in all pre-modern societies, goods and materials were scare and valuable, and thus frequently recycled. Raw materials were expensive due to their relative scarcity (wood, metals, and semi-precious stones, being examples) or to the intense labor and expenditure of materials needed to obtain them, such as that required by the quarrying and transport of all types of stone, and metals. Spent, non-consumable goods were not simply disposed of when broken or obsolete if it was possible to harvest useful raw materials from them. The practice of recycling is attested in the archaeological record and in textual sources. Among the latter are the timber accounts from Memphis from the reign of Sety I (Kitchen 1975: 263 - 267; 1994: 176 - 184; Spiegelberg 1896). These constitute a city-wide inventory of wood, much of it old ship-parts, found in the possession of various officials. They attest to the value of timber as it was perceived by both the officials who collected it for their own use and by the royal administration, which saw it as a source of taxation. Even papyrus was recycled when texts written upon it became obsolete (Caminos 1986).

The most intensively reused substances were metals, all of which were highly expensive and could be melted down and recast to make new objects. Metals were carefully weighed and their use and reuse tracked in administrative documents; the copper chisels used by the tomb workers from Deir el-Medina, for example, were collected and weighed for recasting once they had broken. The illicit recycling of precious metals is attested from sources such as the late Ramesside tomb-robbery papyri (Peet 1930).

Reuse of Building Materials by the Pharaohs

The most conspicuous form of recycling practiced in ancient Egypt was the reuse of monumental stone building material (Björkman 1971; Helck 1985). Re-employed elements included inscribed and un-inscribed architectural components. Other stone monuments such as stelae, obelisks, sarcophagi, offering tables, false doors, and statuary were also re-employed. This widespread practice was often motivated by expediency: cut and dressed masonry from older monuments near at hand could be had for less cost and effort than that required by new stone quarried and transported from a distance. The most frequent use of older material was in foundations (figs. 1 and 2; Arnold 1991: 112 - 113).

Figure 1. Reused early Eighteenth Dynasty blocks in the foundations of the Temple of Montu, built by Amenhotep III, Karnak.

Figure 2. An earlier Eighteenth Dynasty block in the foundations of Amenhotep III's Temple of Montu, Karnak.

In some cases, however, the reuse of older monumental elements in new construction had an ideological component. Masonry inscribed for royal ancestors carried a patina of ancient authority and could imbue new constructions with this legitimacy. The best example of this is offered by the pyramid of Amenemhat I at Lisht, which was found to contain hundreds of inscribed blocks taken from the ruined pyramid complexes of several Old Kingdom rulers (Goedicke 1971). This diversity of sources of reused masonry, taken from various Old Kingdom pyramid complexes at Giza and Saqqara, strongly indicates that Amenemhat I was not simply looking for a handy, nearby source of cheap building material. Instead, he seems to have purposefully collected inscribed blocks from various illustrious ancestors to lend credibility to his own reign, the first of the Twelfth Dynasty (Goedicke 1971: 5 - 6); both the design of his pyramid complex and the imitation of Old Kingdom relief styles and themes in its decoration confirm this. Official sources do not always approve this practice. The *Instructions for King Merikara* advise the royal pupil: "Do not despoil the monument of another, but quarry stone in Tura. Do not build your tomb out of ruins, [using] what had been made for what is to be made" (Björkman 1971: 16 - 17; Lichtheim 1973: 102 - 103).

During the New Kingdom, when temples were often constructed of stone instead of mud-brick, reuse of masonry became common. There seems to be a degree of tension in Egyptian ideology between "respect for and veneration of the old" and the desire of every pharaoh to surpass what his ancestors had achieved. Indeed, kings might claim to have restored what had fallen into ruin, but they also boasted of having surpassed what their ancestors had done or that "never had the like been done since the primeval occasion" (Björkman 1971: 29 - 31). A good example of this is provided by the Karnak Temple, which was continuously enlarged and rebuilt during the Eighteenth Dynasty (Aufrère et al. 1991: 88 - 98; Larché 2007; UCLA's Digital Karnak Project). The temple complex did not merely grow outwards: pylons, gateways, chapels, courts, and sanctuaries were built, torn down, and replaced by new buildings, sometimes after only a few decades or years.

One of the primary justifications given by pharaohs for rebuilding or replacing an existing monument was to have found it "fallen into ruin." Amenhotep I extensively rebuilt the Middle Kingdom sanctuary of Amun at Karnak, parts of which had become dilapidated after a series of high inundations in the Second Intermediate Period (Gabolde 1998). Yet this is clearly not the case with many structures in Eighteenth Dynasty Karnak. A suite of chapels, built of fine limestone for the royal cult, was dedicated by Amenhotep I, only to be replaced by Thutmose III with a nearly identical set (Björkman 1971: 77 - 78). Hatshepsut rebuilt large portions of central Karnak only to have many of her constructions torn down or replaced by Thutmose III. Her bark sanctuary, the Red Chapel, was replaced by a new one, built later in Thutmose III's independent reign (Björkman 1971: 80 - 84; Dorman 1988: 182 - 188; Lacau and Chevrier 1956; Van Siclen 1984, 1989), and her cult rooms north of the sanctuary were rearranged by this king (Björkman 1971: 78 - 80; Dorman 1988: 62 - 64). To make way for his Third Pylon, Amenhotep III dismantled several monuments at Karnak, including a festival hall of Thutmose II and Thutmose IV (Gabolde 1993; Letellier 1979), reusing masonry from these and earlier monuments, including material dating back to the Middle Kingdom (Björkman 1971: 78 - 80; Lacau and Chevrier 1956), as fill for the foundations and solid cores of the pylon towers (Björkman 1971: 104 - 112; Chevrier 1947, 1972). Blocks recovered from the pylon in the twentieth century form the main collection of the Karnak Open Air Museum, which includes a number of complete buildings dating from the Twelfth through the Eighteenth Dynasties (for references to these monuments see *PM* 1972: 61 - 74; UCLA's Digital Karnak Project).

At the end of the Eighteenth Dynasty, Akhenaten raised several new temples, at Karnak and throughout Egypt, dedicated to the solar cult of the Aten. Eschewing reuse of older masonry—perhaps because of the taint of its association with gods he rejected—Akhenaten constructed his monuments with small stone blocks called *talatat* that could be carried by a single man (see Redford 1984: chap. 4; Vergnieux and Gondran 1997). This permitted rapid construction and equally speedy dismantling. Hundreds of thousands of these blocks were quarried and used quickly to build temples all over the country; several of these temples at Karnak were hurriedly erected within the first three years of the king's reign. With his death and the repudiation of his religious ideas, Akhenaten's successors in the post-Amarna era and the early Nineteenth Dynasty found his derelict temples a most convenient source of building material. At Karnak, Horemheb was primarily responsible for dismantling the Aten temples, and the solid masonry cores of his Second, Ninth, and Tenth Pylons were stuffed with *talatat* as well as larger blocks taken from the memorial temple of the now-discredited Tutankhamun (fig. 3; Eaton-Krauss 1988; Redford 1973; 1984: 65 - 68; Schaden 1987). Sety I employed *talatat* in the foundations of the Great Hypostyle Hall of Karnak (Pillet 1924; Redford 1973). Akhenaten's *talatat* were recycled all across the country as late as the Ramesside era; many blocks from his temples found their way across the Nile to Hermopolis (Roeder 1969). Unlike the examples of reuse presented by the Third Pylon at Karnak, or the pyramid of Amenemhat I at Lisht, the reuse of Amarna Period masonry was not a case of "pious recycling," for surely blocks inscribed for the "heretic" Akhenaten gave no legitimacy to the monuments of those successors who discredited him. Instead, reuse of the *talatat* was both an economic expedient and a convenient way to banish vestiges of the Amarna Period from sight.

The Ramesside kings frequently reused masonry from older monuments. Some of these truly had "fallen into ruin," such as

Figure 3. East tower of Horemheb's Ninth Pylon, Karnak. The interior core is composed of much smaller *talatat* blocks from Akhenaten's monuments at Karnak.

Amenhotep III's vast memorial temple in Western Thebes. Limestone blocks with some of the finest reliefs ever carved in Egypt were taken to Merenptah's nearby memorial temple and set into its foundations (Bickel 1997). Other blocks were built into walls and their fine reliefs hacked out or plastered over, to be replaced by much cruder reliefs of Merenptah's own design. A splendid granite triumphal stela of Amenhotep III was inscribed on its formerly blank verso as Merenptah's famous "Israel stela" (Cairo CG 34025; JE 31408) and moved to the latter king's own memorial temple. Throughout the Ramesside Period, earlier New Kingdom structures increasingly became quarries for construction material once they had fallen into disrepair or disuse. The foundations for a huge, unfinished memorial temple of Ramesses IV in the Asasif region of Western Thebes was composed of reused blocks (Winlock 1914). The Khons Temple, built in the Twentieth Dynasty at Karnak, was constructed with inscribed blocks reused from

Figure 4. A late Eighteenth Dynasty relief reused in the Twentieth Dynasty pylon of the Temple of Khons, Karnak.

Figure 5. Blocks from monuments of Ramesses II reused in the gateway of Shoshenq III, Tanis.

dismantled Eighteenth Dynasty buildings, including fragments of war scenes from Horemheb's memorial temple visible in the staircase inside the pylon gateway and Sed Festival scenes of Amenhotep III on the roof of the pylon (fig. 4). Wall reliefs inside the temple sometimes give glimpses of this earlier decoration in places where plaster used to mask the old reliefs has fallen away (examples of which can be seen in Epigraphic Survey 1979: plates passim; and in Epigraphic Survey 1981: plates passim). Smaller monuments, including stelae, obelisks, and statuary, were also reused in the later New Kingdom. A good example is the second Kamose stela discovered in the foundations of a colossal statue at Karnak (Habachi 1972).

Reuse of building material continued apace beyond the New Kingdom. When the Ramesside capital at Pi-Ramesse became obsolete after the local branch of the Nile had silted up, a new capital was founded at Tanis in the Third Intermediate Period. The pharaohs of the Twenty-First and Twenty-Second Dynasties transported hundreds of inscribed stone monuments from Pi-Ramesse and elsewhere to embellish the new city. Some were merely reused as building material in new constructions, such as the pylon gateway of Shoshenq III, which is composed of reused blocks dating to the Old, Middle, and New Kingdoms (fig. 5). Others, including dozens of obelisks, colossal statues, and stelae of Ramesses II, served to decorate Tanis and to emphasize the link between the Tanite kings and their illustrious royal ancestor. Even in the royal tomb complex—itself built of reused masonry inside the main precinct of the Temple of Amun at Tanis—sarcophagi (Brock 1992) and rich burial goods of bronze, gold, and silver, inscribed for earlier kings, were found.

Reuse of masonry from earlier monuments continued through the Ptolemaic and Roman Periods both for ideological and economic reasons. At Upper Egyptian sites such as Armant, Medamud, and Tod, New Kingdom blocks were used in new constructions by the Ptolemaic kings and Roman emperors. In Alexandria, large numbers of inscribed monuments dating from the New Kingdom up until the Late Period have been found (Goddio et al. 1998). Many statues, obelisks, and stelae were transferred from Heliopolis to Alexandria to decorate the new capital there and to associate the Ptolemaic kings with their Pharaonic ancestors.

The ultimate reuse of ancient Egyptian monuments came after the end of Pharaonic civilization itself. The walls and buildings of Medieval Cairo were largely constructed of Pharaonic masonry, including casing blocks stripped from Old and Middle Kingdom pyramids. At Giza, the granite casing from the

lowest courses of Khafra's pyramid was removed and made into millstones (author's personal observation). The great temples of Memphis and Heliopolis have vanished, since many limestone blocks from these monuments were recycled as building material in Cairo (Meinecke-Berg 1985; Postel and Régen 2005, 2006) or were burned to produce lime. In 1845 Lepsius reported from Thebes: "There is a bare white spot in the middle of the fertile plain: on this, two limekilns are erected, in which, as often as they are wanted, the very best blocks of the ancient temples and rock-grottoes, with their images and inscriptions, are pounded and burnt into lime, that they may again cement together other blocks, which are extracted from these convenient and inexhaustible stone-quarries, for some cattle-stall or other structure for government purposes" (Lepsius 1853: 270 - 271; the author is grateful to Heike Schmidt for this reference). At Mit Rahina, only the granite blocks from the lowermost courses of Ramesses II's festival hall have survived, the limestone that made up the bulk of its walls having long ago been quarried away. In Middle and Upper Egypt, especially Abydos, Dendara, Thebes, Edfu, and Kom Ombo, Pharaonic monuments are better preserved, having been built of sandstone in locations that were rural and sparsely populated for the past two millennia. As recently as the early twentieth century, Pharaonic monuments were routinely used as quarries for stone or mud-brick, while rock-cut tombs at Thebes served as housing for modern inhabitants (Englebach 1924; Khater 1960; Van der Spek 2004).

Private Reuse of Tombs and Burial Equipment

Reuse of monuments in antiquity was not a strictly royal phenomenon. Private individuals frequently reused tombs and tomb furnishings—even those of ancestral relatives (Taylor 2001: 180 - 182). The practice is occasionally attested in earlier periods (Dodson 1992), but most examples are from the New Kingdom and later. Many New Kingdom tombs in the Theban necropolis provide examples of reuse, ranging from the usurpation and alteration of tomb decoration in the Ramesside Period to intrusive burials in the Third Intermediate and Late Periods (Černý 1940; Guksch 1995; Kampp 1996; Seyfried 1991). The same was true in Memphis (Spencer 1982). Funerary equipment could also be usurped or recycled after it had been adapted for the new owners. For example, a Nineteenth Dynasty coffin (British Museum EA 29579) was replastered and repainted in the Twenty-first Dynasty for a man named Mentuhotep. Traces of the original decoration are visible where the newer plaster chipped off (Cooney 2007: 290 - 291, figs. 11 a and b). Sarcophagi, too, could be re-inscribed, as was the anthropoid sarcophagus prepared for general Paramessu before he became Ramesses I, the sarcophagus later being adapted for prince Ramesses, the son of Ramesses II (Polz 1986). Unlike the royal practice of employing masonry taken from ruined or obsolete monuments, the private recycling of funerary equipment was often an illegitimate or criminal act, the goods themselves frequently being obtained by theft (Kemp 2006: 313 - 315; Taylor 2001: 178 - 180). Yet tombs and funerary equipment were often plundered within a few generations of the burial of the original owner(s). The later Twentieth Dynasty saw the brazen and systematic plundering of the Theban necropolis, including royal and private tombs and royal memorial temples (Jansen-Winkeln 1995; Peet 1930). Plundered funerary goods were reused "as is" or reprocessed for valuable raw materials (Kemp 2006: 313 - 314).

Restoration of Monuments

Ancient Egyptian civilization expressed great reverence for its own past. Although such piety did not stop pharaohs from dismantling or quarrying the derelict or obsolete constructions of their predecessors when it suited them, at other times rulers claimed to have restored or repaired monuments that were "found fallen into ruin," *gmj wꜣ r wꜣsw* (Björkman 1971: 31 - 38). (Other terms for decay include *wẓṯ* and *wš*.) Terms for restorative acts include *srwḏ*,

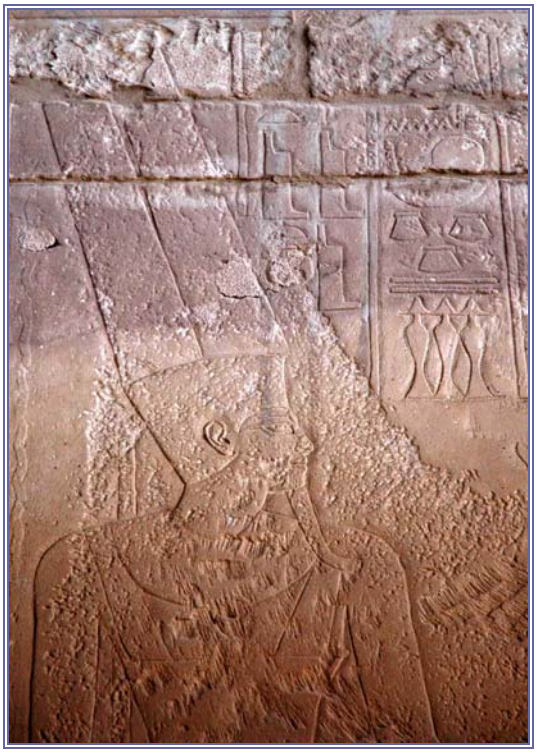

Figure 6. Post-Amarna restoration of image of Amun-Ra, defaced by Akhenaten. Some of the plaster used to mask the hack-marks left by Amarna iconoclasts remains. The relief is in a room north of the Philip Arrhidaeus bark shrine, Karnak.

Figure 7. Restoration "label" of Tutankhamun, usurped by Horemheb. Sixth Pylon, Karnak.

"strengthening/making durable"; *smɜwj*, "renewing/restoring"; *smnḫ*, "improving"; or *jrj m mɜwt*, "making anew." Existing monuments could also be *sʿɜ*, "magnified," and *swsḫ*, "expanded, broadened." In some cases, a pharaoh claims to have "restored" an ancestor's monument when in fact he actually replaced it with one executed in his own name.

In the wake of Akhenaten's suppression of the cult of Amun, the pharaohs of the post-Amarna era and early Nineteenth Dynasty were faced with the huge task of repairing or replacing the cult equipment, statuary, and inscriptions destroyed at Akhenaten's behest in Thebes and throughout Egypt. (Significantly, outside Thebes, Akhenaten's iconoclasm mostly targeted Amun and his triad, while other deities rarely suffered. Even within Thebes, Heliopolitan solar deities appear to have been respected, and attacks on other gods were not consistent.) These repairs began under Tutankhamun and were heralded by his "Restoration stela," wherein he describes efforts to replace the expensive cult equipment and property of the Theban temples that perished during the Amarna Period (Helck 1955 - 1958: 2025 - 2032; Murnane 1995: 212 - 214). Yet according to the text, Tutankhamun's actions were not a response to the depredations of Akhenaten's religious policies but were needed because the temples had "fallen into ruin," and the gods had shunned Egypt.

Tutankhamun's Restoration text does not describe the largest task that faced Akhenaten's successors: the repair of countless wall reliefs and inscriptions representing and naming the gods on the standing monuments where the names and images of Amun and other gods had been ruthlessly hacked out during the Amarna Period (1999a; fig. 6; Brand 1999b; 2000: ch. 2). In the vast majority of cases, it is not

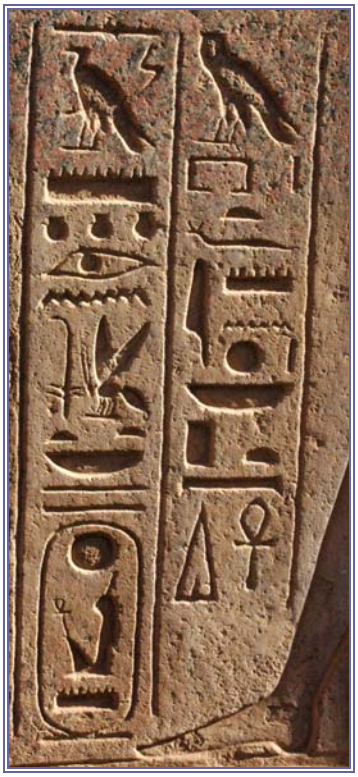

Figure 8. Restoration "label" of Sety I from a gateway of Thutmose III, central Karnak.

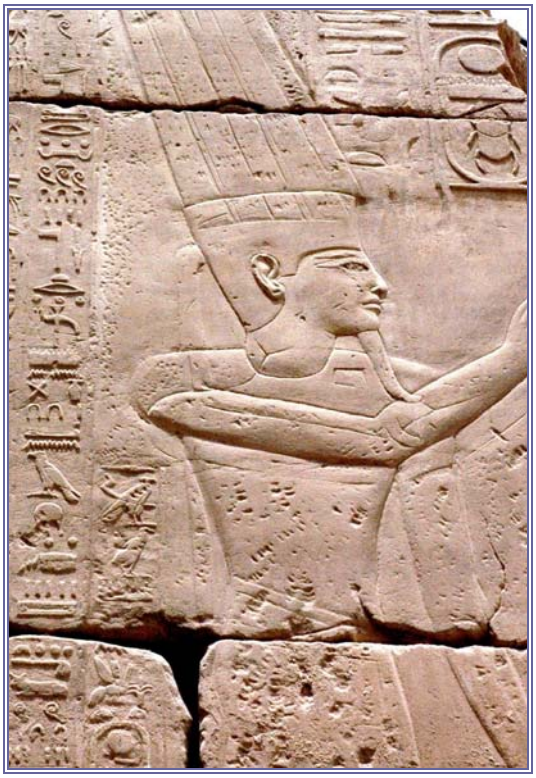

Figure 9. Secondary restoration by Horemheb of a Thutmoside relief of Amun-Ra, originally repaired by Tutankhamun. Visible are traces of Tutankhamun's smaller image of the god, Horemheb's restoration "label," Amarna hack-marks, and plaster.

readily apparent which king actually repaired a particular divine image or inscription, yet on dozens of monuments one finds inserted into a wall relief a formulaic "label" containing the phrase "a restoration of the monument (*smɜwj-mnw*) made by king N" (figs. 7 and 8; Brand 1999b; 2000: 45 - 48). Most of these name Sety I, although examples are also known naming Tutankhamun, Aye, Horemheb, and even Ramesses II (Brand 1999b). The most common locations for these restoration labels are on gateways, stelae, the facades of buildings, and other prominent or prestigious locations. One rarely finds them in dark temple-recesses where vandalized images have been repaired.

Since the majority of the *smɜwj-mnw* restoration labels name Sety I, it was long assumed that he was responsible for the bulk of the post-Amarna repairs to monumental reliefs. It is now clear, however, that these renewal labels are found only in the most prominent and visible locations and that most of the damaged reliefs were repaired earlier, under Tutankhamun. Moreover, Horemheb and Sety I frequently made secondary restorations to reliefs already repaired by Tutankhamun (figs. 9 - 11; Brand 1999b). Their aim was to deny Tutankhamun the credit for these restorations, thereby gaining it for themselves. The secondary restorations of Horemheb, in particular, are part of the *damnatio memoriae* of Tutankhamun. Restoration labels of Tutankhamun were often usurped by Horemheb or Sety I (Bickel 1997: 94 - 97, pls. 21b, 34b, 80; 1999a, 1999b, 2000). Most of Sety I's restoration labels are original, but in all cases of secondary restoration, the repaired images of the gods show re-cutting, indicating that they had been altered subsequent to the initial renewal made under Tutankhamun (Brand 2000: ch. 2).

Figure 10. Thutmoside image of Atum (left) beside a restored one of Montu (right). The Heliopolitan sun gods, like Atum, were not vandalized by Akhenaten. Montu was defaced in the Amarna Period and restored first by Tutankhamun and secondarily by Sety I. Recutting on the arms and shoulder marks the restoration displaced by Sety. Eighth Pylon, Karnak.

Figure 11. A Thutmoside relief restored by Tutankhamun and secondarily by Sety I. Sety added a renewal "label" after he altered the repairs made by Tutankhamun. Eighth Pylon, north face, west tower, Karnak.

In the Ramesside era, following the reign of Sety I, kings occasionally used the *smɜwj-mnw* restoration label in inscriptions they added to existing monuments (see, for example, the *smɜwj-mnw* labels of Ramesses III and Ramesses IV beneath those of Sety I on the bark shrine of Thutmose III at Tod). In most cases, however, these "restorations" do not indicate genuine repairs but merely the addition of new relief-decoration; indeed they sometimes represent nothing more than the

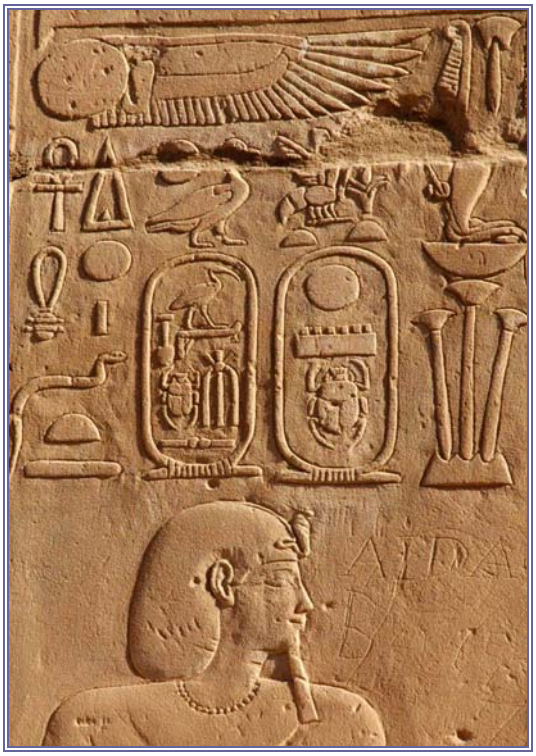

Figure 12. Ptolemaic re-creation of relief of Thutmose III in the *Akhmenu*, Karnak. The original iconography and text are consistent with Thutmoside reliefs, but its artistic style and the paleography of the hieroglyphs are Ptolemaic.

restoration label itself. One occasionally finds restoration labels in the Third Intermediate Period (Brand 2004) or Ptolemaic and Roman Periods that do reflect some kind of repair work carried out by the author (McClain 2007).

During the Ptolemaic and Roman Periods, dilapidated monuments were extensively repaired or rebuilt (McClain 2007). Examples include a number of New Kingdom constructions at Thebes. At Karnak, columns and the roof of the Great Hypostyle Hall and the gateways of the Second and Third Pylons were extensively rebuilt (Golvin 1987; Rondot and Golvin 1989). Additionally, new masonry was inserted along the base of the walls of the Hypostyle Hall, where the action of salt-laden groundwater had deteriorated the original stonework (Brand 2001). Ancient relief decoration was often re-created by Ptolemaic kings in the name of the original builders, so

that one now find reliefs carved in the Ptolemaic style naming Thutmose III or Ramesses II (fig. 12). Examples include the relief of Ramesses I and Ramesses II in the passageway through the Second Pylon (Murnane 1994) and reliefs of Thutmose III on the gateway of the Fourth Pylon (*PM* 1972: 79 [202 g - h]).

Bibliographic Notes

Varille (1943) speculates that the dismantling and reuse of monuments in the foundations of new buildings was actually a pious act of preservation. He bases his theory on the excavation of foundations of buildings at Karnak rather than on Egyptian texts. Björkman (1971) is the fundamental study on the concept of reuse, including the competing Pharaonic ideological concepts of respect for the old and the need to surpass what ancestors had done. Using the example of Eighteenth Dynasty Karnak, Björkman demonstrates that dismantling a predecessor's monument was not necessarily a sign of disrespect. References to textual and archaeological sources back up these findings. See also Gabolde (1998) and Larché (2007). Likewise, Goedicke (1971) shows that pious emulation and a desire to legitimate himself prompted Amenemhet I to reuse Old Kingdom material in his pyramid complex at Lisht. The notion that this was an economic measure is disproved by the fact that none of the blocks are from Maidum, the Old Kingdom site nearest to Lisht, and that there was plenty of local limestone to be had for less effort than that required by transporting blocks from Giza or Saqqara. Redford (1973, 1984) discusses the reuse of Amarna *talatat* blocks as part of the *damnatio memoriae* of Akhenaten. Helck (1985) is skeptical of pious motivations because of the reuse of Amarna *talatat*. The private reuse of funerary equipment, particularly its economic component and illicit qualities, is discussed by Kemp (2006), Taylor (2001), and Cooney (2007). For the ancient reuse of private tombs at Thebes, see Englebach (1924), Černý (1940), Guksch (1995), Kampp (1996), and Seyfried (1991). Post-Pharaonic reuse of the tombs down to recent times is discussed by Khater (1960) and Van der Spek (2004). For modern reuse of Pharaonic masonry in Cairo see Meinecke-Berg (1985) and Postel and Regen (2005, 2006). For the Twentieth Dynasty tomb robberies see Peet (1930) and Jansen-Winckeln (1995). Björkman (1971) discusses restoration texts in general, as well as the terminology and ideology of restoration. Brand (1999a) demonstrates the techniques used by sculptors for restoring soft- and hard-stone monuments. Secondary restoration—the usurpation of Tutankhamun's repairs to monuments vandalized in the Amarna era by his successors Aye, Horemheb, and Sety I—is discussed in Bickel (1997) and Brand (1999b, 2000). McClain (2007) is a study of the tradition of monumental repairs and restoration texts from the Old Kingdom down to the Ptolemaic era. Golvin (1987), Rondot and Golvin (1989), and Brand (2001) discuss specific examples of Ptolemaic and Roman era repairs to New Kingdom monuments at Karnak.

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Figure 1. Reused early Eighteenth Dynasty blocks in the foundations of the Temple of Montu, built by Amenhotep III, Karnak. Photograph by the author.

Figure 2. An earlier Eighteenth Dynasty block in the foundations of Amenhotep III's Temple of Montu, Karnak. Photograph by the author.

Figure 3. East tower of Horemheb's Ninth Pylon, Karnak. The interior core is composed of much smaller *talatat* blocks from Akhenaten's monuments at Karnak. Photograph by the author.

Figure 4. A late Eighteenth Dynasty relief reused in the Twentieth Dynasty pylon of the Temple of Khons, Karnak. Photograph by the author.

Figure 5. Blocks from monuments of Ramesses II reused in the gateway of Shoshenq III, Tanis. Photograph by the author.

Figure 6. Post-Amarna restoration of image of Amun-Ra, defaced by Akhenaten. Some of the plaster used to mask the hack-marks left by Amarna iconoclasts remains. The relief is in a room north of the Philip Arrhidaeus bark shrine, Karnak. Photograph by the author.

Figure 7. Restoration "label" of Tutankhamun, usurped by Horemheb. Sixth Pylon, Karnak. Photograph by the author.

Figure 8. Restoration "label" of Sety I from a gateway of Thutmose III, central Karnak. Photograph by the author.

Figure 9. Secondary restoration by Horemheb of a Thutmoside relief of Amun-Ra, originally repaired by Tutankhamun. Visible are traces of Tutankhamun's smaller image of the god, Horemheb's restoration "label," Amarna hack-marks, and plaster. Photograph by the author.

Figure 10. Thutmoside image of Atum (left) beside a restored one of Montu (right). The Heliopolitan sun gods, like Atum, were not vandalized by Akhenaten. Montu was defaced in the Amarna Period and restored first by Tutankhamun and secondarily by Sety I. Recutting on the arms and shoulder marks the restoration displaced by Sety. Eighth Pylon, Karnak. Photograph by the author.

Figure 11. A Thutmoside relief restored by Tutankhamun and secondarily by Sety I. Sety added a renewal "label" after he altered the repairs made by Tutankhamun. Eighth Pylon, north face, west tower, Karnak. Photograph by the author.

Figure 12. Ptolemaic re-creation of relief of Thutmose III in the *Akhmenu*, Karnak. The original iconography and text are consistent with Thutmoside reliefs, but its artistic style and the paleography of the hieroglyphs are Ptolemaic. Photograph by the author.