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► **To cite this version:**

Christophe Thiers. The So-Called Karnak Method. Vanessa Davies; Dimitri Laboury. The Oxford Handbook of Egyptian Epigraphy and Paleography, Oxford University Press, pp.316-328, 2020, 9780190604653. 10.1093/oxfordhb/9780190604653.013.21 . halshs-02501887

HAL Id: halshs-02501887

<https://shs.hal.science/halshs-02501887>

Submitted on 23 Jun 2022

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The So-Called Karnak Method

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The Oxford Handbook of Egyptian Epigraphy and Paleography

Edited by Vanessa Davies and Dimitri Laboury

Print Publication Date: Apr 2020 Subject: Archaeology, Egyptian Archaeology

Online Publication Date: Mar 2020 DOI: 10.1093/oxfordhb/9780190604653.013.21

Abstract and Keywords

Presentation of the so-called Karnak Method, based on epigraphic copies made on a 1:1 scale using plastic film. The advantages, disadvantages, and evolution of the method all the way up to recent developments enabled by the vectorization of copies are presented, supported by examples from publications.

Keywords: Karnak Method, epigraphic copies, plastic film, vectorization of copies, epigraphy, copy, Egypt

WHEN faced with a hieroglyphic relief or inscription, the Egyptologist has a variety of options available to document it: photography, manual copies, proportional copies, smears, latex/silicone squeezes (in an underwater environment, for example), stamps, and facsimiles (Caminos 1976; Traunecker 1987; Dorman 2008). There are numerous variations in the use of these different techniques, which are obviously not mutually exclusive. They all have their own advantages and disadvantages, depending on the situation, the intended use of the copy, and above all, the time and resources available. Notes and copies on the site, accompanied by a photograph, are often sufficient evidence for Egyptologists' personal archives, while he/she awaits the opportunity (possible, but not always forthcoming) to publish the findings.¹

In the framework of wide-ranging documentation and/or publication programs, whether individual or collective, the end goal is different. It is therefore necessary to use a more proven method to capture the essential features of the object being studied. The hand copy is thus the only option capable of accurately rendering reliefs and inscriptions and particularly the arrangement and relative proportions of hieroglyphic figures and signs (Dorman 2008, 83–85). Once published and accessible to the scientific community, it can then be used for other purposes (proposals to restore lacunae, palaeography, etc.). A careful examination, as close as possible to the wall, ensures the optimum rendering of epigraphic features, especially if the relief has been damaged or subject to hammering/erasure/second engraving. This work must usually be preceded by a preparatory copy (manual copy into a notebook), which acts as a first approach to the text and helps to familiarize the epigrapher with the object in question. Nevertheless, a direct copy of the

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wall “makes the epigrapher more keenly aware of the idiosyncrasies of the artists who decorated the wall,” and “the practice of making facsimiles helps in understanding (p. 317) the texts much more than a mere transcription ever can” (Willems, Coppens, and De Meyer 2003, 2–3).

Since the relief is three-dimensional, a true facsimile can only be carried out using a cast (plaster, latex/silicone squeezes, or even stamped paper). We therefore often use the term “facsimile” in its more limited sense, that is, reproducing a three-dimensional object in two dimensions, but taking great care to render the epigraphic features of the object as accurately as possible (for this distinction, see Traunecker 1987). Facsimiles have been and are often still created based on photographic media, and the final drawing is therefore highly dependent on the quality and accuracy of the shot (see chapter by McClain and *infra*). The Karnak method allows us to avoid using a photographic intermediary when making copies.

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Tradition has it that this technique was introduced at Karnak in 1983:

Tous les égyptologues précités, chargés du relevé de séries de blocs épars, ont appliqué une méthode commode inaugurée par Luc Gabolde en 1983. Elle consiste sur le terrain à décalquer le bloc sur un film transparent souple, en suivant le contour de tous les textes et reliefs au stylo feutre, ce qui permet d’en obtenir aisément le dessin grandeur nature, puis à repasser au bureau le dessin obtenu avec un stylo feutre plus épais afin qu’il soit possible d’obtenir des photos-réductions de bonne qualité. Celles-ci permettent ensuite de réaliser graphiquement l’assemblage des blocs et les dessins de restitution des parois. Le procédé est particulièrement performant lorsque les blocs sont très fragiles ou difficiles d’accès et ne peuvent donc être transportés ou être photographiés [i.e., “All of the Egyptologists mentioned above, responsible for making copies of a series of scattered blocks, used a convenient method introduced by Luc Gabolde in 1983. In the field, it consists of tracing the block on a flexible transparent film, following the outline of all texts and reliefs using a felt-tip pen. This allows us to easily create a life-size drawing, and then to go over it again later in the office with a thicker felt-tip so that it is possible to obtain good-quality photographic miniatures. In turn, this allows us to graphically assemble the blocks and/or reproductions of the walls. This process is particularly reliable when the blocks are very fragile or difficult to access and therefore cannot be transported or photographed”].

(Abd el-Hamid, Golvin, and Goyon 1985, 31n79)

But the so-called Karnak method does not belong to Karnak, and its origins actually lie elsewhere: it was used by P. Clère while working on the publication about the temple of Esna, to remedy the problem of drawing the column scenes, which could not be pho-

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tographed (Sauneron 1963). The same process was used by Chicago House epigraphers to copy the columns of the temples of Luxor and Khonsu at Karnak (Caminos 1976, 11).

(p. 318) Although this method systematized the use of completely transparent plastic film, in reality, it is merely the evolution of an older practice (the “Howard Carter method”). This was originally carried out using natural tracing paper and then later on thicker and more rigid polyester tracing paper (such as Kodatrace and Rhodoïdes, depending on the manufacturer, which are plastic films made of cellulose acetate, in individual sheets or rolls). This was often used with precision to partially reproduce a relief, inscription (statues, tablets), graffiti, or cave carving (e.g., Devauchelle 1984; Jacquet-Gordon 1988, 11; Leclant 1989, 171; Jenni 1998, 11; Schiff Giorgini 1998, IX–XI; Leclant 2001, 3–4; Jacquet-Gordon 2003; Willems, Coppens, and De Meyer 2003). This method of creating a 1:1 copy facilitated the use of plastic film on a larger scale, often being used after or simultaneously alongside polyester tracing paper during the same mission (Gasse and Rondot 2007). Although polyester tracing paper is less transparent than plastic film, it is still frequently used to reproduce inscriptions of smaller dimensions for which the tip of a graphite pencil (lead pencil) is thinner than that of a felt-tip pen (super fine tip: 0.4 mm).

As indicated in the *Karnak 8* report mentioned earlier, this method using plastic film was first developed at Karnak to inventory collections of scattered blocks that could not easily be moved and represented a method of documenting and supporting the study which was easy to put into practice. Indeed, the study of sets of scattered stones has long been favored by the Centre Franco-Égyptien d’Étude des Temples de Karnak (CFEETK), overshadowing the publication of temples and monuments themselves. The method subsequently spread across the entire field of epigraphic documentation. When done carefully, it does not degrade the wall or block at all (prior restoration work can be carried out if the condition of the block calls for it; consolidation with ethyl silicate, for example). Depending on the state of the wall or block, the plastic can also be held in place by a wooden frame. In every instance, the common sense of the epigrapher should prevail, and the condition of the stone should always come first when applying the plastic film. However, the dramatic reality of the combined effects of human (touristic) and climactic factors in wearing down the Nile Valley monuments makes the impact of this method completely insignificant with regard to the conservation of the monuments. On the contrary, this method allows us to document and preserve blocks and walls that unfortunately are likely to undergo significant degradation.

General Principles

The method implemented in the 1980s is simple (Pécoil 2000, 31; Biston-Moulin and Thiers 2016, XI–XIII). Carefully apply a plastic film to the block or wall and, using a permanent felt-tip pen (fine tip 0.6 mm, or super fine tip 0.4 mm), trace (life-size) the outlines and forms of the figures, hieroglyphs (unlike publications that harmfully categorize iconography and inscriptions separately), joints, re-engraved areas, hammered areas, fractures, any epigraphic information likely to be used to understand the inscription

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(p. 319) and its condition. Once the copy has been made and the plastic dusted down, the drawing is retraced on the back with a thicker felt-tip (medium point 1.0 mm) using solid or dotted lines, depending on the conventions settled on. The original drawing on the front is erased with an alcohol or acetone solution, a scale (30 or 50 cm long) is traced and all the necessary information is added (inventory number, material, type of relief, location, date and author of the drawing, etc.). The plastic film (max. size 1.40 × 1 m) on a 1:1 scale is then photographed against a bright wall. For the frequent cases where the dimensions of the scene exceed the maximum size of the plastic, it is sufficient to note points of reference (crosses) between the plastic sheets with enough of an area overlapping to ensure precision when assembling them later. In the days of film photography, paper prints of the negatives (reduced to 1:10 scale) were needed for study and for publication. Manually assembling these paper prints allowed the Egyptologist to prepare a study of a set of stones or to reproduce an entire wall. Naturally, in between these steps the drawing is verified several times (via trips to the monument and the use of photographs) before the final photographs of the copy are taken.

It is clear that this method is more appropriate for reproducing sunken reliefs, since the film is placed as close as possible to the inscribed wall and the relief lines can be easily followed; however, its usage with raised relief is also possible.

There are two fundamental disadvantages of this method. First, although reducing the scale to 1:10 allowed the drawing's imperfections to be largely eliminated, the use of felt-tip pen did not always allow for a uniform outline, both in terms of thickness and density. Second, although it was always possible to erase a line and replace it using a technical pen (Rotring 0.1 mm), the correction process remained impractical to implement once the paper copy had been made without reproducing the entire drawing on tracing paper.

This technique therefore underwent various changes that attempted to address these difficulties. The first (in the late 1990s) was to change the plastic for a polyester crystal film that was totally transparent, thin (50 microns), more rigid, and did not distort at high temperatures (unlike the "nappes de nylon achetées au souq de Louqsor" (i.e., "nylon tablecloths bought in the souq of Luxor": Sauneron 1963). The quality of the drawing was therefore greatly improved. This type of film is still used today on a number of missions. It can be purchased in rolls of various sizes and lengths or in individual sheets and can be reused if needed (by erasing the existing drawing with an alcohol or acetone solution).

To remedy the potential irregularities resulting from the use of a felt-tip pen, a change was made when finalizing: based on the photograph/scan of the copy, reduced to 70 per cent, the final outline was done using India ink (Rotring technical pen) on conventional polyester tracing paper. The line was therefore more uniform, and it was easier to make corrections during the verification process (Figure III.3.1). This method was used in particular for the blocks of the Chapelle Rouge (Burgos and Larché 2006) and the Speos Artemidos (Bickel and Chappaz 1988). After the original had been reduced, the final drawing could always be made on tracing paper using a lead pencil (Jordan, Bickel, and Chappaz 2015). (p. 320)



Figure III.3.1. Karnak, block from the Chapelle Rouge. Credit: CNRS-Centre franco-égyptien d'étude des temples de Karnak © Cnrs-Cfeetk/H. Zacharias.

(p. 321) This method with its various modifications was mainly used at Karnak, as mentioned, to document and publish sets of stones, some of them significant (e.g., the festival court of Thutmose II, Gabolde 1993; the calcite bark-shrine of Thutmose III, Arnaudès-Montélimard 2003; Netjery-menu, Gabolde 2005; the great pillared court of Thutmose IV, Letellier and Larché 2013; the obelisks at Karnak, Gabolde 2007; and in numerous articles, especially those published in *Cahiers de Karnak*). It has also proved to be effective in documenting monuments (“Botanical garden,” Beaux 1990; Akhmenu, Pécoil 2000; gate of the tenth pylon, Jordan, Bickel, and Chappaz 2015), and notably thousands of scattered blocks whose records and handcopies are kept in the archives of the CFEETK, which are often the only evidence of stones that have unfortunately largely deteriorated over time. In other places, different teams have appropriated this method, improving it as needed (e.g., Beaux and Karkowski 1993; Karkowski 2003; Beaux, Grimal, et al. 2012; Beaux, Karkowski, et al. 2016; see *infra*).

Vectorization of Epigraphic Copies

The evolution of computer programs (photography and vector graphics) has profoundly changed the method, even if the philosophy behind it remains the same. Nowadays, the on-site copy done on plastic film, dusted down, and annotated (with information concerning the drawing, grid, etc.), is photographed or scanned directly. With the aid of the grid transferred onto the plastic, it is easy to obtain the desired scale by simply manipulating the image on a computer. The digital file is then used to create the final vectorized image using Adobe Illustrator software. This type of design software lets us apply a range of features, such as colors (*infra*), and to modify the scale of the work ad infinitum. As well as improving the rendering, it also makes it easier to transfer it to the final document intended for publication (Biston-Moulin and Thiers 2016). In addition, paper versions of old copies can now be digitized and vectorized to improve the quality and make it easier to assemble images or reproduce them (e.g., Thiers 2009); documentation work done in the past therefore remains perfectly usable for editing or publishing purposes now.

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Color notation has largely been excluded from copies for a long time. As with other methods, thinner or dotted lines giving the impression of a gray line could indicate color on the plastic copy with a more or less exhaustive list of any traces of colors preserved in the reliefs being provided in the body of the publication (e.g., Jacquet-Gordon 1988, 9 nos. 1, 264; Pécoil 2000, 9–20; Thiers 2003, 295–296). Traces of color could also be indicated directly on the final drawing with letters/abbreviations (e.g., Jenni 1998, 11). Nowadays, software offers tools to represent the entire range of colors encountered. Beforehand, the epigrapher annotates the copy to indicate traces of color; the use of indelible color pens also simplifies the process. The drawing is finalized with the aid of a high-definition color photograph (orthophotography) and verification against the original (Figure III.3.2). At each stage, a paper copy can be annotated with the corrections (p. 322) (p. 323) made to the digital copy. The decrease in publishing costs thanks to the use of digital presses means that nowadays copies of scenes can be printed in color, accompanied by a full-color photographic cover if necessary. Color can also be used to effectively and aesthetically differentiate between the outlines of scenes and inscriptions as opposed to broken areas/joints (Willems, Coppens, and De Meyer 2003; Willems 2007) or hammered/re-engraved areas (Karkowski 2003; Beaux, Grimal, et al. 2012; Beaux, Karkowski, et al. 2016; Biston-Moulin and Thiers 2016).

Whether for temple walls or any other inscribed object, digitizing copies also means that we can consult the results of archived research (drawings and old photographs), allowing us to better understand the condition of inscriptions and reliefs; vectoring allows us to easily show (using a different color) information provided by the archives in relation to the current state/deterioration of the wall (e.g., Shenhûr, Willems, Coppens, and De Meyer 2003, 3; Ayn el-Muftella, Labrique 2014, 163–164).



Figure III.3.2. Karnak, outer southern wall of Philipp Arrhidaios' bark shrine. Credit: CNRS-Centre franco-égyptien d'étude des temples de Karnak © Cnrs-Cfeetk/P. Calassou.

For publications concerning temples, having the handcopy accompanied (alongside it, if possible) by a normalized digital version of the hieroglyphs (online, with critical apparatus), a layout plan (of the temple and the wall), and finally a photographic copy gives the reader access to all the information essential for Egyptology (Karkowski 2003; Thiers 2003; Jordan, Bickel, and Chappaz 2015; Biston-Moulin and Thiers 2016; Figure III.3.3). This is a major improvement over typographical editions offering only the typography (old lead cast or digitized) running from right to left (Edfu, Dendera, Kom Ombo, Esna, Athribis) or traced editions (Opet, Deir Shelwit, Tod I) accompanied by an indicative summary of the iconography or the scenes depicted—but without taking into account the hieroglyphs—and sometimes by layout plans. An intermediary method of presenting a proportional copy showing the hieroglyphs as arranged in the original scene (Traunecker 1987) but usually separating them from the iconography (Coptos, el-Qal'a, Qasr elAguz) has also been proposed. All these methods proved their worth during the time they were used, in terms of not only the scope of the task in hand but also the readability of the reliefs studied and the economic constraints of publications.



Figure III.3.3. Karnak, temple of Ptah, hymn dedicated to Imhotep. Credit: CNRS-Centre franco-égyptien d'étude des temples de Karnak © Cnrs-Cfeetk/Chr. Thiers.

Some Remarks

The choice of method when making an epigraphic copy therefore depends largely on the resources available (financial and human) and consequently on the time that we are willing to dedicate to documenting a relief or inscription that could deteriorate quickly in order to provide access to Egyptological information. A copy that is extremely accomplished but that takes years to be accessible to the scientific community is perhaps not the most suitable, if it deprives many researchers of the information they need to further their studies. The ambiguous concept of productivity in the humanities remains significant when it comes to documenting monuments that were last documented a long time ago or that have never been published before, as far too many examples attest to irreversible destruction or disintegration over time.

(p. 324) (p. 325) This practical, easy, and inexpensive method, which does not require lengthy training, allows us to produce a rendering of an inscription or relief in order to document it or to support and illustrate a publication on Egyptology. This level of rendering does not aim to be a definitive reproduction of the relief or inscription: it must be comprehensive, legible, and show the reader all the key epigraphic features. The final drawing is therefore not to be considered an artistic work by any means—this is not its function. Obviously, we tend toward an aesthetically pleasing drawing where possible, one that is faithful to the original and nice to look at for the reader who flicks through the work in which it is published, but the inclusion of epigraphic/Egyptological features takes priority over the artistic value. “L'idéal est atteint lorsque l'égyptologue est également un

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artiste" (i.e., "The ideal is achieved when the Egyptologist is also an artist") (Traunecker 1987, 265n8).

Every drawing is an interpretation of how the object being drawn appears in reality, and the choices made when rendering the outlines are the result of collective rules or individual practices. A copy made by even the most brilliant artist is merely an interpretation of the reality of the relief or inscription in question even if he/she has access to photographs without optical distortion (tilt-shift or orthoimages). It is possible to obtain the maximum possible objectivity of the supporting material—and we can consider that this is the case when using geo-referenced orthoimages alongside a theodolite—but the objectivity of the copy will always depend on the ability of the epigrapher to interpret the relief or inscription, especially when the supporting material has been highly modified. This interpretation, however, must remain objective and faithful to the original.

We can only welcome recent technological improvements (orthoimages, Reflectance Transformation Imaging, depth maps) that can now act as supporting material and can often be decisive in epigraphic analysis. However, they cannot always be a substitute for the trained eye and Egyptological knowledge of the epigrapher.

Since this method of making a copy is not binding, there is no definitive style guide. It is enough for the copy to be internally consistent and for its role to be clearly defined beforehand (rendering the limits of blocks, joints, outlines of figures, breaks, cupules, post-restoration mortar remnants, etc.) (e.g., Beaux 1990, 351; Schiff Giorgini 1998, IX–XII; Pécoil 2000, 32; Karkowski 2003, pl. A; Biston-Moulin and Thiers 2016, XI–XIII).

Sometimes used in certain publications, a thicker shadow line tends to indicate the existence of a theoretical light source situated above and to the left of the object (at an angle of 45°) and therefore indicates the nature of the relief (sunken or raised). This shadow line is typically absent from *Karnak* copies. Using photography, which must nowadays be systematically published (on paper, CD-ROM, or online) along with the handcopy (see Caminos 1976, 19), allows us to visualize the nature of the relief, which can also be indicated in the publication (Schiff Giorgini 1998, XI; Thiers 2003, 295). This avoids having the shadow line interfere with the drawing and distort the work of the ancient sculptor, who was not thinking about a conventional light source above the pattern on the left when he carved it. The use of the shadow line is sometimes ambiguous in [\(p. 326\)](#) certain publications, where it is applied to reliefs but not to smaller hieroglyphic signs. But as mentioned, the method is not prescriptive, and this convention may therefore be adopted if desired, being even easier nowadays thanks to the digitization of copies. It is a technical and/or aesthetic decision, whichever method is used to make the epigraphic copy.

A wide variety of renderings is therefore possible, from the most succinct to the most aesthetically accomplished. However, since the handcopy is intended as a supporting material when reading, understanding, and studying a relief, it is not usually necessary to note the slightest scratches or the internal details of breakages on the plastic film. By contrast, areas that have been lost, as well as cupules, need to be clearly defined (by a dotted line or dashed/shaded areas); failing to note broken areas is extremely damaging, re-

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sulting in a loss of information since there is no longer any way of distinguishing between a nonengraved area and an area that has been damaged (accidentally or intentionally). The Egyptologist's job of editing and reproducing texts is therefore not possible using such copies.

The strengths of this technique are its flexibility, based on a copy scale of 1:1, and the speed with which it can be carried out. It is very easy to perform and has therefore been adopted by many missions and by inspectors from the Egyptian Ministry of Antiquities, allowing them to better document the various monuments unearthed during excavations or during inventories of sets of stones by the Ministry. The few studies noted here are, of course, just an indication. It is impossible to list the hundreds of publications (monographs and articles), monuments (temples, blocks, statues, etc.), and documentation/inventory projects that have benefited from this quick and simple technique throughout Egypt, bringing together a considerable collection of documents for Egyptologists to study.

Technological Developments

The growing contribution of digital photography, the increase in computing power, and the appearance of specialized software all allow us to further develop the old techniques of photogrammetry and thus to obtain high-definition orthoimages with no optical distortion. Thanks to these media, digital epigraphy at Karnak is applied to large-scale programs where the traditional method would not be suitable. For example, the entire Eighth Pylon was recently drawn in this manner based on high-definition orthoimages. The same process was used for the chapel of Alexander at Akhmenu where the extremely well preserved colors, after an extensive period of restoration, made the use of plastic film inadequate. Again, each method has its advantages and disadvantages, and we must choose the most suitable according to the variables involved, subject to the characteristics of the supporting material, the time dedicated to making the copy, and the final use that the epigrapher intends for it.

The so-called Karnak method is just one tool among many others.

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Notes:

(¹) Project supported by LabEx ARCHIMEDE from "Investissement d'Avenir" program ANR-11-LABX-0032-01.

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