[SLIDE 1] Beyond Morphology and Resemblance in Early Graphical Culture

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Introduction

Please accept my sincere apologies for being unable to present my contribution in person. I would also like to thank Martin for consenting to read my paper and showing the accompany PowerPoint presentation.

In assessing the function and meaning for graphical marks which precede the emergence of early Egyptian 'writing' (however we define 'writing'), prevailing approaches tend to focus on an image for its morphology—for its character or nature as completed graphical action, an outcome. Strokes and lines are examined to discern the resultant form, which is in turn compared to establish resemblance and thereby function and meaning. Emphasis is placed on discerning the work the image does *external* to itself—establishing which function it fulfils, be it iconic, indexical or symbolic. For example, an image shaped like a 'bird' may be investigated to determine whether is represents a bird, signifies a particular phonetic value or symbolises an Egyptian deity. Where images are treated as relatively self-contained entities, however, one runs the risk of overlooking the significance of material, temporal and spatial contexts in the construction of past meaning. As I have discussed previously (Piquette 2008), another pitfall is the temptation to retroject image functions and meanings from later better-understood contexts back onto earlier morphologically-similar imagery (Piquette 2008). In some cases, continuities in Egyptian graphical practice can be demonstrated from an early to a later context, but I suggest that this method should be reserved for application *after* more grounded, context-sensitive methods have been exhausted. I suggest we need to see an image not merely for how it appears as encountered in the moment of visual perception, but also as a process whereby function and meaning emerge through sets of practices by embodied makers and viewers situated in a past material world. My paper therefore revolves around the notion of the contingent, situated material image, and it is this theme that I develop as I briefly attempt to address the 3 points identified by the session organisers for discussion in today's roundtable.

[**SLIDE 2**] To begin, I will consider the criteria by which we distinguish art from non-art in prehistoric iconography from the perspective of the materials and techniques which constitute an image. I address point 2 concerning the heuristic assessment of graphic clusters from a compositional perspective as aided by the software programme ATLAS.ti, a tool for qualitative analysis of multi-variate data. I conclude by briefly discussing point 3 regarding methods for systematic documentation of marks and their contexts, in relation to Reflectance Transformation Imaging. RTI is an emerging digital imaging technology which aids the detailed study of image morphology and assessment of resemblance, and supports the material-practice perspective I advocate and explore in my previous and current research (Piquette Forthcoming; 2008; 2007).

1. The criteria by which we distinguish art from non-art in prehistoric iconography

As for the criteria by which we distinguish 'art' from 'non-art' in early iconography, this depends of course on how we define of 'art' and whether this definition is imposed from above or derives from the evidence. I offer the following example whereby criteria are derived and in so doing reveal important insight into the wider social significance of early image types—at last for certain high status early Egyptians

[**SLIDE 3**] Sometime around 3200 BCE at the upper Egyptian site now known as Cemetery 'U' at Abydos, a large mudbrick lined, multi-chambered tomb was equipped with (among other things), hundreds of ceramic vessels, some of which were marked with 1-2 iconic images. Other grave goods, which no longer survive, are implied by the presence of tiny bone and ivory labels perforated in one corner for attachment (Dreyer 1998). These bear with 1-4 iconic images, or alternatively, numerical notations.

[**SLIDE 4**] The imagery on the jars, limited to faunal and floral subjects, was rendered in applied black pigment to the external surface of the upper part of the vessel body, usually closer to the wavy-handle pattern encircling the shoulder than the base (Dreyer 1998: 22-28). Based on the published photographs the lines appear to have been applied quite dry using a coarse brush-like instrument (perhaps a rush?), resulting in the uneven deposition of colour. [**SLIDE 5**] The image repertoire on the bone and ivory labels is somewhat wider. In addition to flora and fauna, human

figures are attested, as are architecture and landscape elements. In all cases label imagery is incised, with many incisions still containing traces of a dark-coloured paste infill.

Do these images constitute 'art' or some type of 'non-art', such as 'writing'? Both sides have been argued by the excavator and others (Dreyer 1998; Breyer 2002; Kahl 2001; Kemp 2000). Sample size and its restriction to a single temporal-spatial context make drawing firm conclusions difficult, but it is thought that the imagery may have identified people and/or places. Investigation has been more fruitful with regard to how each image type was deployed in practice. Just as there is little overlap between the jar and label image repertoires, so too is there little overlap in other respects. The production of each image group required a different set of tools and technical use of those tools. For the labels, a small chisel and the subtractive techniques of incision/carving were required. The labels were probably rotated in the course of incision, relative to the body of the designer/maker, perhaps requiring the use of a vice or other gripping device given their small size (whether incised as plates of bone prior to separation (Dreyer 1998: 137) or individually). In contrast, the relatively large size and weight of the jars perhaps permitted surface elaboration while placed upright on their flat bases. Likewise, the additive process and larger size of the images may have required less manipulation and fixing of the ground (jar) to which pigment was applied. In comparison to what appears to be a single phase of decoration for the jars, the label imagery, in addition to the incision stage, required pigment (probably carbon), binders, adhesives, a mixing vessel or surface, and applicator would have been required to add the paste infill.

[**SLIDE 6**] Embodied technological concerns inevitably influenced the style and ductus of imagery, as suggested by comparison of the 'scorpion' and the 'bucranium', one of the few examples were similar content appear on both object types. The technical style in each case is somewhat different. On the jars these images are executed in a way that might be described as rough or "cursive". While there is morphological similarity, appearance is nevertheless influenced to a great extent by the technology deployed in their expression (see also Baines 2004: 159). Differences are particularly apparent when comparing the internal detail of the 'scorpion' as expressed on the larger jar imagery, in comparison with much smaller-scale 'scorpions'. Differences in morphology also

reflect differences in the embodied gestures of the image-maker as she negotiated the material surfaces and substances via particular tools.

[**SLIDE 7**] Another important distinction for the question of criteria, and determining how past image categories relate to notions of 'art' /'non-art', emerges when we consider how imagery was spatially distributed around the tomb. The decorated jars were clustered in chambers 1, 2 and 5 (Dreyer 1998: 7, 9), while the labels and presumably the goods to which they had once been attached were restricted to chambers 11 and 12 (although those found in 12 probably relate to a looting episode and 11 was original intended location of deposition).

[**SLIDE 8**] While we may not be able to discern image type in terms of 'art'/'non-art', we can see that past image-makers and users, in Tomb U-j at least, had developed criteria and were reproducing these cultural conventions in an explicit was as part of early funerary practices. These criteria or conventions were bound up in material object, tool type, technique, pigment and the form in which it was used (thinly applied colour vs. paste), and as mentioned, particular embodied acts associated with each type of image-making may have also been considered part of these conventions. As archaeological context shows, the function of each image repertoire was also firmly linked to depositional location within the tomb. Thus, as this example readily demonstrates, developing criteria for understanding imagery, morphology, resemblance and any conclusions about image function and meaning need to be assessed alongside the material, spatial and temporal contexts of both production and use.

2. The heuristic assessment of graphic clusters

[**SLIDE 9**] As for point 2 concerning the heuristic assessment of graphic clusters, here I also advocate a contextual approach which emphasises composition and materiality of expression. For such an approach collation the data variables requiring organisation, measurement and analysis are numerous. I briefly present and discuss the software programme ATLAS.ti, a workbench developed by Thomas Muhr for qualitative (and some quantitative) analysis. ATLAS.ti is mainly used by researchers in the social sciences, but has been applied to a small number of archaeological research projects (Labadi 2006; Piquette 2007; Townend 2005). Drawing on hermeneutics, the 'science of interpretation', the

software is designed to support the development of recursive relationship between research questions, data, theories, analysis and results necessary for reflexive study. This tool enables the systematic encoding and study of multivariate data, importantly, in direct relation to digital images of the artefacts. Graphical criteria may be distinguished and heuristically assessed for building context-sensitive interpretations.

ATLAS.ti can handle hundreds of files which can be accessed instantly and worked on simultaneously. Data handling structures allow the user to manage, index/code and annotate artefact images, making it possible to extract, compare, explore, and reassemble meaningful pieces of data efficiently and systematically. The ability to break images down into 'atomic' elements allows one to compare and contrast multiple variables in order to discover patterning which might otherwise be too subtle to be visible on casual inspection. Once images are loaded into the ATLAS.ti interface, viewing, encoding, analysis and the writing up of results take place in one location with the artefact images at its centre – a feature vital to grounding analysis in the data. This central location is termed the Hermeneutic Unit, as picture on the slide [**SLIDE 10**]: This is the primary working area to which each digital of the artefact or surface to be studies is assigned image (e.g. Primary Document or "P-Doc" ID 175, a bone label displayed in the Hermeneutic Unit). Data-handling structures built into the Hermeneutic Unit include 'Quotations', 'Codes', 'Families', and 'Comments', 'Memos' and 'Networks' [drop-down menus running along top of Hermeneutic Unit], some of which I will now briefly describe:

Quotation: Each artefact image or 'Primary Document' can be broken down into units called 'Quotations'. Any area of the object image can be selected and designated as a Quotation, including the artefact itself, an individual image or cluster of images, as well as artefact features such as a perforation, erasures, tool marks, and surface accretions, etc.

Code: Each Quotation can be assigned any number of 'Codes'. A 'lion forepart' may be quoted and assigned descriptive Codes (i.e. 'lion forepart, 'incised, 'right facing', 'located in upper left', etc.), or conceptual Codes relating to its representation or symbolic meaning. Once all elements are encoded, and as relationships and patterning emerge, Quotations and Codes can again be assigned to begin weaving together observed relationships, for example where groups of images co-occur on more than one artefact, permitting 'Clusters' to be identified (outlined in red on slide). Quotations and Codes permit relationships between any

number of Clusters or other variables. Clusters can be assessed and compared according to spatial association within the composition (e.g. contiguity, overlapped / overlapping, spatial separation), technique of expression (applied pigment, carving, etc.) or orientation (e.g. right- or left-facing, frontal or side view, upright, up-side down, etc.). 'Clusters' can be studied with direct reference to the artefact on which it occurs, to examine its relationship for example with physical features, such as position on a pot in relation to the rim or handles, or compared with any encoded variables of any other clusters on other artefacts.

Thus, ATLAS.ti allows one to 'objectify' the thing being studied; an image or cluster can be studied like any other material object: its different components can be analysed and dissected, as can the various configurations of which the image or cluster is part (cf. Molino 1992: 17). In this way, ATLAS.ti supports a heuristic device which, as a form of preliminary analysis, assumes that understandings of past imagery, such as clusters, can be achieved not just on the basis of morphology and resemblance, but by taking account of material, technical, and compositional features and their relationships.

[SLIDE 11] 3. Methods for systematic documentation of marks and their contexts

With regard to the final point concerning methods for systematic documentation of marks and their contexts, I discuss a project we recently completed at the University of Oxford (in collaboration with the University of Southampton): Reflectance Transformation Imaging System for Ancient Documentary Artefacts (RTISAD) (Graeme et al. 2011; 2010*a* and *b*). Reflectance Transformation Imaging, or RTI, is a method of photography whereby multiple photographs are captured from a fixed camera position with a moving light source. The resulting amalgamated files present a digital model of the surface and enable it to be interactively relit. Together with image enhancement modes ephemeral, difficult-to-read features are made visible.

Given the ever-increasing amounts of archaeological iconographic data coming to light and the possibility of extracting new information from previously studied data, RTI presents exciting possibilities for the question of systematising the documentation of graphical marks. I undertook RTI on a range of objects such as Roman Vindolanda tablets and cuneiform tablets from Mesopotamia, but today I will showcase a few examples of objects bearing early Egyptian imagery. **[SLIDE 12]** These

examples were photographed under the black plastic lighting dome pictured on the SLIDE. The dome has 76 LEDs attached to its underside, a different LED being illuminated for each of 76 exposures. These image files are then amalgamated together using a mathematical algorithm called Polynomial Texture Mapping, or PTM, developed by Tom Malzbender et al. (2001) of Hewlett Packard Labs. The resultant PTM file is then viewed on a special viewer. Unfortunately, it is not possible today to show this in practice today, but I have created a series of screen captures and JPG outputs which give some send of what RTI offers for the systematic and detailed documentation of graphical and other surface marks.

Pictured in this slide [**SLIDE 13**] is the "RTIViewer". The main viewing area displays the object. Lighting in this main display area is adjusted by clicking and moving the mouse pointer around in the green circular area in the upper right. The box in the lower right allows the user to zoom in and out and navigate around the main image. The image can be viewed in different rendering modes from the drop down menu below the green light adjustment area. JPG outputs of whatever view or settings are in the main display can be produced, as I have done for the next slide [**SLIDE 14**] which shows the results different rendering modes: the default view, diffuse gain, specular enhancement, unsharp masking, static multi-light, among others. Depending on material and method of decoration or inscription, some modes, in combination with light position adjustments, work better than others to flesh out surface details.

[**SLIDE 15 and 16** (compare)] The detailed level of documentation RTI provides is demonstrated by the clarity of various marks on the Late Predynastic (*c.*3100 BCE) Hunters Palette, a ceremonial relief-carved palette of mudstone (an object type which derives from smaller usually-undecorated palettes used for grinding pigment, probably for eye makeup). Through light control and rendering mode settings RTI supports the rigorous analysis of graphical imagery in relation to the material surface on which it appears and through which it is constituted.

As the next two slides show [**SLIDE 17**], an Early Dynastic stone vessel inscription is not only more easily readable with RTI, but the difficulty of cutting serpentine, a hard stone, is also apparent [**SLIDE 18**]. Light from certain positions in the specular enhancement rendering mode reveals multiple tool marks, some of which veer off from the main incisions forming the hieroglyphic

sign, showing here a cluster which includes a ‘bee’. In addition to accurate and detailed photographic documentation of graphical marks and surfaces, RTI also reveals the challenges posed by making images on/in certain material types. RTI also enables the detailed study of ductus, and methods of tool use, research which can be undertaken rigorously from such photographs, especially when access to the original objects is not possible.

Concluding remarks

[**SLIDE 19**] In the forgoing, my aim has been to demonstrate the importance of moving beyond a static concept of image morphology, especially when identifying resemblances between image occurrences. I have argued that determinations of what an image depicts, its function or meaning should not be assumed solely on the basis of morphology and resemblance, but should also consider how physical expression, conceptualised here as both process and outcome, contexts of use and deposition should also be taken account of. Albeit too briefly, I have presented ATLAS.ti, an example of a software which support the implementation of heuristic devices and enables the systematic analysis of the multiple variables necessary for a contextual approach. I discussed the powerful imaging technology, Reflectance Transformation Imaging, and provided examples which I hope convey kind of material information that can be documented with this powerful technique – and further facilitating a contextual approach to graphical imagery. These tools for data documentation, and collation and analysis, together with a contextual and practice-centred approach, can thus provide greater leverage for exploring “pre-, proto-, and historical graphic sign patterns” and other forms of early image making.

I hope that the paper and PowerPoint presentation contributes a useful perspective on the session’s theme. My thanks again to Martin for reading my paper and I would be happy to answer any questions via email, as indicated on the final slide [**SLIDE 20**].

Thanks for your attention!

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Online Resources

ATLAS.ti

- www.atlasti.com

RTI

- RTISAD project summary: http://www.soton.ac.uk/archaeology/acrg/AHRC_RTI.html
- Overview of Oxford University work: "Shedding Light on Ancient Documents": http://www.csad.ox.ac.uk/csad/Newsletters/Newsletter14/Newsletter14.pdf
- Selected results from the Ashmolean Museum RTI: "Exploring Ancient Writings at the Ashmolean Museum with Advanced Digital Technologies": http://www.ashmolean.org/departments/antiquities/research/research/rtisad/
- Various RTI resources prepared by RTISAD project partner, Cultural Heritage Imaging (CHI): http://www.c-h-i.org/technology/ptm/ptm.html
- RTIViewer: http://www.c-h-i.org/learn/learn_RTIviewer_download.html