

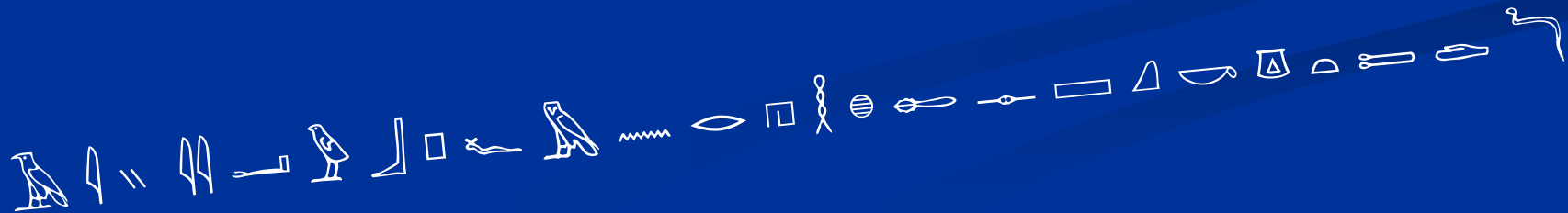


Hieroglyphs Everywhere?

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www.saqqara.org

Oxford, 9th August 2006



Hieroglyphs Everywhere?

- Ancient Egyptian in Print
- Ancient Egyptian as Information
- Future Directions
- Hieroglyphs Everywhere

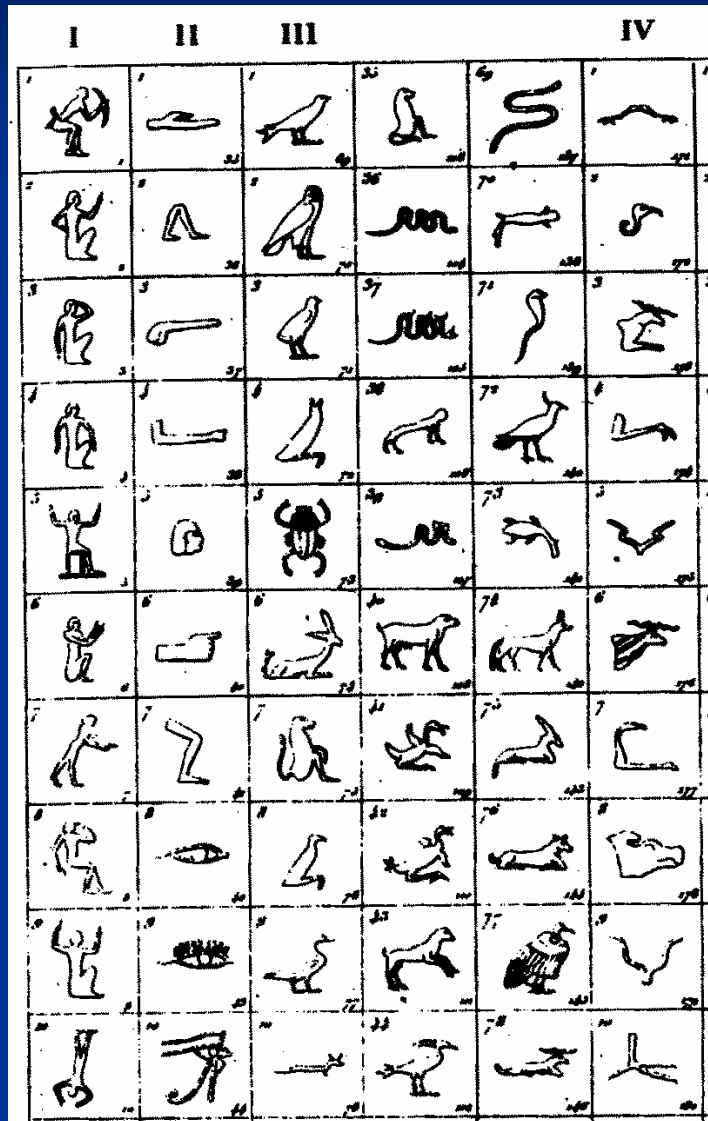
Ancient Egyptian in Print

- Printing Technology
- Hieroglyph editors on Personal Computers
- Desktop Publishing
- Word Processing
- Illustration

Printing Technology

- Lithography – Hieroglyphs as Illustration
- Engraving – woodcut, metal etc.
- Letterpress – Hieroglyphs as Type
- Offset printing
- Laser Printing
- InkJet

Example: Description d'Égypte

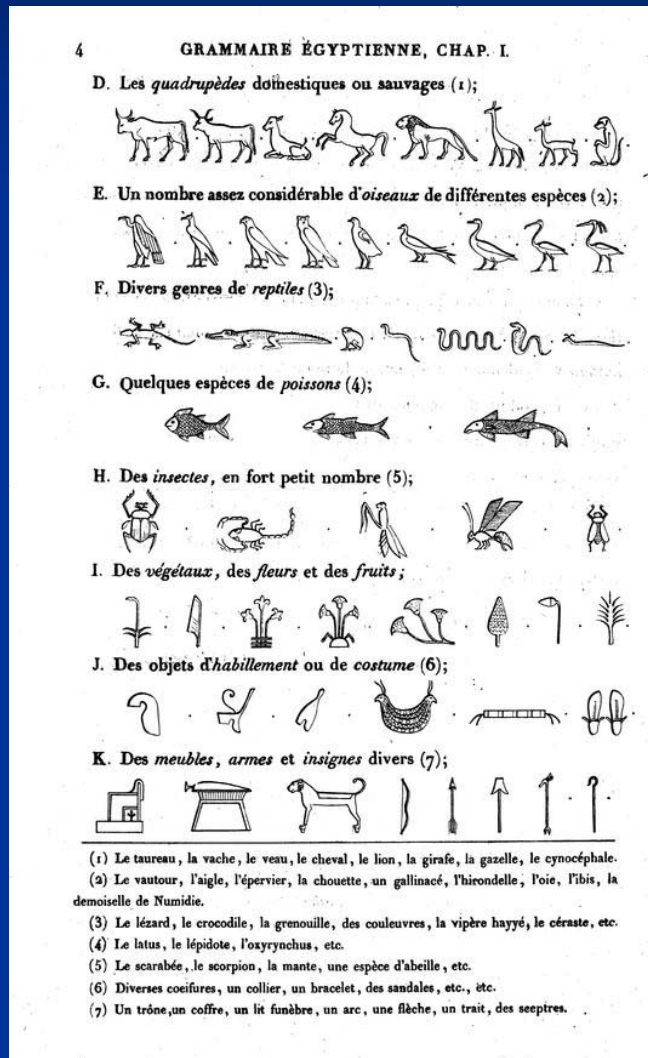


- Early modern sign list (1483 hieroglyphs)
- [From Manuscripts sur Papyrus, Hieroglyphes et Inscriptions – A.VOL.V -PL.50]

Lithography

- New technology in the 19th century (invented in 1798 by Alois Senefelder)
- Chromolithography became available from the 1830s enabling cost reduction in use of colour – previously colouring was done by hand.
- Modern lithography yields low cost, high quality colour and monochrome printing.
- [Photolithography with semiconductors → Information revolution.]

Hieroglyphs as images (examples)



Grammaire égyptienne de Champollion (1836)

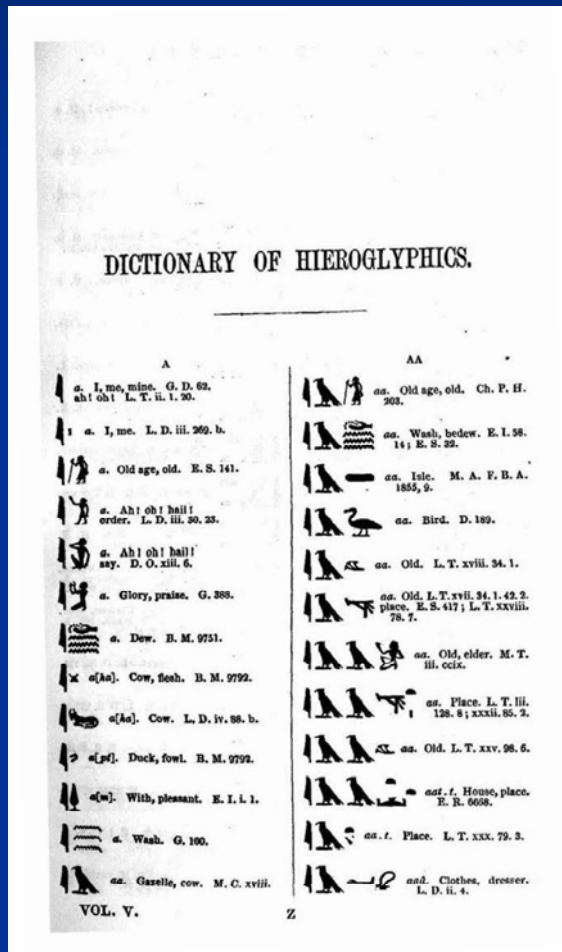


Egyptian Hieroglyphics, Samuel Sharpe (1861)

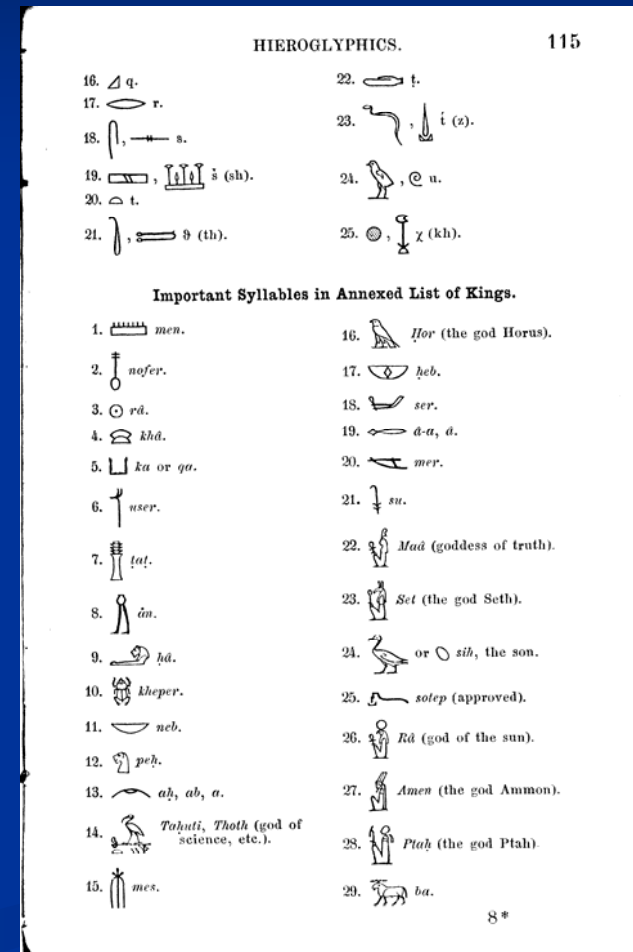
Letterpress

- Early hieroglyphic typefaces designed by Dubois and Devéria for Rougé, Theinhardt for Lepsius.
- Longman fount, designed by Bonomi - used in the 1867 Egyptian Dictionary by Samuel Birch.
- Various others, e.g. for Griffith (1898).
- Holzmann (Vienna) and Harrison & Sons (London) - expanded Theinhardt style up to c. 1920.
- Best known typeface – Gardiner 1925 fount (with N. & N. de G. Davies, W.J. Bilton).

Letterpress (examples 1)



Birch Dictionary of Hieroglyphs (1867)



Baedeker Lower Egypt (1885 edn.)

Letterpress (examples 2)

EGYPTIAN GRAMMAR. 35

These words occur in the extradition clause of the Treaty between Rameses II. and the king of Cheta, and have reference to deserters from the land of Egypt. In another paragraph referring to deserters from the land of Cheta the expression is varied as follows:—

au- f em uā au- f em sen au- f, em χemt

Be it singly, be it by two, be it by three.

In the inscription of Canopus *uit en āner re-pu* χemt 'a tablet of stone or brass' corresponds to *σπίθην λιθίνην ἢ χαλκήν*.

has also the sense of 'alioquin,' 'else,' 'otherwise,' e.g.,

āmmā - tu petrā pa enti au - ten er āri

Be it looked to, that which you shall do

en sen re - pu tet - ā semā - u

to them, otherwise I shall tell their story [to the king, my master].

re-pu is a compound expression. *re* signifies 'part,' 'division,' hence when two or more notions excluding each other are spoken of *re pu* signifies 'there is the alternative.*' This may be placed either between or after two words or phrases opposed to each other, and it is sometimes omitted altogether.

The relative pronoun in many languages (compare *ῥῆς, ὅτι, quod, che, que, dass, that*, etc.) easily becomes a conjunction. This is the case in Egyptian as regards the relative *en*.

* 'Or' is only a derived meaning in the Hebrew *וְאִם*, a construct noun, signifying 'will,' 'choice,' and in the Latin *vel*, an old imperative of *volō*.

HUMANITY. 11

hieroglyphs were copied are as follows (for the proofs, see *B. II*, i., pp. 7 *et seqq.*):—

Tomb 17, of Chety; end of XIth Dynasty.
Tomb 14, of Chnemhetep; Amenemhat I. (first king of XIIth Dynasty).

Tomb 2, of Amenemhat; Usertesen I. (second king of XIIth Dynasty).
Tomb 3, of Chnemhetep; Usertesen II. (fourth king of XIIth Dynasty): it is thus very nearly contemporary with the tomb of Tehutihetep at El Bersheh.

II.
DISCUSSION OF THE SIGNS IN NATURAL GROUPS.

A. HUMANITY.

Fig. 184. Man seated on the ground in the usual attitude, i.e. kneeling on one knee, both arms bent, with hands closed as if in effort to rise (?).

In O.K. occasionally perhaps word-sign for *s*, "man," "person," and repeated for *sm*, "men" (*Uua*, l. 21). After O.K., id. of first pers. sing. masc., standing for its suffix, *y* (*i*). It is det. of male persons in general, and in particular is used regularly after proper names, except in the earliest period.

Fig. 152; *B. II*, iii., fig. 79. Woman seated on the ground, closely wrapped, with long wig hanging over back [and shoulders]. Probably occurs as word-sign for *hm*, "woman." Corresponds precisely to in all its uses as suffix and det.

Group of man and woman; with plural sign after O.K. (figs. 184 and 152 were taken from this group in *El B.*, i., Pl. xv.).

Word-sign for *rm*, "people" (e.g. *Kah. Pap.*, p. 35). Det. of human beings in general, of their classes, tribal names, &c.

Fig. 162. A baby, as carried by its nurse, sucking its finger [and with a lock of artificial hair hanging from one side of its head].

Word-sign for *hr* (*chryd*), "child": in the name of Heracleopolis Magna, *Hm(ry)w'sta* (*Hmonseten*), it is regularly written, apparently for "youth," *hcu* (BRUGSCH, *Ä. Z.*, 1886, p. 76, from a variant *hu* in *Todd*, cap. 125, l. 9). In *B. II*, i., Pl. xxxii., in a group corresponding to *B. II*, i., Pl. xxvi., l. 189, it stands by exception for *o* *nha* (*uchenu*), "infancy," "innocence," "simplicity." In late times it was used for *ms*, "child," *ss* (*sa*), "son."

Figs. 25, 182. Front view of human face, showing ears and artificial beard.

Properly *hr*, "face," lit. "the upper (thing)"; written *hr*, which is also the preposition *hr*, "upon."

The final *r* was soon weakened or lost; and in employing it as a word-sign, almost if not quite as a phon., it was usual, except at the earliest period, to add in writing if the *r* remained strong. Thus not , is the regular spelling for *hr*. The use of for *h[r]* is probably restricted to the two words already mentioned.

Fig. 59. Upper part of face, showing nose and eye in profile.

Name *o* *hnt* (*khent*), with radical *h*, lit. "the foremost (part of the face)"; cf. especially *Pyr. M.*, l. 306. In late texts it is word-sign for *hnt*. Gradually it was substituted for other

Offset Printing

- Began to replace letterpress type technology in the early 20th century.
- Many developments over last 50 years.
- Production cost reductions and major quality improvements, e.g. low cost colour for volume runs of books, magazines etc.
- Digital typesetting from 1970's on.
- Example: Oxford Gardiner font moved from metal to LaserComp in late 1980s.

Laser and Ink Jet printing

- Laser Printer: spin off of 1970s photocopying technology - reasonably affordable by 1985 → emerging desktop publishing on PCs.
- Personal, workgroup, enterprise printing.
- Print on Demand.
- Colour, continuing cost reductions from silicon shrink.
- Inkjet: personal use, images and photos, high cost per page.

Hieroglyph editors

- At present, usually used to create graphics for use with other applications.
- Hieroglyphs as graphics or font elements.
- Hieroglyphs named from Catalogues, e.g. Gardiner, Hieroglyphica.
- Layout using Manuel de Codage (MdC) 1988 & later dialects or application specific conventions.
- Appeared around 1993 at time of emergence of modern Personal Computer architecture.

Hieroglyph editors (continued)

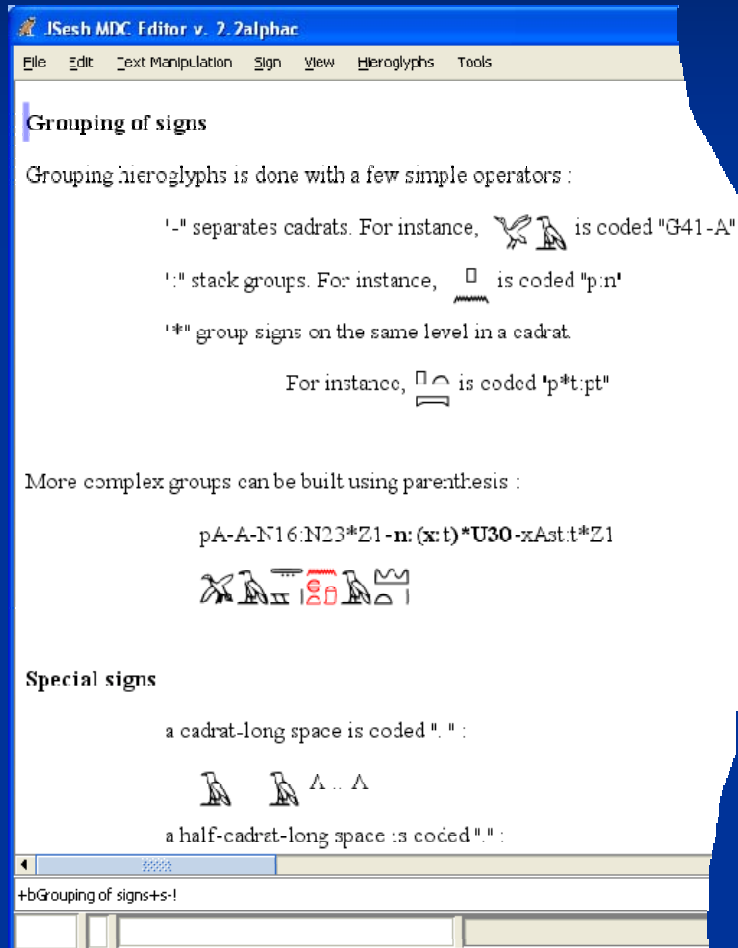
- Best known examples in use since '90s: InScribe, MacScribe, WinGlyph.
- Web and Open Source, e.g. JSesh, RES, Rosette project, WikiHier.
- Oriented towards students, scholarly work in Egyptology.
- Personal notes, research, theses, magazine and book publishing.
- [Less used for web publishing, database etc.]

Example: InScribe 2004



- Updated version of InScribe (first released 1994).
- TrueType Font based rendering (expanded Gardiner repertoire).
- MdC data format.
- EMF Metafile graphics for use with other applications.
- Embedding in applications, e.g. Microsoft Office, Sun OpenOffice, Corel WordPerfect - provides editable graphics.

Example: JSesh



- Open Source, Java.
- Hieroglyphs as SVG graphics for rendering.
- MdC Extensions.
- Export as Bitmap, PDF, etc.

Desktop publishing

- Books, magazines and newsletters are nowadays often assembled with specialized desktop publishing software.
- First packaged DP software - Aldus PageMaker, (Mac 1985, Windows 1987). Specialist font support initially (TrueType introduced in 1991 – MacOS 7, Windows 3.1).
- Document organisation as Text and Graphics. Like 19th Century except richer graphic options (e.g. metafiles mixing vector graphics, bitmapped images and text).
- Last PageMaker 2001. Professional DP now has InDesign, QuarkXPress, FrameMaker. Casual DP applications such as Microsoft Publisher or simply use generic Office Software
- Adobe PDF format used widely for digital pre-press and web publishing of printable documents.

Key Problems with DP

- Patchy support for font embedding.
- Graphic scaling.
- Poor overall support for editable embedding (Microsoft's OLE as used by InScribe remains only non-application specific technique).
- No adequate standard yet for Rich Graphic Formats.
- Result: re-working can be needed in the author ↔ editor ↔ typesetting pipeline for collaborative productions.

Word Processing

- Simpler to use than Desktop Publishing but often adequate for print requirements and most comments for DP apply here, e.g. hieroglyphs as graphics.
- Currently, almost always Microsoft Word, Corel WordPerfect, Sun OpenOffice (StarOffice).
- Transition period for data formats e.g. Sun Open Document Format (ODF) and Microsoft Open XML.
- Adobe Acrobat for portable documents (PDF). Built in PDF support is gradually improving.

Illustration

- Images: Adobe Photoshop, PaintBrush,
- Illustrations, drawing: Adobe Illustrator, Corel Draw,
- Work with hieroglyphs purely as graphics, or first compose in hieroglyphic editor then modify in illustration software.
- Useful e.g. for colour hieroglyphs and graphic design but little in the way of ancient Egyptian specific tools.

Ancient Egyptian as Information

- Digital Documents
- Database
- Ancient Egyptian on the Internet

Digital Documents

- PDF the most portable format. However only weakly editable.
- New XML Office file formats don't help a great deal with Ancient Egyptian but do form stronger foundation for future work.
- Hieroglyphs not searchable until Unicode available. Some useful work with Unicode Private Zone but formal standard necessary for full text treatment so until then, we are largely stuck with Graphics.
- New initiatives e.g. Microsoft's XPS (XML Paper Specification) and improved PDF capabilities look promising in medium term.

Database

- Mainly SQL-based relational databases with some object and text-searching capabilities. MySQL, Microsoft SQL Server most popular plus Access and FileMaker on desktop. Oracle also used in Enterprise.
- Custom solutions can be devised for Ancient Egyptian text, e.g. transliteration, MdC or catalogue-based schemes. However weak for interoperability.
- Hieroglyphs can be used as graphics but text implementations require Unicode.

Ancient Egyptian on the Internet

- Documents from word processors (e.g. export options), web editors etc. HTML and PDF. Issues with desktop publishing and databases apply.
- Little support for language in email, forum, wiki, etc..
- Hieroglyphs as graphics so few mechanisms for search engines – google, msn, yahoo etc. – to hook into.
- Various viable server-side approaches.
- Useful yet limited and fragmentary range of information available to date. Secret Gardens.
- Few resources to encourage collaboration.
- Confusing range of options and new technologies.

Aside: PC Technology

- 1982– Z80, CP/M, Apple Lisa→Mac (1984)
- 1985– Windows 1.0, IBM PC ascendancy.
- 1990– 286, 8bit graphics, Windows 3.0.
- 1991– TrueType (MacOS 7). Unicode 1.0. GPL 2.0.
- 1992– Windows 3.1 (NT follows '93). Linux 0.95.
- 1993– Internet opens out. Intel Pentium released. 24bit graphics becomes viable.
- 1995– Windows 95.
- 1996–NT 4.0, Linux 2.0.
- 1997– Microsoft Office 97. MacOS 8. Commercialisation of WWW. Emergence of 3D graphics. AMD competes with Intel low end. Java 1.1.
- 2001– MacOS X, Windows XP, Linux 2.4. Unicode 3.1 (introduces SMP). Xbox.
- 2002– Microsoft .Net. Java SE 1.4.
- 2004– AMD K8 (AMD64)
- 2005– Mac switch to Intel (Core processors).

Status: Hieroglyphs as Text

- Currently useful in scaleable graphics. Not very useable directly at present (e.g. 8 bit symbol fonts, hieroglyphs as graphics ...)
- Unicode fonts are a prerequisite for change (Private Zone helps but formal standard needed for many non-specialist applications). Fonts necessary but not sufficient.
- Hieroglyphs lack character identity so search etc. is difficult using standard software.
- The goal should be to enable use of traditional working with hieroglyphs as text PLUS computer related operations: search, analysis ...
- Standards. Compatibility rules will be needed for fonts and character data.

Future Directions

- Transliteration
- Hieroglyph Taxonomy & Sign Lists
- Hieroglyphs as Text
- Hieroglyphs in Illustration
- Simplifying data exchange
- Hieroglyphs Everywhere

Transliteration

- Included in Unicode 5.1 release expected 2008.
- General vendor support traditionally up to 2-3 years post Unicode release (online services may be faster).
- Specialist Egyptology solutions expected from 2007.
- Conventions such as MdC should be reviewed
- Users can choose to switch if and when convenient.

Hieroglyph Taxonomy & Sign Lists

- Repository of sign information (see S. Rosmorduc presentation).
- Unikemet database, other Unicode data such as EGPZ.
- Taxonomy. Classifications schemes vs. catalogues.

Hieroglyphs as Text

- Unicode Hieroglyph Standard.
- Unicode Private Zone Hieroglyphs.
- Manuel de Codage implications
- Linearized Egyptian
- Simplified Egyptian
- Rich Egyptian Text

Unicode Hieroglyph Standard

- Draft proposal July 2006. Feedback requested at I&E 2006.
- Complete proposal to be submitted to UTC & WG2 in 2006. Technical notes (e.g. sorting) planned for 2007.
- Initially Gardiner-based, extensions to be proposed when documented and accepted by user community.
- Release takes time (2009, 2010?) and small changes can be expected during ballot process.
- Applications and tools can be made alongside approval process so long as care is taken.




Unicode Private Zone Hieroglyphs

- Egyptian in Private Zone (EGPZ) announced 2005; currently on hold until formal standard proposal is in release pipeline. New review materials/tools to go on www.egpz.com when available.
- Catalogue of glyphs rather than standard Unicode character approach. Useful for fonts and certain other applications.
- Version 1.0 repertoire: Formal Unicode + Hieroglyphica 2000 + InScribe 2004 + Faulkner. Being revised for interoperability with formal standard proposal.
- Features: (1) Unicode Private Zone Plane 15 or BMP subset for short/medium term software compatibility. (2) Protocols for building hybrid Formal Unicode/EGPZ software and fonts.
- Enables work with 'hieroglyphs as text' and data formats to proceed from 2007 in a formal standard compatible way.

Manuel de Codage implications

- MdC ‘snippets’ often more useful than MdC documents.
- Hieroglyph Editors using MdC need not change mode of use. ‘Hieroglyphs as text’ can be an extra feature.
- Enhanced MdC formats (such as new MdC dialect with UTF-8) can be backwards compatible with existing tools.
- Some rationalization of MdC dialects is itself desirable (e.g. see S. Rosmorduc presentation).
- Other than minor changes, a strong case can be made for using a well-supported protocol such as XML instead of attempting to expand MdC.

Linearized Egyptian

- Egyptian Hieroglyphs as a stream of (Unicode) characters, i.e. no attempt to group (cluster) the signs in the word  *wnn*, just write  .
- Linearized Egyptian works, at least to some degree, with much software already, given a suitable font for EGPZ and prototype formal Unicode.
- However. Some software will not allow searching on characters not in an applicable Unicode standard release. Windows XP is still at Unicode 3.1. Needs to be considered on a case by case basis.

Simplified Egyptian

- Simplified Egyptian Text is taken here to be a character stream (like Linearized Egyptian) used in conjunction with a special OpenType font.
- The special OpenType hieroglyphic font contains rules to auto-cluster signs. Additional Unicode ZWJ (Zero-Width Joiner) and ZWNZ (Zero-Width Non Joiner) characters can be used to control clustering.
- Analysis so far shows this method is effective for much data. Faulkner's Dictionary and Topographical Bibliography can be treated this way. Especially useful for casual users of hieroglyphs.
- Experiments with existing applications show weaknesses in levels of OpenType and Unicode support. Adobe InDesign works quite well. With improvements in general software over the next few years, Simplified Egyptian could be very useful.

Rich Egyptian Text

- XML tags on top of Linearized or Simplified Egyptian for greater typographical precision, variant handling etc.
- Fairly straightforward to add in a specialized software context.
- Hampered by lack of adequate mechanisms in current generic software and standards.
- Should be considered as part of discussions on successor formats to MdC.

Hieroglyphs in Illustration

- Embedded illustrations in documents ought to allow for flexible meta data and detailed structure in standardized ways.
- This has just not happened even though the issues were well understood, even before InScribe was written in 1993. Reasons are complex but not technical.
- Once the new XML Office file format versions are finished and released, *perhaps* innovation will resume.
- Meanwhile we ought to look for improvements in specialized software within the subject.

Levels of Object Representation

- Actual Object
- Visually Digitized Object – ‘Facsimile’, photograph, scan...
- Interpreted object – e.g. Epigraphy, feature enhancement, classification
- Analysis, e.g. text extraction
- Idealization, e.g. text normalization
- Simplification

Representing Hieroglyphs in XML

Use simple concepts, e.g.:

```
<hieroglyph
```

```
  var1="life"
```

```
  var2="universe"
```

```
  var3="everything"> </hieroglyph>
```

Attributes: Typography, origin, graphic,
grammar, ...

Simplifying data exchange

- Publication pipelines and methodologies, Print and Web.
- Data formats
- Cross platform tools
- Common resources: fonts, etc.
- Standards

Hieroglyphs Everywhere

- Hieroglyphs are already ‘everywhere’. Popular TV & movies, computer and video games, books, furniture, schools ...
- The Web is no exception. Yet most now is illustration; the Egyptian language in hieroglyphs is virtually invisible to software.
- To achieve scholarly objectives, we must encourage widespread software support.
- What is there will be used, not just for Egyptology. Not just on PCs. Hello Egyptian text message! ☎️😊☎️
- So what happens as ‘nowhere’ becomes ‘everywhere’?

The Good

- PC DTP, Office and other software. Search engines, email, wiki, and the rest of the web paraphernalia should gain an increasing amount of Ancient Egyptian functionality.
- Easier to write specialist Egyptian software and adapt other software. More subject-specific tools with much wider range of application. Simpler and quicker modes of use for author and editor.
- Egyptian reaches a wider audience.
- Many more digital resources.
- Cost reductions.

The Bad & Ugly

- Generic software support is likely to be mediocre unless encouraged.
- As with other languages, Google et al will index masses of junk.
- As with English Web, expect prolific use of Egyptian in unpleasant or malicious web page, emails, etc.
- Poor or patchy support may feel worse than none at all for a number of years.
- Patience!

Making it work

- Support standards
- Write specialist Egyptological software tools
- Encourage major vendors: Apple, Google, IBM, Microsoft, Novell, Sun et al.
- [Dictionaries, encyclopaedias etc.]
- Ensure good quality resources on web