OVE VON SPAETH

Scientists’ correspondence
with Ove von Spaeth on
The Senmut Star-map and
his discovery of its dating

Addendum: Essential Answers to 15 Key Questions
on the Interpretation of the Star Map

Harvard-Smithsonian Center for Astrophysics
Cambridge, MA 02138

Ove von Spaeth
Zenith I.C., Project
P.O. Box 1009
DK-1009 Copenhagen K

Dear Dr. von Spaeth:

I greatly appreciate your sending the reprint concerning the Senmut star map. Your findings are very ingenious and admirable, and quite surprising considering the apparent lack of interest of the Egyptians in this sort of astronomy. I would probably have missed your paper if you hadn’t sent me a copy.

I have visited and photographed the Senmut tomb several times, and find it quite strange and most especially interesting.

11 October 2001

Publication title: Scientists’ correspondence with Ove von Spaeth on The Senmut Star-map and his discovery of its dating.

Addendum: Essential Answers to 15 Key Questions on the Interpretation of the Star Map.

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Net-address: www.moses-egypt.net/images/2-06_en_correspondence-scientific-on-the-senmut-star-map.pdf

Contents: - A main collection of a vast number of letters from researchers, containing assessments and recommendations of Ove von Spaeth’s dating of the contents of the world’s oldest star map, The Senmut Map from ancient Egypt, 1,500 BC. • The presentation includes an historical-astronomical mathematical analysis - and statistical processed views. • Included, a detailed introduction to the special area, and the author’s article on the topic’s historical context. • In addition, extensive answers to 15 key questions are presented. Moreover, a gallery and a small info section on the author and on related books.

Backtrack: - The original treatise of Ove von Spaeth’s dating of The Senmut Star-map was published in full in Centaurus International Science-History Magazine in July 2000 and a separate edition on the author’s www.moses-egypt.net in January 2001. (It was at first published in short in a Danish magazine in 1984). • Due to the early availability of this dissertation on the Internet, the knowledge of the star map’s very existence and significance became much-discussed and more widespread and

"...the findings are very ingenious and admirable, and quite surprising considering the apparent lack of interest of the Egyptians in this sort of astronomy ...I have visited and photographed the Senmut tomb several times, and I find it quite fascinating. Thus I find the paper especially interesting ..."

- Owen Gingerich, Research Professor in Astronomy and the History of Science, The Harvard-Smithsonian Institution, Astrophysical Observatory, Cambridge Mass., USA
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p.13 - Sebastian Richter, Dr., Ägyptologisches Institut, Universität Leipzig, Germany - (21 September 2000).

p.14 - Erik Iversen, Dr. Phil. h.c. Egyptologist, formerly the Copenhagen University, Denmark - (20 Jan. 1997).

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p.18 - Alan S. Weber, Managing Director, Isis Journal of History of Science Society, Department of Science & Technology Studies, Cornell University, Ithaca NY 14850, USA - (13 May 2002).

p.19 - Kurt Moeller Petersen, Prof., Philosophy of natural science, & Editor, Centaurus, International Magazine of the History of Mathematics, Science and Technology, History of Science Department, History of Science Department, University of Aarhus, Denmark - (18 July 2000).

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Scientists’ correspondence with Ove von Spaeth on
The Senmut Star-map and his discovery of its dating

The treatise on “Dating the Oldest Egyptian Star-map” published in 2000, got informative response.

New discovery in old Egyptian star-map. Updating ancient astronomy. - Background: ancient astronomical knowledge of Egypt has appeared surprisingly broader than previously imagined. According to the new orientation by larger analysis, the world's oldest star-map seems to contain information of an actual celestial event of its time, a rare but not unknown phenomenon.

* This 3,500-year old star-map adorning a ceiling in the tomb of Senmut (Senenmut) near Luxor (Thebes) apparently demonstrates a previously unknown aspect of the astronomical situation in Egypt 1,500 BC. Data encoded in the map were investigated by Danish researcher Ove von Spaeth.

* The map’s configurations which were considered as mythic representations, are now seen to be depictions of a rare gathering of planets in well-defined celestial positions, i.e. information of time!

* The re-evaluation of this and of subsequent maps, together with the data contained therein, gives birth to new perspectives. By introducing these reference points of time - substantiated in astronomical terms - the appropriate chronology of the epoch in question, which has been much disputed, may now be dated with considerably greater precision than possible before.

Oldest Known Scientific Report. - The star map was carried out by Senmut who was the vizier to Queen Hatshepsut and also Egypt’s calendar registrar, in the 18th dynasty (16th-15th cent. BC). The recently decoded material can be objectively proven, based on modern astronomical calculations, to depict important astronomical circumstances. It has become clear now that the map of Senmut neither depicts an arbitrary gathering of planets in the sky nor is it a virtual copy of possible older patterns made by Senmut’s predecessors. Since the stellar map describes a planetary conjunction (i.e. a close encounter of the planets) in which a unique pattern of the positions of the planets concentrated within a defined sector of the sky, it therefore contains information related unmistakably to a fixed point of time. It was possible to calculate this as May 1534 BC.

* According to the analysis, this dating may additionally be supported by the map’s record of a simultaneous solar eclipse. The map seems to have been made later than the events in question, and although the eclipse was possibly not observed directly, it had been relatively easy to recalculate and put on the map. Likewise, most of the planets are recorded without they could be seen in the sky due to their placements near to the sun. The presented interpretation seems being confirmed with great precision by modern astronomical methods. Accordingly, Senmut’s star map must be acknowledged as one of history's oldest concretely recorded scientific achievements.

Forgotten Tradition. - Subsequently produced star-maps in Egypt seem to confirm the discovery.

* Created during reigns of several pharaohs up to 400 years after the first map, these maps exhibit Senmut’s principle of depicting a certain planetary conjunction in the certain celestial sector. The findings seem in accordance with a tradition by which the younger star-maps were produced only at times of those pharaohs, such as Ramses II, where the actual conjunctions of the relevant type appeared in the Egyptian sky. - See scientists and experts’ correspondence on the discovery.
RESEARCHERS’ LETTERS ON THE SENMUT STAR MAP RESULT

Top part: Senmut’s star map on the ceiling’s southern panel in his tomb under the Deir el-Bahari temple.
Bottom part: The star map sector with the World-axis, at the ceiling’s northern panel in Senmut’s tomb.

Following pages: Researchers’ Letters and Communications on The Senmut Star Map Dating Results.
11 October 2001

Owen von Spaeth
Zenith L.C., Project
P.O. Box 1009
DK-1009 Copenhagen K

Dear Dr. von Spaeth:

I greatly appreciate your sending the offprint concerning the Senmut star map. Your findings are very ingenious and admirable, and quite surprising considering the apparent lack of interest of the Egyptians in this sort of astronomy. I would probably have missed your paper if you hadn't sent me a copy.

I have visited and photographed the Senmut tomb several times, and find it quite fascinating. Thus, I found your paper especially interesting.

I noticed one technical error in your paper, which does not affect your results in any way. You write that Opolzer, P.V. Neugebauer, and Schoch did not know the value of precession for an accurate establishment of the place of the vernal equinox. This is not true. What you meant to say was that they did not have accurate values of the secular acceleration in ancient times, and thus the correction between ephemeris time (for which their eclipse tables were made) and universal time (the observed quantity) was not precisely known. This would have a considerable effect on the position of the path of totality for a solar eclipse, but comparatively little on whether or not a partial solar eclipse would be seen.

Sincerely yours,

Owen Gingerich
Research Professor of Astronomy
and the History of Science
15 September 2000 - Pages: 1 - Sir Patrick Moore, D.Sc., Astronomer, CBE, FRAS

Dr. Patrick Moore, CBE, FRAS
Farthings,
West Street,
Selsey,
Sussex.
PO20 9AD (Selsey 00308)

Sept. 15

Dear Dr. von Spaeth,

Many thanks indeed for this important and fascinating paper. And many congratulations on your research. Needless to say, it is new to me, and is a major advance.

Years ago I did an English translation of E.M. Antoniadi's book on Egyptian Astronomy - I still have it, but never tried to publish it.

With all good wishes,

Sincerely

[Handwritten signature]

Dr. Ove von Spaeth,
Valkendorfsgade 4,
PO Box 1096,
DK-1099 Copenhagen K,
Denmark.
Lund, September 12, 2000

Dr. Ove von Spaeth
Zenith I.C., P.O. Box 1096
DK-1009 Copenhagen K, Denmark

Dear Dr. von Spaeth,

I have read your article “Dating the Oldest Egyptian Star Map” with great interest. I agree with your conclusions as to the general positions in the sky of the planets, the sun and the moon and the general dating of the configuration.

However, when it comes to the solar eclipse on May 7, 1534 BC (gregorian) I am in doubt. I use a program with a very accurate algorithm for the moon based on Improved Lunar Ephemeris (Nautical Almanac Office, US Naval Observatory, Washington 1954) amended by a correction of the moon’s secular acceleration taken from recent laser lunar ranging. In fact the program gives virtually identical results to the latest state of the art program DE11S. The time used in these programs is necessarily ephemeris time. The correction from ephemeris time to universal time is made using data from the recent Stephenson: Historical Eclipses and Earth’s Rotation, Cambridge University Press, ISBN 0-521-46194-4. For the ancient times this correction can be computed as 32.5$t^2$ seconds where $t$ is the number of centuries since AD 1800. Numerically this correction is about 26 000 seconds or about 10 hours for 1534 BC. Actually there is no safe way of extrapolating that far back in time but the correction would be accurate to within +/- some hours. Changing from ephemeris time to universal time will also move the eclipse path on the earth towards the west. For the sun I use the algorithm given by Pierre Bretagnon, Jean-Louis Simon: Planetary Programs and Tables from -4000 to 2800, ISBN 0-943396-08-5. The error is here specified to be less than 30” for the time -2000 B.C to 2000 A.D.

When I check the solar eclipse on May 7, I find that there is really a solar eclipse at a time that is very close to the one you state, but provided that the time is ephemeris time.

Applying the correction from ephemeris time to universal time the eclipse occurred at about 22h universal time on May 6, or about local midnight May 6/May 7 in Thebes and could thus NOT be visible in Egypt. In fact the eclipse was total in the southern Pacific.

Sincerely

Lars Gislén Ph.D.
Department of Theoretical Physics
Sölvegatan 14 A, S-223 62 Lund, SWEDEN
Telephone: +46-46-222 46 49 +46-46-222 46 49
Fax: +46-46-222 44 38
E-mail larsg@thep.lu.se
Dear Mr. von Spaeth,

Many thanks for your article on the Senmut ceiling, with so many interesting observations. The exact astronomical dates - like May 1534 BC in this case - are of course always fascinating, but one factor may change things. I fear that your equation of ūnas nḫt with Meru will raise some scepticism, since this star is known as one of the decans since the MK, and all dictionaries refer to him as a decan. So one probably has to look out for other solutions.

With all best wishes,

Sincerely yours,

Erik Hornung

Erik Hornung

Ägyptologisches Seminar
der Universität

Prof. Dr. E. Hornung

CH-4056 Basel, 24 October 2001
Schönenstrasse 20

Ove von Spaeth
Valkendorfsade 4
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DK-1009 Copenhagen K
DENMARK
I.C. Zenith

Fra: Robert D. Biggs [r-biggs@uchicago.edu]
Sendt: 12. oktober 2001 16:16
Tit: ZENITHIC@GET2NET.DK
Emne: message for Ove von Spaeth

Dear Colleague,

Thank you very much for sending us your materials on dating the Egyptian star map. I am passing it on to the Oriental Institute library for the pamphlet file (we do not subscribe to Centaurus, so we would not otherwise have your paper). We appreciate your thoughtfulness.

Sincerely yours,

Robert Biggs
Editor, Journal of Near Eastern Studies

Robert D. Biggs
Oriental Institute
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1155 E. 58th Street
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February 2001 - Historical Astronomy Division of The American Astronomical Society

American Astronomical Society

Historical Astronomy Division of the American Astronomical Society. Topics relating to the historical nature of astronomy - History is broadly interpreted to include traditional history of astronomy, archaeoastronomy, and the application of historical records to modern astrophysical problems. - ...Recent publications relating to the history of astronomy, bibliographies prepared by Ruth S. Freitag of the Library of Congress, February 2001: - Articles, Including Essays in Books and Papers in Proceedings:


Historical Astronomy Division of the American Astronomical Society, Washington DC - & Louisiana State University, Department of Physics and Astronomy, -
http://www.aas.org/~had/biblio.html & http://www.aas.org/~had/ASTRO22.html
RESEARCH LABORATORY FOR ARCHAEOLOGY
AND THE HISTORY OF ART
6 Keble Road, Oxford OX1 3QJ

Director: Professor M S Tite
Edvard Hall Professor of Archaeological Science

MST/JES
Dr O von Spaeth
Zenith I.C., Project
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FO Box 1096
DK-1019 Copenhagen K
Denmark

Dear Dr von Spaeth

Thank you for the offprint of your paper on the Dating of the Oldest Egyptian Star Map together with the associated summary and the FAQ.

I have read this with interest and have now passed them on to the relevant colleagues.

Thank you again for sending this offprint to me.

Yours sincerely

[Signature]

Professor M S Tite

UNIVERSITY OF OXFORD
Dear Mr. van Speck,

This is to acknowledge receipt of your article "Rising the Osiris Egyptian Star-Map". I regret to have to inform you, that the journal will not publish review articles.

But I would like to take your article into the library of our institution and to recommend it to colleagues.
With best regards,
Yours sincerely,

Erik Iversen
(Doktorant)

20 January 1997
- Pages: 1
- Erik Iversen, Dr.Phil.h.c. Egyptologist

ERIK IVERSEN, dr. phil., h.c.
Betty Nansens Allé 35, 4
DK-2000 Frederiksberg C

Without any knowledge of astronomy I am nevertheless convinced that from an egyptological point of view the paper of Mr. Ove von Spåth contains new and valuable information concerning the date of Senmut's star map.

Erik Iversen, dr.phil. h.c.
København
Regarding Ove von Spaeth's treatise "Senmut's Star Map - For Historical Dating":

Through a long range of years, I have followed Ove von Spaeth's extensive interdisciplinary studies within Egyptian history, archeology and astronomy history.

Specifically, I find it interesting that Ove von Spaeth has proposed a dating of the Senmut star map based on the assumption that this map represents a specific planetary constellation.

The actual occurrence of such planetary constellations, the author has tested objectively on an astronomical basis.

I believe that the resulting dating deserve to be published as a significant contribution to the debate on fixing the Egyptian chronology.

Kr. Peder Moesgaard  -  Museum Director, Dr. Scient.
I.C. Zenith

Fra: dilos@hol.gr
Sendt: 7. marts 2002 18:20
Til: zenithic@get2net.dk
Emne: Re: ANISTORITON article published

Dear Mr. Spaeth,

It is a pleasure to announce that your work submitted to ANISTORITON some time ago, has just been published.

Please direct your internet browser to the following URL:

http://users.hol.gr/~dilos/anistor/vpoints/v021.htm

Congratulations and thank you for your submission to ANISTORITON

Prof. D. I. Loizos
Editor-in Chief

ANISTORITON
History, Archaeology, ArtHistory Journal
http://users.hol.gr/~dilos/anistor/cover.htm
ISSN 1108-4081
2000-09-19

Dear Mr von Spach,

The Editor acknowledges receipt of your contribution to the Journal. It has received reference No. AGA141. Please quote this in future correspondence. We are currently considering this for publication as a news item, and would appreciate it if you have any good quality pictures or illustrations (original prints only please) that could be published as part of the item. We would of course return these to you after publication.

Thank you for thinking of the Journal for publication of this piece.

Yours sincerely

Amanda McCaig
Editorial Assistant
Astronomy & Geophysics: the Journal of the RAS

Please note: The Editor’s address is now:
Department of Physics & Astronomy, University of Leeds, Leeds LS2 9JT, UK
Tel/fax: 0113 233 6672

Department of Earth Sciences, The University of Leeds, Leeds LS2 9JT
Tel/fax: 0113 233 5231 Email: s.bowen@earth.leeds.ac.uk
5/13/02

Dr. Ove von Spaeth
Zenith I.C. Project
P.O.Box 1096
DK-1009 Copenhagen K
DENMARK

Dear: Dr. Spaeth

Thank you for agreeing to review the manuscript:

About the Identification of the Hour Stars in the Ramesside Star Clocks

The manuscript is enclosed. I am also sending along a copy of the ISIS
referee form. I look forward to hearing from you.

Sincerely,

Alan S. Weber
Managing Editor

Enclosure
18 July 2000 - Pages: 1 - Kurt Moeller Petersen, Prof., Philosophy of natural science

Dear Ove von Spaeth,

On behalf of the copyright holder of your manuscript, due to be published in Centaurus, Munksgaards International Publishers Ltd., we hereby give you the permission to use the manuscript in your work with the forthcoming book on Egyptian History granted that you, whenever, give full particulars of reference to the extent you are able to do so.

Sincerely yours

Kurt Møller Pedersen
Editor

Louis Klostergaard
Secretary to the Editors

---

2004 - Pages: 1 - Ove von Spaeth - On History: The Egyptian Star Map and Moses’ era

STAR MAP * EGYPT * SPAETH http://www.moses-egypt.net/star-map/senmut4-history_en.asp

The Pleiades Constellation and Senmut’s Star Map

In all ancient Mediterranean civilizations the constellation known to us as the Pleiades had a most important role. It served as a celestial marker or sign for one of the year’s great events, i.e. the springtime’s arriving rain or flood. In fact, these stars were thought to be connected, in a meta-astrological sense, with the concept “blessing”.

Thus the Pleiades were signaling and initiating the “wet season” which then became more enhanced by other signals from a next following star group, the Hyades, in Greek ‘to rain’.

Later in antiquity, Greek and Roman authors enjoyed to write about the especial popular stellar group of the Pleiades, to which there already existed several mythological accounts.

For instance, the Pleiades group is depicted on the ancient Egyptian vizier Senmut’s 3,500-years old star map - i.e. these stars are placed on the map precisely as the location where the Pleiades are situated in the sky. More so, on the map the specific picture have been attached some hieroglyphs showing clearly to be read in the direction from the right to the left, displaying the name mw(t) nwt bt. i.e. ‘the watery body’, ‘the humid’, or ‘...of moisture’.

And, as very often in Egyptian texts, it also may have an additional interpretation: ‘three parts of Nut’s body (in the sky)’.

The now so famous Senmut map is adorning the ceiling of his tomb (Thebes Tomb 353, at Deir el-Bahari, near Luxor) which like a tunnel is leading beneath Queen Hatshepsut’s Temple of Hathor, goddess of the sky.

However, a certain analysis of the map reveals such kind of information being of greatest importance in connection with the history and chronology of Antiquity - cf. below, the sections 5 and 6 - the detection was made by Ove von Spaeth. His discovery was first published in 1984 (in the Magazine ‘Stjernerne’) - and later added further scientific details, now published as the treatise: “Dating Egypt’s Oldest Star Map”, in “Centaurus Magazine of The History of Mathematics, Science, and Technology” (Vol. 42/3, July 2000, pp. 159-179).
The Calendar and Astronomy of Ancient Egypt

Stars and Moon Calendar

Representations of the earliest calendars in history have been found on tomb ceilings and sarcophagus lids from the 9th Dynasty onwards. Some of the surviving artwork inside the tombs of the most important (or wealthy) Egyptians consists of stars and celestial figures we'd recognise as constellations.

The Egyptian astronomers (usually priests) divided the year into 12 months within three seasons:
• Akhet (Inundation: the flooding of the Nile upon which all life in Egypt depended) I, II, III and IV
• Peret (Emergence of the Land) I, II, III and IV
• Shemu (Harvest) I, II, III and IV

Each of the 12 months had a name, for example Akhet III was called Hwt-Hrw, Peret IV was Renwett and Shomu II was Hnt-hjt. The months were divided into 'decans', a decan being a ten-day week. The 36 decans were heralded by the rise of a particular star, for example Akhet I was announced by the heliacal rising of Sopdet - 'the star of Isis' (which we know as Sirius). Decan stars adorn the ceiling of the temple dedicated to the goddess Hathor at Denderah.

The total year of 360 days did not match the solar year, so to balance their calendar they spent five days - known as epagomenals - in celebration of five important gods: Osiris, Horus, Seth, Isis and Nephthys. As they had no leap year equivalent, every four years their calendar fell out of sync with the rising of the stars, so they attempted to make everything fit by creating a lunar (moon) calendar as well.

The astronomer priests observed a calendar of lunar phases in order to calculate when certain rituals needed to be performed, and that particular process was presided over by Khonsu the lunar god. The lunar calendar was represented by 12 large circles (one complete moon cycle or 'synodic month') each of which was divided into segments. The lunar month has 29.5 days, which meant that some years were short when there were 12 new moons, or long when there were 13. The lunar calendar was used for religious festivals only, for administrative purposes the 360+5 day calendar was used.

During the reign of the female pharaoh Hatshepsut, an architect and teacher, the high official Senmut or Senenmut, adorned his tomb ceiling with a unique Astronomical Map also having moon calendar circles.

Referenced Sites:
Gemstone guide: Turquoise
The Senmut Star Map, by Ove von Spaeth...
Ancient Egypt calendar

Please note that the BBC is not responsible for the content of any external sites listed.
SUMMARIZING - STATEMENTS ON OVE VON SPAETH’S TREATISE
SECTION 2

- Summarizing - approx. 30 statements on The Ove von Spaeth Treatise
Survey - info on Ove von Spaeth’s paper on dating the oldest Egyptian star-map (Senmut)


The treatise on dating of Senmut star map has been prepared so that it can be analyzed by experts from different exact sciences, like astronomers and mathematicians, as well as from the humanities, e.g. Egyptologists and historians. This could not be solved without both directions in interaction. Astronomers gave statements, now one more by the humanities:

Discovering the star map research - 9 October 2011 - Opinion:

A closely-reasoned scientific article - this thoughtful and reflective leap brings new light on Senmut's star map.

Dating the Oldest Egyptian Star Map

In this treatise, 'Dating the Oldest Egyptian Star Map', Ove von Spaeth developed the implications and significance of a configuration of planets and stars represented on the most ancient Egyptian star-map - the 'Senmut Star Map' - from the reign of Queen Hatshepsut (ca. 1500 BC) during the 18th Egyptian dynasty. By drawing upon the resources of modern astronomy and mathematics, von Spaeth computed and verified the presence of distinctive planetary conjunctions represented on the Senmut map as a factual occurrence in the skies.

By doing so, he was able to indicate a more exact dating of its time and period in history and of the reign of Queen Hatshepsut. His approach - a combination of modern astronomy, statistics of rare planetary conjunctions, mathematics, archaeological materials, and Egyptology - allowed for a fuller understanding of Egyptian history dating and shed light on the place of ancient astronomy in its cultural contexts.

On detail and perspectives

In all: a closely-reasoned scientific article that explores the implications and significance of an unusual configuration of planets and stars represented on an ancient Egyptian star map - the Senmut Star Map established 3,500 years ago - the world's oldest star map.

Earlier scholarship on the Senmut star map by Egyptologists focused mainly on identifying the planets and stars depicted on the map and analyzing its principal features but the significance of the actual configuration of these stars and planets remained unrecognized.

By drawing upon the resources of modern astronomy, Ove von Spaeth, has been able to compute and verify the presence of the distinctive planetary conjunctions represented on the Senmut map as a rare and factual occurrence in the skies and so also to indicate a more exact dating of its time and period in Egyptian history. His approach - a combination of modern astronomical and mathematical evidence with materials of archaeology and Egyptology - allows for a fuller understanding of the development of astronomy in ancient Egypt and to provide important chronological evidence about the reign of Queen Hatshepsut.

As well, it reveals that ancient Egyptians were not concerned merely to represent astro-mythological features in star maps as aspects of their cosmology but to mirror concrete and specific events in the sky as and when they occurred. Such usage of star maps in ancient Egypt, interpreted as here with support from modern astronomical computational methods, opens up areas of research and investigation that have remained largely unexplored for lack of interdisciplinary approaches and perspectives derived from critical relations between modern science, archaeology, and Egyptology.

Ove von Spaeth’s treatise takes a thoughtful and reflective leap in this direction and brings startling new light upon the skies of the Senmut star map.

:: Anu Kumar, Ph.D. in English Literature, Pittsburgh University, - M.A. in Sanskrit Studies, Copenhagen University, - Associate Professor in Hindi at Aarhus University, - (9.Oct.2011).
Summarizing - statements on Ove von Spaeth's treatise, *Dating the Oldest Egyptian Star Map* (the Senmut map)

"... the findings are very ingenious and admirable, and quite surprising considering the apparent lack of interest of the Egyptians in this sort of astronomy ...I have visited and photographed the Senmut tomb several times, and I find it quite fascinating. Thus I find the paper especially interesting. ..."


"... the article on the Senmut ceiling, with so many interesting observations. ..."

:: **Erik Hornung**, Professor Dr., Ägyptologisches Seminar der Universität Basel - (24 October 2001).

"...We congratulate for the discovery and we wish the author good luck with the further investigations"

:: **George V. Coyne, S.J.**, Director of Specula Vaticana (Vatican Observatory), Città del Vaticano; - & **Gustav Teres, S.J.**, astronomer, Vatican Observatory, Castel Gandolfo, Italy - (12 October 2001).

"... this important and fascinating paper - many congratulations on the research ...and it is a major advance. - (Years ago I did an English translation - not published so far - of E.M. Antoniadi's book on Egyptian astronomy). ..."


"... The resulting date of Senmut's star map, objectively proven by the author on an astronomical basis, adds, in my opinion, a considerable contribution to the debate concerning the Egyptian chronology ..."

:: **Kristian Peder Moesgaard**, D.Sc., Professor, History of Science Department, Aarhus University; - Director of the Steno Museum, Denmark’s National Museum for the History of Science - (10.Feb.1997).

"... Dear Colleague, - dating the Egyptian star map conveys materials we would not otherwise have, we appreciate it. (Will be passed on later to the Oriental Institute library). ..."


"... a pleasure to announce that the work on Dating The Oldest Egyptian Star Map has been published by Anistoriton - providing the readers of this Journal a selection of the news of the article published in the electronic version (Vol. 6/2002, Issue V 021) ... Congratulations and thank you for the permission."


"... Without any knowledge of astronomy I am nevertheless convinced that from an Egyptological point of view the paper by Mr. Ove von Spaeth contains new and valuable information concerning the date of Senmut's star map. ..."

:: **Erik Iversen**, Dr.Phil.h.c. Egyptologist, formerly the Copenhagen University - (20 Jan. 1997).

"... I have read your article "Dating the Oldest Egyptian Star Map" with great interest. I agree with your conclusions as to the general positions in the sky of the planets, the sun and the moon and the general dating of the configuration. - I find that there is really a solar eclipse at a time that is very close to the one you state, but provided the time is ephemeris time. - Actually there is no safe way of extrapolating that far back in time but the correction (ephemeris time to universal time) would be accurate to within +/- some hours. ..."

:: **Lars Gislén**, D.Sc., Professor, Dep. of Theoretical Physics, University of Lund (12 Sep.2000).
"... the paper on the Dating of the Oldest Egyptian Star Map, together with the summary and the FAQ, - I have read it with interest. ...

:: M.S. Tite, Professor, Director: Archaeological Science, Research Laboratory for Archaeology and the History of Art, University of Oxford - (9 October 2001).

"... This star-map actually describes a planetary conjunction in which the planet position is defined to a certain sector of the sky, plus a solar eclipse. As such, precise astronomical calculation can date this map to the date, May, 1534 BCE (Ove von Spaeth, "Dating the Oldest Egyptian Star Map", International Journal of the History of Science, Centaurus, vol 42:3 (2000):159-179). ...


"... STAR-MAP: New orientating discoveries in the world's oldest star map in a 3500 years old Egyptian tomb - presented through historian Ove von Spaeth's research - revealing informative and precise astronomical data of great importance to ancient Egyptian chronology. (http://www.moses-egypt.net/star-map/senmut-files_survey_en.asp) ...


"... A lengthy illustrated article... by Ove von Spaeth concerning the astronomical ceiling of the tomb of Senenmut - published in Centaurus ...."


"... The Oldest Egyptian Star Map - the Senmut map Dating information decoded. A presentation of newly discovered data of special importance to Egyptology, ancient history, and astronomy - and, typically, studies of chronology - as well as related culture and science of Egypt's 18th dynasty and ancient Near East. - Being published in Ove von Spaeth's treatise on "Dating the Oldest Egyptian Star Map". The data concerned have been revealed by a thorough examination of one of the most unique Egyptian celestial decoration. ...


"... I find your work on the Senmut star map most interesting. ...


"... Egyptologists were able to date that this particular configuration of planets occurred in the sky in 1534 BC, - cf. von Spaeth, (Centaurus, 2000). ...


"... When considering the existence of an original star chart that indicates the occurrence of a solar eclipse 3500 years ago, one should be allowed to focus one's attention on the closest - chronologically and geographically - solar eclipse that actually occurred. Why else would the indication of a solar eclipse be inserted into a star chart? - The thesis on Senmut's star map has raised an interesting discussion. - Ove von Spaeth, you have engendered quite a row among astronomers. - If nothing else, your work will lead to some interesting clarifications - which is more than most books have managed to achieve. ...

:: Jurij Moskvitin, mathematician, philosopher, writer, - 22270-010 Rio de Janeiro, Botafogo, Brazil - (9 January 2003).
"... A closely-reasoned scientific article that explores the implications and significance of an unusual configuration of planets and stars represented on an ancient Egyptian star map - the Senmut Star Map. His approach - a combination of modern astronomical and mathematical evidence with archaeological materials and Egyptology - allows for a fuller understanding of the development of astronomy in ancient Egypt and to provide important chronological evidence. Ove von Spaeth's article takes a thoughtful and reflective leap in this direction and brings startling new light upon the skies of the Senmut star map. ...

:: Anu Kumar, Ph.D. in English Literature, Pittsburgh University, and M.A. in Sanskrit Studies, Copenhagen University - (9.Oct.2011).

"... A controversial interpretation of the Senmut star map. ...


"... this paper, as I have said earlier, was an interesting read and was informative... (an excellent site - do a search - on: www.moses-egypt.net/star-map/senmut2-faq_en.asp ). ...


"... Risorse Bibliche lingua e scrittura ebraica. - Site sobre Qumran e os Manuscritos do Mar Morto. Mantido por Elio Jucci, Università degli Studi di Pavia, Itália. - Elio Jucci : SETH - "Semitica et Theologica". - Calendari. A proposito di Calendari (questo mese)... è noto a tutti quanto la questione del calendario fosse importante nel mondo ebraico ... per tale motivo dedicherò almeno una pagina a links connessi in qualche modo con questo tema. ... Calendari: [VII -2003] - An Egyptian Star-map. By Ove von Spaeth, Independent Scholar, Denmark ( http://www.moses-egypt.net ). ...


"... I'm most impressed by the accuracy of the dating. Not of the map... but of the original chronology that Egyptologists had long-established for dynastic times. Just goes to show... good theory will be supported by future evidence. ...


"... Although general merit can be given to his [von Spaeth's] interpretation of the ceiling (of which he received widespread accolades from numerous and notable peers), there are concerns about the dataset he used ... is confirmed using Starry Night Pro software ... but we can be sure such an eclipse could have been an early root from which later generations of priests drew reverence. ...


"... I have read with interest information provided on your website concerning the research of the Senmut star-map and its probable relation to Moses. You suggest the map shows a real astronomical
observation ... As I am writing a book on the chronology of Jesus Christ, my interest was drawn to what seems a conjunction of Saturn and Jupiter in the very year that an eclipse of the sun occurred over Egypt. - (My research shows two possible dates for the [such] solar eclipse, one retro-calculation with "Voyager" software came up with June 1, 1478 BC; the other, Julian date August 23, 1463BC). ..."

:: Don Leichel, - writer, New Zealand - exalto@... - (15 November 2005).

"... Ancient Star Charts: The word "star" comes from the Greek term meaning heavenly body; - Bronze Age 'star chart' found March 2nd; - Lascaux, France, 17,000 years ago: in star pictures of the Pleiades; - Prehistoric Star Maps Identified In France And Spain; - New Discovery in Ancient Egyptian Star Map ( http://www.moses-egypt.net/star-map/senmut-files_survey_en.asp ). ..."


"... By using astronomical approach on the ancient Senmut star map, Ove von Spaeth computed and verified the presence of distinctive planetary conjunctions represented as a factual occurrence in the sky. This allowed the calculation of an exact dating of its time and thus the period in Egyptian history. “


"... the events coincide with the accepted dating methods and chronology; - while also re-interpreting the conclusions derived therewith: http://www.moses-egypt.net/star-map/senmut1-mapdate_en.asp#5 (and http://www.moses-egypt.net/star-map/senmut4-history_en.asp ) ...


"... when people like Owen Gingerich, whom I greatly respect as an astronomical historian, appear to endorse something astronomically historical, I tend to sit up and take notice. I have just emailed
him about this and will report back here if I get a reply (busy man, so it may be a while). ... I also had a look at the ( www.moses-egypt.net/images/Senmut_conjunction2.jpg ) chart for May 1534BC on www.moses-egypt.net/star-map/senmut-survey_en.asp. - Although the planetary positions are correct, there is again the problem of this being an eclipse that was ( www.astunit.com/astrocrud/BC1534May06eclipse.jpg ) only visible on the other side of the world. - The difference in one day between my date for it and that of the authors is that I am using UT and they are presumably using local time at Luxor. ...


"... I found Ove von Spaeth's page on Senmut's Star Map very interesting. - It's also interesting that von Spaeth suggested that the map indicated a "specific point in time"; on that I agree because it's something the Ancients would do. - Why in this living world, on the other hand, von Spaeth would include a series of responses on the subject from the-hall-of-maat (net discussiongroup) - I cannot imagine. I also loved the choice comment by Owen Gingerich: Quote: "... the [von Spaeth's] findings are very ingenious and admirable," ..."


"... I have purchased your paper, 'Dating the Oldest Egyptian Star Map', from Centaurus Magazine via Blackwell. We are preparing a special exhibition about astronomy. I am the Acting Head of the Department of Astronomy at The Kroppedal Museum (formerly The Ole Roemer Museum). The main subject of this department is in general the history of Danish astronomy (Tycho Brahe, Ole Roemer, etc.), however, we are also engaged in ancient natural science and cosmology. With greatest interest I have read your paper on the dating of the Star Map from the tomb of Senmut. ..."

:: Jakob Danneskiold-Samsoe, - Leading Curator, Department of Astronomy, Kroppedal Museum, (DK-2630 Taastrup), - astronomi@kroppedal.dk - www.kroppedal.dk - (27.Apr.2006).

# A further number of acknowledgements, notices, disputes, and questions, from e.g.:


Some notices by Ove von Spaeth to special opponents' cases:
http://www.moses-egypt.net/star-map/senmut1-mapdate_en.asp

FAQ on Dating the Oldest Egyptian Star Map:
http://www.moses-egypt.net/star-map/senmut2-faq_en.asp -& - present pp.57-68

* * *
OTHER COMMUNICATIONS
SECTION 3

- Centaurus - on Retrieving the Treatise
- Centaurus, info on the editorial staff
- Thirteen other Communications, variously published
p.32 CENTAURUS - on Retrieving the Treatise
p.33 July 2000 - Centaurus, info on the editorial staff

OTHER COMMUNICATIONS

p.34-35: 7 March 2002 - ANISTORITON Journal - History Archaeology ArtHistory
p.35 17 February 2008 - Marianne Luban, Egyptology Scholar and Writer, USA
p.36 October 2007 - Star - wikipedia.org/wiki/Star, Brunei Darussalam ভারা

OTHER COMMUNICATIONS

p.37 2008 - Bojan Novakovic, Astronomer, Astronomical Observatory of Belgrade
p.39 2005 - Juan A. Belmonte M.A. & Mosalam Shaltout - The SEAC 2005 Proceedings,

OTHER COMMUNICATIONS

p.40 2001 /2012 - Jno Cook - Recovering the Lost World, Appx. A, Notes on Cronology
p.41 July 2003 - Robert D Mock MD - Bible Searches - (re-edited January 2010)

OTHER COMMUNICATIONS

p.42 31 October, 2011 - Don Leichel: Ipso Facto, A Scientific Exploration of OT and NT
p.43 since 2004 - STAR, Observational history - in Wikipedia
p.44 3 July 2013 - M. Christine Tetley “Reconstructed Chronology of the Egyptian Kings”

Ancient Egyptian Astronomy Database

Tomb of Senenmut

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CONCERNING THE CENTAURUS MAGAZINE - publishing the volume 42;3 in question - **July 2000**: "Centaurus International Magazine of the History of Mathematics, Science, and Technology" (established 1950/51) being most esteemed as only comparable to the world’s oldest and largest journal in this field: ”Isis Journal of the History of Science” (establ.1913). Some information about Centaurus may be of use:

The treatise of Ove von Spaeth: "Dating the Oldest Egyptian Star Map", was published in "CENTAURUS INTERNATIONAL MAGAZINE OF THE HISTORY OF MATHEMATICS, SCIENCE, AND TECHNOLOGY", Vol. 42;3, 2000, pp. 159-179, by Aarhus University, the History of Science Department, Denmark; - issued by Munksgaard /Blackwell International Publishers, Copenhagen. - (ISSN 0008-8984).

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http://www.blackwellpublishing.com
OTHER COMMUNICATIONS

1: 7 March 2002 - ANISTORITON Journal - History Archaeology ArtHistory
http://www.anistor.gr/english/enback/v021.htm

An Egyptian Star-map

By
Ove von Spaeth
Independent Scholar, Denmark

The astronomical knowledge of the ancient Egyptians turns out to be surprisingly broader than previously imagined. According to a new analysis, the world’s oldest star-map seems to contain information of an actual celestial event of its time. This recent discovery uncovers the earliest exact scientific description of an otherwise rare but not unknown celestial phenomenon.

This 3,500 year old star-map which decorates one of the ceilings in the tomb of the great Senmut (or Senenmut) near Luxor (Thebes), apparently demonstrates a previously unknown aspect of the astronomical situation in Egypt around 1,500 BC. This revelation is the result of investigations, the full report of which was published in the International Journal of the History of Science Cenaurus (Ove von Spaeth. "Dating the Oldest Egyptian Star Map," vol. 42:3 (2000), 159-179).

The map’s configurations, which previously have been considered mostly as mythological displays, are now disclosed to be an accurate depiction of a rare gathering of planets in well-defined celestial positions. The information contained in the map refers to a specific point in time. The re-evaluation of this and subsequent maps gives birth to new perspectives: by introducing these new reference points in time, the appropriate chronology for the epoch in question, which otherwise has been difficult to date, can be established. Understanding the timeline for these events
The well-known Egyptian star map in question was worked out by Senmut, who was the vizier to Queen Hatshepsut and also the calendar registrar of Egypt, during the 18th dynasty (16th c. BCE). The recently decoded material can be objectively proven, based on modern astronomical calculations, to depict important astronomical circumstances. It has now become clear that the map of Senmut neither depicts an arbitrary gathering of planets in the sky nor is it a copy of a pattern eventually made by Senmut's predecessors.

Since this stellar-map describes a planetary conjunction (i.e., a close encounter of the planets) where a unique pattern of the positions of the planets are concentrated within a defined sector of the sky, it therefore contains information unmistakably related to a fixed point in time, which it has been possible to calculate as May 1534 BCE. According to the analysis, this dating is additionally supported by the map's record of a simultaneous solar eclipse. Modern astronomical methods confirm this interpretation with great precision: accordingly, the map of Senmut must be acknowledged as one of history's oldest recorded scientific achievements.

Subsequently produced Egyptian star-maps seem to confirm this discovery. Created under the reign of several pharaohs, during 300 years or more after the first map, they exhibit Senmut's principle of depicting a planetary conjunction. This seems to be a now-forgotten tradition since these younger star-maps occur only in the reign of those pharaohs, such as Ramses II, where actual conjunctions of the relevant type appeared in the Egyptian sky.

The study concludes as follows:

_The Senmut map depicts an exceptional event in the sky. This seems to have produced a prototype for all later pictures of similar celestial events - but with one exception: In the first depiction, in the time of Senmut, Mars is retrograde in the west when the other planets assemble around Sirius in the east._

_So far has been demonstrated:_

1. _The Senmut maps contain a cosmological and astro-mythological expression not only as decoration - as hitherto assumed - but also as a picture of a particular and unique situation in the sky._

2. _This configuration of the sky can be exactly dated: 1534 BC. Furthermore one particular day can be identified if the solar eclipse is included as indication._

_In addition the star maps may contribute to a better dating of their creator Senmut and also of the contemporary Egyptian pharaohs - at least accurate to within a decade._

Author's Web Page: [www.moses-egypt.net](http://www.moses-egypt.net)

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### 2: 17 February 2008

**Marianne Luban, Egyptology Scholar, Writer, USA**

https://groups.yahoo.com/neo/groups/AncientBibleHistory/conversations/topics/57935

**ANCIENT BIBLE HISTORY**

Many of you have never heard of Ove von Spaeth, but he's a very interesting Danish independent scholar [my favorite kind of people, when they're well-informed and reasonable] who loves astronomy.

- I thought I knew a lot about rabbincal literature, Midrashim, but here's something I missed and left out in my own book, - Rabbi Abrabanel's info on the state of the heavens around the time of the birth of Moses.
- But von Spaeth, the same guy who attributed the year 1534 BCE to the heavenly configuration on the astronomical ceiling of Senenmut picked up on it.

:: marianneluban, #57935, <Mluban@...> - AncientBibleHistory - Sun Feb 17, 2008 3:15 pm
র্যাকিকিক্ষকের ইকতহাে প্রকতটি তারা কিকেষ গুরুত্ব হন।

প্রাচীন থ্যাকতকিযিরা অকনি তারা স্বেীয থোলকি কিিযষ্ট স্থাকন আিদ্ধ।

চলকত প্রো অনুর্াযী তারা তারাগুকলাকি কিেু তারামণ্ডকল ভাে কিকরকেকলন এিং এই।

মণ্ডলগুকলার মাধযকম এই।

এরা অিকরিতযনীয।

চলতি প্রথা অকুযামী তারা তারাগুলোকে কিছু তারামণ্ডল ভাগ করেছিলেন এবং এই মণ্ডলগুলোর মাধ্যমে সূর্যের অস্বাভাবিক অবশ্য ও প্রাণের গতি সম্বন্ধে ধরণের নাটক করতেন।[২] তারার পত্তভূমিতে তথা বিগতে সূর্যের গতিকে ব্যাবহার করে পশিকা তৈরী করা হতো যা কৃষিকাজ বিশেষ করে আসতো। বর্তমানে পৃথিবীর সবচেয়ে বৈশ্বিক পশিকা তৈরী পশিকা সৌরকেদ্রিক। সূর্যের সাপেক্ষে পৃথিবীর থুর্সন অক্ষের কোণগুলোর মাধ্যমে এই পশিকা নির্মিত হয়।

জানা মতে সঠিকভাবে প্রকৃতক প্রাচীনতম পশিকা নির্মাণ করেছিলেন প্রাচীন মিশরীয়রা, ১,৫৩৪ খ্রিস্টপূর্বাব্দে।[৩] ইসলামী জ্যোতির্বজ্ঞানীরা আলবিখাতির নামের আকাশগহের নাম অর্জন করেছিলেন।

একাদশ পর্যন্ত তথা সূর্যের গতিকে নিজে তৈরি করেছিলেন। সূর্যের প্রাণের মধ্যে কিছু সংখ্যায় রাখার সময় গঠিত বলে ব্যাখ্যা করেন। এর মাধ্যমে যে প্রাকৃতিক তারার মত ধর্ম রয়েছে বলেও তিনি উপলব্ধ করেন। ১০১১ সালের এক চন্দ্রাঙ্গণের মধ্যে তিনি বিবি বিবি তারার অক্ষাংশে গতি বিন্যস্ত করেছিলেন।[৪]

তারার ছুরী অপরিবর্তনীয় বস্ত্রদেশ করলে চৌকিয় জ্যোতির্বজ্ঞানি বুদুই নেলেন, বুদুই তারার উদ্ভব হতে পারে।[৫]

1. Online Etymology Dictionary. 2007-09-21 তারিখে সংগৃহীত।
:: Wikipedia, Brunei Darussalam, - (21.Oct.2007),
3: 2008 - Bojan Novakovic, Astronomer, Publ. of Astronomical Observatory of Belgrade, p(19), 22


SENENMUT: AN ANCIENT EGYPTIAN ASTRONOMER

BOJAN NOVAKOVIĆ
Astronomical Observatory, Velogina 7, 11060 Belgrade 38, Serbia
E-mail: bnovakovic@aob.bg.ac.yu

Abstract. The celestial phenomena have always been a source of wonder and interest to people, even as long ago as the ancient Egyptians. While the ancient Egyptians did not know all the things about astronomy that we do now, they had a good understanding of some celestial phenomena. The achievements in astronomy of ancient Egyptians are relatively well known, but we know very little about the people who made these achievements. The goal of this paper is to bring some light on the life of Senenmut, the chief architect and astronomer during the reign of Queen Hatshepsut.

BOJAN NOVAKOVIĆ

grouping and at first sight seems to be missing in the map. However, Mars is also pictured in the Senenmut map, but it is represented by an empty boat in the west. This seems to refer to the fact that Mars was retrograde so that in this backward movement (well known phenomenon to the Egyptians) the Mars position was perhaps not consider to be "concrete". Using these facts, Egyptologists were able to date that this particular configuration of planets occurred in the sky in 1531 BC (van Spaeth 2000).

Modern chronologists tend to agree that Hatshepsut reigned as pharaoh from 1479 to 1458 BC, but there is no definitive proof of the beginning date. Some other sources proposed that Hatshepsut could have assumed power as early as 1512 BC. Consequently, it is not clear whether or not the celestial phenomenon, mentioned above, was happened within the lifetime of Senenmut.

Figure 1: The southern part of the astronomical ceiling in Senenmut’s tomb (TT353).

4. CONCLUSIONS

A short review of the achievements in astronomy of ancient Egyptians, presented here,
Вопросы хронологии

В свежем номере журнала по истории науки Centaurus 2000, vol. 42, pp. 159-179. Опубликована статья Ove von Spaeth, "Dating the Oldest Egyptian Star Map".

Привожу начало:
"The earliest known maps in Egypt are found as a main part of the decor in a tomb (No. TT 353) at Thebes on the West bank of the Nile. The tomb was constructed during the first half of the Egyptian 18 dynasty, probably about 1490 BC, and it belonged to Queen Hatshepsut’s vizier and calendar registrar Senmut (or Senenmut).

The Senmut maps, Fig.1, are almost 4 meters long. They are found on the southern and northern panels of the ceiling, which is shaped as the inner part of a low-pitched roof of the burial chamber hewed out of the subterranean rock.

The map on southern panel proves to reflect a specific conjunction of planets around the longitude of Sirius. The particular configuration of planets actually occurred in the sky about May 1534 BC. These characteristics of the maps have not been recognized before. Egyptologists identified the planets on maps long ago, but the actual occurrence of their configuration in the sky can now be verified through modern astronomical calculation."

P.S. Помнится Дист обещал закрыть свой сайт если я найду древнее решение дендерского зодиака лучше Фоменковского 18 века - я такое решение быстро нашел. Ждемс.

(translation:)
Вопросы хронологии (= Questions, chronology) - В свежем номере журнала (= In the latest issue of the magazine) по истории науки Centaurus 2000, vol. 42, pp. 159-179. - Опубликована статья (An article by) Ove von Spaeth, "Dating the Oldest Egyptian Star Map".

Прихожу начало: (= Here is the beginning:)
"The earliest known maps in Egypt are found as a main part of the decor in a tomb (No. TT 353) at Thebes on the West bank of the Nile. The tomb was constructed during the first half of the Egyptian 18 dynasty, probably about 1490 BC, and it belonged to Queen Hatshepsut’s vizier and calendar registrar Senmut (or Senenmut).

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P.S. Помнится Дист обещал закрыть свой сайт если я найду древнее решение дендерского зодиака лучше Фоменковского 18 века - я такое решение быстро нашел. Ждемс. (= I remember Diest promised to close our website if I find an older solution than the Dendera Zodiac, Fomenkovskogo was the best finder in the 1800’s; - then I quickly found a solution. Zhdems.)

The Astronomical Ceiling of Senenmut: a Dream of Mystery and Imagination.

JUAN ANTONIO BELMONTE AND MOSALAM SHALTOUT

Abstract

The most ancient complete representation of the Egyptian (and of any other people) sky is to be found in the ceiling of the first chamber at the tomb of Senenmut at Deir el Bahari (Tomb 353 of the Theban western necropolis). Since the discovery of the tomb, the astronomical ceiling was compared with other representations of the same celestial diagram found in other monuments, such as the nearby Ramesseum or the tomb of Sethy I. One important point was stressed, the absence of the planet Mars in Senenmut’s representation. Consequently, some scholars have tried to show that the diagram represents a real celestial map and have tried to demonstrate that the ceiling was designed in such or such epoch, when Mars was not visible, or visible in peculiar position, in an attempt to date Senenmut’s carrier and, consequently, a very important period of Egyptian history, the reign of queen Hatshepsut. In this paper, we try to show that all these hypotheses are based on erroneous foundations and that the absence of Mars can be explained in a much more prosaic and simpler manner. Other problematic aspects of the astronomical ceiling will be also briefly discussed.

Introduction

Senenmut’s astronomical ceiling (see Figure 1) is the oldest representation of the Egyptian “Firmament” and the first of a series of celestial diagrams that culminated in the “zodiacs” of the Greco-Roman period. Dated in the first half of 15th century BC, under the reign of Queen Hatshepsut, it is centuries older than other astronomical ceilings and almost a millennium older than the first Mesopotamian astrolabes. Numerous specialists have described the ceiling since the tomb was first discovered by Winlock (1928), the earliest description being that of Pogo (1930), the most detailed that of Neugebauer and Parker in the excellent “Egyptian Astronomical Texts” (hereafter EAT) or one of the most recent by Etz (1997).

However, some scholars have recently tried to demonstrate that the ceiling is something more than a pictorial astronomical scheme and that it actually represents a certain view of the starry sky for a certain night. For example, on the one side, for Leitz (1991), it shows the night sky for different nights in the year 1463 BC and specially that of November 14th (all dates, unless expressed, are in the Julian Calendar) when Mars was not visible (see Figure 2); and, on the other side, for von Spaeth, the night of May 22nd 1534 BC, identifying Mars with another star within the diagram (see Figure 3). It is the intention of this paper to briefly analyse the different areas in which the celestial diagram can be divided, to study various related “mysteries”, and to demonstrate the improbability of both hypotheses. As shown in Figure 1, we have divided the astronomical ceiling in six areas.
Note 21 --

Senmut is dated to about 940 BC in the revised chronology of Velikovsky.

For an analysis of the images see Ove Von Spaeath "Dating The Oldest Egyptian Star Map" Centaurus V42 (2000). Von Spaeath notes that the rock cut tomb was abandoned during construction in 1493 BC (what a coincidence!). The central portion depicts the circumpolar constellations. The circles represent 12 calendar months of 24 divisions each, for a total of 288 days -- 15 days longer that my estimate of 273 days for the length of the year after 2193 BC.

There are other possibilities. Redating to 940 BC is one option. Additionally, since calendars are very conservative, it is possible that the 24-day months are a holdover of an earlier calendar (when there also were 10 months, not 12). It would not be untypical for a religious calendar to retain an older outdated form. A portion of the decans and planets are shown on the bottom. Von Spaeath suggests the planets show a conjunction of all the planets (except Mars) in 1534 BC (under uniformitarian conditions). Later tombs duplicate this arrangement when the conjunction is repeated (with Mars). The conjunction of all the planets marks the start of a "Great Year," although this is a notion dating to the 7th century BC.

[return to text]
Senmut's Tomb

Senmut was the vizier to Queen Hatshepsut and also the calendar registrar of Egypt, during the 18th dynasty (18th c. BCE). He was also chief architect of Queen Hatshepsut, the female pharaoh’s funeral mortuary temple near the Valley of the Kings.

According to A. Pogo, on the ceiling panel of this architect’s tomb, it “displays the celestial heavens including the zodiac and other constellations. The strange thing is the southern sky shows the constellations in ‘a reversed orientation.’” (A. Pogo, “The Astronomical Ceiling Decoration in the Tomb of Senmut (XVIIIth Dynasty),” Isis (1930). P. 306 as quoted by Velikovsky in World’s in Collision, p. 127)

The Astronomical Ceiling of Senmut’s Tomb

This star-map actually describes a planetary conjunction in which the planet position is defined to a certain sector of the sky, plus a solar eclipse. As such, precise astronomical calculations can date this map to the date, May, 1534 B.C.E. (Ove von Spaeth, “Dating the Oldest Egyptian Star Map,” International Journal of the History of Science, Centaurus, vol. 42, 3 (2000): 156-179)

Whereas Immanuel Velikovsky identified Queen Hatshepsut as the Queen of Sheba who came to visit King Solomon, internationally recognized former head of the School of Archeology at Andrew University in Berrien Springs, Michigan, Dr. Gearty, believes that a firm case can be made that Queen Hatshepsut was the foster mother of the prince apparent to the Pharaoh of Egypt, Moses. Upon the exile of Moses and the death of Queen Hatshepsut, the nephew Thutmos III, a mighty Pharaoh in history became the Pharaoh that put the Israelites into bondage.
The star configurations in the tomb of Senmut

Thanks to the groundbreaking work of Danish researcher Ove von Spaeth, there is supporting archaeological evidence of the unusual star phenomena in the first phase of the 18th Dynasty or New Kingdom in the history of Egypt. His treatise on dating the Senmut stellar-map was published in the international magazine Centaurus, published by the History of Science Department, Aarhus University, Denmark (July-August 2000, Volume 42).

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The astro-mythical particulars discussed above are conserved on a mural painting in the burial chamber of Senmut, the vizier and architect of Queen Hatshepsut. Senmut designed Queen Hatshepsut’s magnificent mortuary temple, composed of a stepped series of colonnades, at Deir el-Bahari near Thebes. In the ceiling of his tomb, dated to year 16 of Hatshepsut’s reign and located in the forecourt of Queen Hatshepsut’s mortuary temple, archaeologists have been puzzled by unusual star configurations incorporated in the story of his journey from the underworld into the afterlife. Southern panel TT 353 (see Figure 1) contains star configurations analogous to those found in the almanac (segments A and B). Senmut provided two “snapshots” of the heavenly sky near the distinct three stars known as The Belt of Orion. 293

It is the first time that unusual astronomical depictions appear in a sepulchral monument, and they are in the chapel of Queen Hatshepsut too. Senmut’s evident objective was to connect unusual celestial events with Egyptian history during his life. The practice of showing memorable features in a person’s lifetime is also followed on the walls of Queen Hatshepsut’s temple: one in

293 Photograph from Senmut’s tomb reproduced by kind permission of Ove von Spaeth.
9: since 2004

- STAR, - in Wikipedia - Observation history


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**Observation history**

The oldest accurately dated star chart appeared in ancient Egyptian astronomy in 1534 BC.\(^8\) The earliest known star catalogues were compiled by the ancient Babylonian astronomers of Mesopotamia in the late 2nd millennium BC, during the Kassite Period (ca. 1531–1155 BC).\(^9\)

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**References**


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**Ove von Spaeth**

In the 1970s, von Spaeth began studying ancient history, religions, and astronomy. His analysis of the earliest known star map in Egypt - the 'Senmut star-map'\(^1\) lead to von Spaeth publishing an exact dating of its time and period in Egyptian history and of the reign of Queen Hatshepsut.\(^2\)

**Dating the Oldest Egyptian Star Map (2000)**

By using astronomical approach on the Senmut map, von Spaeth computed and verified the presence of distinctive planetary conjunctions represented as a factual occurrence in the sky. This allowed the calculation of an exact dating of its time and thus the period in Egyptian history.
represented: Osiris, Isis, Horus, Seth, and Nephthys. The first system was found drawn or carved on coffin lids primarily from the Middle Kingdom (11th and 12th Dynasties) when the civil calendar was already established, though the origin of the decans may have gone back much earlier. The second system was introduced when the earlier system was no longer usable because the ¼ day extra to the 365 days of the year was not accommodated by the civil calendar, so that by about the time of the 12th Dynasty the civil calendar was not synchronized to the decans. The new system used mostly different decans from the first system, and measured hours by means of the transits in half-monthly intervals, so that there were 24 half-month periods to every year.

The earliest surviving star clock is depicted on the southern ceiling of the tomb of Senmut, vizier to Queen Hatshepsut (early 18th Dynasty). Senmut had two tombs, one at Sheikh Abd el-Qurna (TT71), and a larger one situated just east of Hatshepsut’s mortuary temple at Deir el-Bahri (TT353). The latter has astronomical ceilings, with star maps on the southern and northern panels of the ceiling, but the tomb itself was never finished. On the southern ceiling, the decans are shown from right to left, Sirius, no. 30, is drawn just above the horizon, the last and most important of the decans.

In addition to decans, the star clocks exhibited stars and other deities. Referring to the astronomical ceiling of Senmut’s tomb, Ove von Spaeth claimed that judging from the positions of the planets at conjunction, with Mars significantly placed by itself on the extreme right and the possibility of a faint solar eclipse depicted in the same year, that the star map points to a specific time: 7th May 1534 BCE.

Earlier scholars, however, suggested it was copied from a star clock dating from 400 years previously (presumed to be at the end of the 12th Dynasty). It remains to be seen whether Spaeth’s recent analysis and date of the star clock can be corroborated by, and correlated with, other chronological data.

Similar star conjunctions to that of Senmut’s tomb appear on star maps of Amenhotep III, Seti I, and Ramesses II. In addition, later astronomical calendar depictions appear also on the ceiling of the tomb of Ramesses VI, Ramesses VII, and Ramesses IX, of the 20th Dynasty. Water clocks, such as that of Amenhotep III, eventually replaced star clocks, which I explain later.

The decanal clocks show that, from early on, the Egyptians used star patterns to tell time during the night hours and the length of a year, and specifically that of the star Sirius whose heliacal rising was used as the harbinger of the solar year and coming inundation. Parker asserted that their calendar depictions of deities with month-names represented a lunar calendar, but this is contested by Anthony Spalinger. I examine their views later. With this succinct overview, I will now briefly introduce the calendar on the Ebers papyrus, leaving a fuller discussion to a later chapter.

43 Ibid., 159-179; date from p. 173. See star maps depicted on pp. 160 and 161.

* * *
THE EGYPTIAN SKY AND SENMUT - (& A BIBLIOGRAPHY)
SECTION 4

- The Egyptian Sky and Senmut (Senenmut)
- Bibliography regarding the star map
ADDENDUM

p.48 THE EGYPTIAN SKY AND SENMUT (SENNEMUT)

Senmut’s Star-map and the World-axis
Senmut presents an entire celestial system for the first time
The mystery about the Senmut star map
The world’s oldest known ‘horoscope’?
Most rare combination of planets only four times in 2000 years
Other Egyptian star maps with the same kind of dating information

p.52 BIBLIOGRAPHY (regarding the Senmut Star-map) - orientating and relating
The Egyptian Sky and Senmut (Senenmut)

By OVE VON SPAETH - © Copyright

Senmut’s Star-map and the World-axis

A secret tomb hidden beneath a 3,500-year-old Egyptian temple area at Luxor/Thebes, was discovered by American archaeologist Herbert E. Winlock in 1925. The tomb complex was found to contain a veritable treasure of extraordinary interest - a ceiling decoration with the world’s oldest star map, placed by the tomb owner, Senmut (Senenmut), a person of unusual capabilities.

The Grand Vizier of ancient Egypt 3,500 years ago, Senmut had many high-ranking titles and had in reality many impressive skills and was in charge of many important works and duties. He was one of the first real personalities to be known in ancient history. Early in his career, around 1,500 BC, he had a secret burial chamber constructed for Queen/Pharaoh Hatshepsut. It was brilliantly concealed inside a high rock wall. Besides this, he constructed two tombs for himself. Inside the later and most secret one of them, the ceiling was adorned with an exceptional celestial map, the world’s oldest known ‘complete’ star map.

One part of this extraordinary star map reveals the largest and most dominant reproduction of the World-axis (axis mundi) known from any Egyptian star map. So far, the importance of the axis seems to have been neglected by Egyptology. For many years the image was not recognized as the World-axis. The World-axis is not the Earth’s axis but the straight line of sight connecting the sky’s three most radiant stars: Canopus, Sirius, and Vega (Lyra) - the center-line of the Milky Way.

Senmut was known for having planned and headed extensive works of cutting, transporting, and erecting giant obelisks. He was also known as a master in concealing puzzle pictures on his buildings and sculptures, a habit which became a fashion in Egypt and a model through many following centuries. Also his star map contains several riddles.

Senmut was also known for planning and heading extensive works of cutting, transporting, and erecting giant obelisks. He was even a master in the old art of concealing puzzle pictures on his buildings and sculptures, a habit which became a fashion in Egypt and a model through many following centuries. His star map contains several riddles.
Senmut presents an entire celestial system for the first time

Ancient star knowledge included astronomy, astrology, and chronometry, and in the past it was an especially important subject of knowledge. A characteristic Egyptian version of this celestial knowledge was in use long before a specific Babylonian astrology was taken up in Egypt.

In the Karnak/Thebes temple, already at an early stage in Egypt, an observatory was placed on top of the sanctuary of Khonsu, the Moon god-son. And from most ancient times astronomical lines of sight were used in planning the axes of the temples.

The great volume and number of the vezire Senmut’s posts all over Egypt besides being the administrator of the Egyptian calendar was not unrealistic. Later, for instance, the secretary of Pharaoh Amenhotep II was the chief-astronomer at the Karnak (Thebes) Temple and also a surveyor as well as the inventor of the world’s first public book-keeping. - Existing remains of the oldest astronomical traditions in Egypt are scarce. Merely a few drawings of constellations can be found and representing in particular Sirius - and the Great Bear, called khepesch (or sometimes meskhetiu) since it is shaped like a leg of an ox. Fragments have been found showing the 36 decan-constellations (earliest findings from 2,300 BC) marking the Egyptians’ division in 36 sections of the ecliptic (the apparent course of the sun).

However, in the second and later tomb of Senmut (in the Thebes: no. TT353) the representation of the sky is more complete and stringent than in contemporary fragments which is shown by the main chamber’s adornment - the detailed astronomical and astro-mythological star map. This may be the first representation of an entire celestial system. This impressive map was both a landmark and represented an invention in Egyptian astronomy. The astronomical images found here may be the oldest and most comprehensive that we know of.

This unfinished, unused, and secret, tomb of Senmut was discovered in 1925 and was dated between 1500-1470 BC. The dating is further clarified and it appears that in 1493 BC the construction of the tomb ended abruptly. - A rather interesting fact about Senmut is that, despite his supposedly middle-class origins in ancient Egyptian society, he was able to equip his tomb in an elaborate way that not even a Pharaoh had been able to do till then. So the tomb’s most remarkable feature is its elaborate, complete star map, the oldest one in Egypt and without a parallel for 300 years after. After my thesis was propagated in 2000 it is called a star-map and no longer a decoration.

The mystery about the Senmut star map

It is true that a few star maps – usually in tombs of pharaohs - have been found in periods after Senmut’s version. For example, in the tomb of Pharaoh Seti I from the 1200’s BC, such an astronomical and astro-mythological celestial arrangement of stars is represented. In a later period from the time of Pharaoh Ramses II, there is still another map but not as elaborate as Senmut’s.

What kind of man might Senmut have been since he in these matters could compete on equal terms with - and even surpass - the pharaohs in this so important matter of that time? Could it be because of some special knowledge or position that he held? All traces and inscriptions reveal that although Senmut, besides having a profound knowledge of stars, he was somehow the country’s most esteemed man after Hatshepsut. However, it appears that despite support from high places in the kingdom, he mysteriously and suddenly fell into disgrace and disappeared into oblivion.

Probably it is the reason why Senmut never used his tomb. Indeed, there are obvious traces that
the work on the tomb was suddenly interrupted. Materials from the Senmut tomb reveal dates inscribed by the teams of workers. The last dates are from the time when the work was stopped and these contribute to pinpointing the time when he disappeared.

**The world's oldest known 'horoscope'?**

With regard to time and place, Senmut seemed to have lived in a period of religious expansion often issuing from the Thebes. The concept of Egyptian religion included a special, celestial relationship of cosmology and interrelated patterns of stars in the firmament. This cosmological expression of religion ties in with Senmut who seemed to have been learned in these aspects.

However, despite all his learning, it can’t be surmised that Senmut alone was the inventor of the complex division system of the celestial maps. These are known to be a result of a long tradition of star based chronometry ("star clock"). But apparently he has invented decisive improvements with extensions and innovations in construction of star maps. (Regarding details, cf. Ove von Spaeth’s book: "The Enigmatic Son of Pharaoh’s Daughter", the entire Appendix 2 is on this star map). 

This first, complete star map installed in Senmut’s secret tomb had set a fashion of which in principle was copied during the following 1,500 years in Egypt. However, a special motive - which in other star maps in tombs of later pharaohs and in the temples was gradually less emphasized and sometimes being disappeared completely - is originally the most dominant with Senmut: the World-axis. - As this axis is established by the three most brilliantly shining stars of the sky, i.e. Canopus, Sirius, and Lyra/Vega, this phenomenon should not be mixed up with the axis of earth. Together these three stars show the straight line across the sky along the shining Milky Way.

Although Senmut’s star map has the oldest picture of the World-axis known anywhere, it is often called “a mast” by the Egyptologists who have at all noticed it. Maybe the only researcher known to have recognized the World-axis on the Senmut star map was Ernst Zinner, German astronomer, astronomy historian, and Manager of the Bamberg Observatory. In his treatise, "Die Sternbilder der alten Ägypter" in the ‘Isis’ Science Magazine (1933, Vol. 16, pp. 92-101), he mentions it directly as "the World-axis on the star map" - few years after the finding of the tomb and its star map.

![The other part of the star map showing the World-axis where meshket (oxen shank), known to us as the Great Bear, turns around each day. Moreover, an overview of the 12 months’ cycle diagrams.](image-url)
A close-up of the god figures at the foot of the World-axis.

Most rare combination of planets only four times in 2000 years

Senmut’s star map constitutes also a celestial portrait, which in fact is the world’s oldest known ‘horoscope’ in the original understanding of this term which expressed “reading the sky” - especially in order to determine the time based on certain figurations of stars in the horizon. A close analysis of the inscriptions of Senmut’s star map reveals that almost all planets are gathered around the Sirius star and thus the World-axis. This presents a special information which can indicate a certain date - to be observed in the following.

The position of the planets and their special succession in the Sirius section of Senmut’s star map is such a rare combination that this individual form has only appeared less than four times in several thousand years in the celestial sector in question - e.g. in the case of Senmut: in May 1534 BC. It concerns all the years between 2200 BC and 200 AD having been examined (cf. analysis in the big table in Ove von Spaeth’s treatise about the star map, p.165 in Centaurus 42:3, July-August 2000).

Present research in this field, however, has not explicitly acknowledged these unique qualities of the Senmut map. It seems that the existing arrangement on the map regarding the planets has not been noticed even though the planets in question have been identified by Egyptologists. The main point here is that such a special grouping of planets in fact was to be observed in the sky exactly at the time of Senmut.

Other Egyptian star maps with the same kind of dating information

With the discovery of the dates encoded in Senmut’s starmap some traces were revealed and these could conceivably support indications of Senmut’s background and reveal hidden parts of his story. But first, many precise examinations of other Egyptian star maps disclose the fact that in the 1,500 years to follow, the versions of star maps were in many ways modelled after Senmut’s map. In the cases when the planets were gathered in a similar fashion around Sirius, they were often placed in a succession of minor difference.
The differences show in which way the planets were individually placed in the sky at the exact times to which these later star maps were made. Only in the latest periods of Egypt’s history, circumstances and conditions of a connecting time may seem a bit more incidental.

However, the time correspondence of the earliest maps is exact. Consequently, the dating of the Senmut map might be able to establish more correctly the very period of Senmut and his contemporaries: Hatshepsut and the Tuthmosis-kings. - Thus, based on visual statements of the star map, it seems evident that this period in Egyptian history of the 18th dynasty is often calculated as 20-30 years too late, if the so-called low-dating seen in works of many Egyptologists is being used, and according to which Pharaoh Tuthmosis III only ruled from the year 1479 BC - instead of the real time from 1486 BC (at Hatshepsut’s death) or from his coup d’état in 1493 BC.

The low-dating consensus, however, is also a passing trend. During more than 200 years of Egyptology studies (from when Napoleon’s scientific staff started off in 1799) it has often been tried to improve the dating which has thus been moved and redefined many times with intervals of approx. twenty years and when new generations of researchers arrived, a new datings were suggested - but still without a real confident result.

Besides, the star map contains further layers of astro-information! - for researchers in the future.

Anthropologist Max Weber founded the ‘Verstehen’-principle: that we can not describe a distant culture’s sociology, customs, art and rituals without understanding the meaning and very purpose. After my in-depth studies of antiquity’s star knowledge for calendars and astrology I much better understood the meaning of the Senmut star map’s contents. This is one of the keys to its decoding.

**Bibliography**  (regarding the star map) - orientating:


FAQ ON ‘DATING THE OLDEST EGYPTIAN STAR MAP’
SECTION 5

- Summary on the Treatise
- FAQ on 'Dating The Oldest Egyptian Star Map'
- I: Astronomy and Egyptology
- II: Egyptology and Astronomy
- III: Chronology and The Star Map
- IV: An Extraordinary Clue
- On Continued Debates
SUMMARY - on the Treatise about dating the Senmut Star-map.

FAQ ON ‘DATING THE OLDEST EGYPTIAN STAR MAP’

I: ASTRONOMY AND EGYPTOLOGY
1. Dating the Solar Eclipse
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II: EGYPTOLOGY AND ASTRONOMY
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6. Astronomical Plausibility of the Original Egyptian Data
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III: CHRONOLOGY AND THE STAR MAP
13. Senmut and The Chronology
14. Senmut's Star Map - the Oldest Known Celestial Map

IV: AN EXTRAORDINARY CLUE
15. The Exactness In General

On Continued Debates

Obs. NOTES ON SPECIFICS: By Decoding the Map’s Data It Should Be Recalled - 1) that the treatise on the dating contained in the star map does not state that a mentioned solar eclipse was observed in Egypt. The recording on the map only shows that the eclipse has in fact taken place; - 2) the treatise does not mention anything about a total eclipse. It is a fact that also annular or partial eclipses were recorded by the ancients.

Obs. NOTE-X: Expressions signifying planet Mars, - the treatise's translation p.166 concerning tms hntt (or tms(n) xnt.t by the Schenkel-system) has been disputed. We know the last of these Egyptian words, hntt, is always a noun. Accordingly, the translation would be expressed like “the red in (an) upstream-sailing” (cf., too, Erman & Grapow: Wörterbuch der Aegyptischen Sprache, Band 5, Seite 309). The early existence of several variants of this expression is well known, e.g. tms n hnt and tms n hnty etc. - Concerning planets connecting to the boats as depicted in their astronomical positions on the map, they express the nature of the planets’ movements (the treatise, p.164 and 166), the “upstream-sailing” constitutes a most excellent description (but not its name) of the red planet Mars (in its west-to-south position) and its sliding movement towards the southern sky, - as we know “upstream-sailing” as a common phrase connected with the sailing towards south, originally referring to the Nile stream, - cf. especially present pp.64-65. Ove von Spaeth ©
Summary  - about the treatise on the Senmut star map, with quotations by Ove von Spaeth from his text

Dating the Oldest Egyptian Star Map  (1000EN)

" Ancient Egyptian astronomy updated. The knowledge system in the field of astronomy developed by the Egyptians has proved surprisingly more comprehensive than previously assumed. According to scientific documentation and analysis in the treatise by Ove von Spaeth, the world’s oldest known star map - from a 3,500-year-old tomb at the Thebes in the central Egypt - includes information on a specific incident in the real sky. This map holds the evidence of the earliest exact recording of a rare celestial phenomenon. “

" The star map was considered by most scholars to contain a star-mythological setting but in fact it reveals a precise representation of a specific constellation of planets in the sky. This evidence suggests available data regarding a specific time. The reassessments of this map, and also of several later maps, therefore, provide a new orientation and suggest new perspectives especially in the matter of disputed chronological timing of the reigns in the 18th dynasty. The map contributes to date this period of ancient Egyptian history with greater accuracy. “

" The map, eventually well-known in Egyptology, was created by Queen Hatshepsut’s vizier, Senmut, who was also the official registrar of Egypt’s calendar in the country’s 18th dynasty (the15-1400’s BC). Essential astronomical aspects and features in the now decoded material of this map has been tested objectively based on modern astronomical calculations and analysis. On this basis, it becomes apparent that the Senmut map does not portray a random collection of planets or a replication of some pattern from earlier maps. “

" On Senmut’s star map, based on given information about a particular planetary conjunction within a defined sky sector, a distinct and clear point of time has been calculated - May 1534 BC. This dating is further supported by the map’s recording of a calculated solar eclipse (not visible in Egypt). Today’s astronomical dating methods are able to verify these data with the greatest possible precision and show how the world’s oldest star map can be described as one of history’s oldest known scientific achievements, the oldest scientific ‘report’. “

" The study concludes: the Senmut map depicts an exceptional event in the sky. This seems to have produced a prototype for all later pictures of similar celestial events. The following has been determined: 1) The Senmut map contains a cosmological and astro-mythological expression and it exists not only as decoration - as often assumed - but also as a picture of a particular and unique situation in the sky. 2) This configuration of the sky can be exactly dated: May 1534 BC. “

" Characteristics of the unique event regarding a planet demonstrated on Senmut’s star map, and documented on similar maps of the epoch of dynasties 18-19, shows “...is (its) traveling backwards”. This was a familiar phenomenon - the so-called backward, ‘retrograde’, motion of a planet. On Senmut’s map, we note that a planet is to be found located opposite to the sun all of which is a precisely correct tracing of the planet Mars. “

" Forgotten tradition: - Later Egyptian star maps were prepared for several pharaohs during the 400 years after the first map. These also showed features of the Senmut prototype - that is, a depiction of a particular planetary conjunction. The Senmut map, however, carries a unique feature: the planet Mars is here retrograde (backward motion as seen from Earth) in the west while the other planets are gathered around the star Sirius in the east. Probably there was been a tradition - now forgotten - that later star maps were produced only under the reigns of those pharaohs (as Ramses II) where a specific conjunction occurred similar to that of the Senmut star map. “

" The basic form of graphical arrangement of the planets on the Senmut map seems to have been created as his idealized, yet unique, representation of a particular celestial configuration. However, here is an outstanding evidence of a singular celestial event: Mars retrograde in the west. This event took place in Senmut’s era and, all together, only 4 times in 2,000 years. The basic pattern became normative for subsequent depictions. “
FAQ on 'Dating The Oldest Egyptian Star Map'

By OVE VON SPAETH - Copyright © 2000 - www.moses-egypt.net/star-map/senmut2-faq_en.asp

I:  Astronomy and Egyptology,  p.57
II: Egyptology and Astronomy,  p.60
III: Chronology and the Star Map,  p.66
IV: An Extraordinary Clue,  p.67

By his treatise, of July 2000, Ove von Spaeth introduces an astronomical method, developed (and published in brief) by him in 1984, for an exact dating of the star map of Senmut (Senenmut).

The treatise in question was published in "Centaurus International Magazine of the History of Mathematics, Science, and Technology", 42;3, 2000, pp.159-179. - The resulting date with its consequences for a more precise dating of historical events - not only in Egypt but also in ancient Near Eastern and Mediterranean cultures - may by its interesting perspectives contribute to a needed enhancement of the chronology.

* Observe: The following answers are connected to specific questions concerning the original text of the treatise and should not be quoted as completely independent statements. On their own, such statements may not in a satisfactory way cover the right context in full.

   From the libraries' article-bases the copies (digital, xerox, etc.) of the treatise can be requested concerning the above mentioned issue of Centaurus. It has the reference No. ISSN 0008-8994. Or the treatise to be downloaded via web-page "The Senmut Star Map Decoded".

* Observe too:
1. It might be useful noticing that Senmut’s star map was constructed and installed a number of years later than when the calculated and recorded celestial events took place.
2. Also notice that the map is recording even several celestial events having taken place individually at different times although they are still gathered on the same map.
3. Senmut's map design is by some principles the same as depicted on clepsydras ('water-clocks') but it is the first time to our knowledge that such a detailed big star map has been seen in total. Clepsydras seem to have existed prior to Senmut but have not been found.

I FREQUENTLY ASKED QUESTIONS - CONCERNING:

Astronomy and Egyptology

1. Dating the Solar Eclipse

A frequently asked question, which seems to be of special interest (though unimportant for the exact dating of the star map), is the dating of a solar eclipse in connection with the appearance of the planetary grouping shown on the Senmut star map. The map did not predict an eclipse - but indicates having recorded one.

First of all, this does not mean that the eclipse had to be visible in Egypt. A missing visibility should not be a condition to avoid notifying the eclipse on the star map. However, this is not what many critics wrongly have presupposed without scientific basis. According to some of these critics' calculations (done without advanced astronomic computer programmes or knowledge) the eclipse should instead have been observed in e.g. "the South Passific" - thus they create artificial problems. Ancient Egyptians were able to calculate or record the existence of the eclipse in any case. See additionary information in paragraphs 5, 9, and 11.
Furthermore, even a variation of plus/minus some hours for the eclipse appearance does not disturb the
dating of the celestial arrangement as depicted on the map. The fact that alternative methods of calculation
might make some difference seemed too obvious to mention. Nevertheless, it now seems that an added
note serving this purpose would have been appreciated. (And to the following, when somebody might
suggest alternative hours for the eclipse, this could not in any way be surpassing or changing the option
already given for the fixation of the hour).

NOTE (1a): COUNTING OF YEARS

Note, please, the fact that all years B.C. when appearing in Ove von Spaeth’s texts concerned
are counted without a year zero - thus, for the sake of historians and Egyptologists.
All this was established in order to be in accordance with historians’ older historic
references, materials, and whole tradition. A residual from Julian calendar style, for instance,
the year of 1534 B.C. will thus be equal to the astronomy-counted year of "minus"-1533.
This was done in favour of the historians and Egyptologists who may have more
difficulties by changing from one system to another, than in the case of e.g. astronomers
who can be helped by their special computer programmes.

2. The Precession

Some of the small variations and perturbations connected to the precession of the vernal equinox, in the
more precise details (cf. the Treatise's p.172), were not known to experts of astronomical calculation - i.e.
not till after ca. 1950. According to questions about this, it seems that it was expressed too shortly and
deserve further explanation:

The expanded account (also supported by Owen Gingerich, Research Professor in Astronomy and the
History of Science at the Smithsonian Institution) states that the experts did not have accurate values for
the secular acceleration in ancient time, and thus the correction between ephemeris time (for which the
ephemeris tables were made) and universal time (the observed quantity) was not precisely known. This
would have a considerable effect on the position of the path of totality for a solar eclipse, but comparatively
little on whether or not a partial solar eclipse could be seen.

3. The Delta-T Problem

Independent of the planet-calculation theories the most important matter is that the result strongly depends
upon the choice of formula of Delta-T for the ephemeris time. Regarding some specific technical questions,
problems similar to the one cited above, may arise when using the theories of e.g. Bretagnon or Chapront
and others, all making use of the best modern theories (contributed also by the most recent measurements
of the Moon's conditions of distance and velocity etc. - e.g. achieved by laser beams reflected from mirrors
placed on the surface of the Moon).

We only know of approx. 180 Delta-T values of the years from 1620 AD and up to around 2000 AD. (cf.
astronomers - a few - began to make records of their observations. From approximately 1660 the records
being more precise, and around 1750 the number of records extended sufficiently to make some simple
statistic calculations of Delta-T for this short span of time.

This scarce material of merely approx. 180 years without any regularity of the Delta-T values varying
between +124 to -6.7, naturally, is not possible to use as any safe base of calculating Delta-T the 3.500
years back in time.
Even extrapolations by the best of today's techniques are not able to produce a result just roughly precise. This uncertainty is why there already exist several ingenious theories for using Delta-T for going back in time! And they all end up with different results none better than the other. Formulae based on such theories as presented e.g. in "Nautical Almanac" are not, and never were, authoritative.

Surprisingly, very few take into consideration or even know about the existence of several competent but different theories. This goes, too, for ready-bought lap-top astronomy device as well as some even more powerful computer programmes of astronomy.

NOTE (3a): Some reformation of the Delta-T theories was worked out by the Bureau des Longitudes by Chapront-Touzé & Chapront (1988) and already by Stephenson & Clarke (1978) - both to be combined by K.M. Borkowski, cf. his paper "ELP 200-85 and the Dynamic Time-Universal Time Relation", Astronomy and Astrophysics (ISSN 0004-6361), vol.205, no.11-2, Oct. 1988, pp.L8-L10


To some degree these actions clearly have ameliorated the Delta-T function, though it is still somewhat far from being satisfyingly dependable concerning certain ancient historic astronomical questions.

Thus, a Delta-T value for ancient times is not possible to fix or extrapolate even to be 60-70 percent correctly, and nobody should have any firm "religious" beliefs that one of these values or figures - unavoidingly being "relative" - should constitute any "absolute" figure.

Calculations with one or another of these figures, as have been done frequently in modern literature on ancient time's astronomical phenomena - and from there, comparing the results with the result presented in the paper on Dating the Senmut Map, and then trying to show the latter being wrong, is not possible by a true scientific view.

4. Which Theory to Be Applied?

Moreover, by applying more recent improved formulae when calculating the time of an ancient eclipse, it would not always be sufficient just to select a fixed formula from some of the new publications on the subject. This is because the perturbations of the ephemeris time, over epochs of long duration, often are unpredictable: In order to arrive at a more realistic result, the method of using one formula for the years back to ca. 1600 AD, another for the years back to ca. 400 AD, and yet a third for going still further back, etc., will often prove preferable (e.g. Jean Meeus' "Astronomical Algorithms" [Richmond, Va., 1991 and later updating] would also be of some help).

The results of these kinds of methods, however, are not final and in the future, of course, new improvements will still be achieved. It will still be the case in the years to come: the ephemeris time still has no empiric fixed value, thus it is hardly possible to calculate/predict with a sufficiently high precision.

In order to cover a vast number of variations in the elements of planetary orbits, a full-scale operation of the collection of formulae, such as the one known as VSOP 87, would demand thousands of components of formulae for most of the celestial bodies; yet, in each case, a few hundred were sufficient when analysing the Senmut star map.

We must (also) emphasize F.R. Stephenson's excellent "Historical Eclipses" (1997). It goes far back, e.g. to be used in connection with the famous earliest solar eclipse of the Babylonian record (763 BC); and even for a fair dating of one of the oldest Chinese records of an eclipse (1050 BC). Stephenson's "Historical
Eclipses” is p.t. one of the best publications in this field, but still it must be borne in mind that the Senmut star map is 500-800 years further back in time.

As for the eclipse in the texts of the Senmut star map, nothing is said concerning the visibility of the solar eclipse. The important point, however, is that the conjunction of sun/moon (and here, as it turned out, as an eclipse) was recorded on the map at all.

II FREQUENTLY ASKED QUESTIONS - CONCERNING:

Egyptology and Astronomy

5. Ancient Egyptians as Skilled Calculators

Other questions concern the ability of the Egyptians to calculate the positions of celestial bodies and eclipses. Greek historian Diodorus Siculus stated (ca. 50 BC) categorically that the ancient Egyptian astronomers possessed the ability to predict solar eclipses. Greek author and scholar Plutarch (46-125 AD) related that the ancient Egyptians explained solar eclipses by the passage of the Moon between the Sun and the Earth in daylight hours. Further, the famous "Vienna Papyrus" describes lunar and solar eclipses and their implications and presents great knowledge of astronomy.

More so, Greek-Egyptian scholar and Father of Church, Clement of Alexandria (150-215 AD), relates to temple libraries containing a 36- (or 42- or even) 50-volume book-series "of Thoth" preserved by the priests of ancient Egypt - four of the volumes treating astronomical subjects. One book dealt with the "constitution of the Sun and Moon" and another "the conjunctions and variations of the light of the Sun and Moon". In these books it was axiomatic that it was a valued skill of the ancient Egyptian astronomer-priests to predict eclipses.

The books were collected by the founder of the Alexandrian library, King Ptolemy II, ca. 300 BC, from all of Egypt's ancient temple libraries - the texts being often from traditions far more ancient than any early Greek influence.

In 1930 some Italian archaeologists found an Egyptian temple library containing approx. 500 volumes beneath the 2,300 years old Tebtunis Temple ruins, in Fayum. Considerably many of the books concern astronomy and astrology. It is the only temple library of ancient Egypt of which substantial remains are preserved. (Today, most of the immense literary material is at the Berkeley and Michigan Universities, British Museum, and the Carlsberg Collection, Copenhagen).

By his access to similar ancient Egyptian sources and, of course, later Greek sources, the Egyptian-Greek historian, hieroglyph scholar, and stoic philosopher, Chaeramon of Alexandria - who ca. 40 AD was the chief librarian of the Alexandrian Library - wrote several treatises on the stars and about comets.

A small temple from Debod - in an area of Lower Nubia since 1960's permanently flooded - was originally constructed in 200 BC, conditioned to completely adapt the very old traditions of Egyptian temple architecture. However, today it is saved from the flooding and reconstructed in Madrid, Spain. In order to preserve what was a treasure of highest value also this temple has a special room, the temple library: pr mDAt, the 'house of books'. Like other similar known temple libraries, e.g. in Denderah and Philae, the Debod temple library contained texts of sacred contents, as well as astronomy, medicine, besides administration papers and inventory lists, etc. On the walls of the library room ancient graffiti showing
astronomical notes, diagrams and geometry, the golden section or ratio, etc. - a further physical proof of this culture's wide-spread organized astronomical knowledge.

The very existence of the precise planetary positions on the Senmut star map, and on other star maps of that era ca. 1500-1300 BC, demonstrates an expertise concerning the calculations of planetary positions. The fact that these maps include such details as a retrograde planet - Mars - and a solar eclipse position (proven to be exactly as stated on the Senmut map), exclude any possibility of coincidence.

A thousand years before the time of Senmut, the astronomer-priests were developing such skills by constant observation of the firmament, which necessitated the keeping of accurate records, especially with regard to calculating celestial positions and cyclic phenomena. The data were used for the sun- and star-related calendars as well as the "star clock". Records of such astronomical calculations, however, do not seem to have survived, although there are examples of very ancient calendars. But as documented by e.g. inscriptions - a planet "... travels backwards ..." - a retrograde movement of a planet placed opposite to the sun was a well-known phenomenon (cf. the paper's paragraphs 3 and 6, and note 3).

The precise positioning of planets by observing them, even in bright daylight, from the bottom of deep wells or shafts directly (and probably less by oblique mirror-reflection in a water surface in the well), was a widely known practice in all ancient cultures.

NOTE (5a): It has been doubted - under the modern time's drawback of historical knowledge - and has been called "a myth" that astronomers of ancient times were able to use wells/shafts at all, in order to make observations from them. Besides, especially Venus - and also e.g. Jupiter in some cases - can sometimes be daylight objects.

Plato (428-348 BC) mentions that the philosopher Thales of Miletus (ca. 640-547 BC) had an accident in a well while observing the stars. And the Greek author Aesop (ca. 620-560 BC) tells similarly concerning another astronomer in a well-shaft. An ancient apocryphal text from Syria, ca. 100 AD, which at that time was influenced by Christianity, tells about the magoi, i.e. some Babylonian astronomers and astrologers, who by observing a certain star (later called "the Bethlehem Star") by the mirroring water surface in a well in Northern Palestine, were able to calculate and find a certain local direction.

None of these events would be understood by contemporaries, if this practice was not well known.

Furthermore, today it is frequently forgotten that through the entire era of antiquity much of the important information was, quite normally, conveyed and preserved by presenting the very facts and data of the information as a dialogue or a mythically formed narrative.

One of the most learned and respected Greek scholars, Eratosthenes (276-194 BC), director of the great Alexandrian Library, calculated the circumference of the Earth by also using a great well shaft, with a staircase to the bottom - to observe the lack of shadows by the sun's meridian passage at summer solstice. This well - a Nilometer from ancient pharaonic times - is situated on the Elephantine Island in the Nile at Syene (Aswan) in Upper Egypt. However, today this event as well as the method are being claimed a myth by some academics.

On the contrary, the great thing is that there was a very ancient knowledge concerning the existence of the measure of the Earth's circumference - and also great that Eratosthenes from the said depots of knowledge was thus able to catch the information of this and the method to prove it, as measuring shadow angles was a very old practise in Egypt.

A great civilization during several thousands of years has, naturally, accumulated large amounts of knowledge. If it wasn't so, then we should be surprised instead of somewhat arrogantly claiming that things we, in the present, do not fully understand are just a myth - as in the case of accounts about the great knowledge of the ancients. Even the mathematical and astronomical skills may only represent a fraction of what they really could have known.

Furthermore, one of the oldest known Egyptian presentations of a planetary position, places Jupiter close to
the decan (celestial sector of 10-degrees) of Sirius. This dates back some 4200 years, and is recorded on a fragment of a starclock-diagram depicted inside a coffin-lid (on Heny's coffin) - one of the traditional methods of recording.

NOTE (5b): The application of geometrical calculations to the numbers in use by the astronomy implies a highly sophisticated stage of mathematic-geometrical skills by the ancient Egyptians. Indeed, this is confirmed by the mathematical (and geometrical) Papyrus Rhind, ca. 1650 BC.

Egyptian knowledge was famous - and in later times, Pythagoras coined his theorem of the right-angled triangle, ca. 550 BC, after having studied 22 years in Egypt (and some years in Babylonia too). - And Plato defined the Platonic solids, ca. 400 BC, after his 13 years of studies in Egypt, according to his pupil Eudoxus. - Especially Thales of Miletus brought geometry from Egypt to Greece and systematized it to an extend which became culminating in Euclid's work "The Elements", 300 BC. In the case of Thales it is interesting that the Egyptians de facto knew trigonometry with tangent etc.

The concept of $\pi$ was known in Ancient Egypt. Much later, around 250 BC, Archimedes of Syracuse found that $\pi$ is somewhere about 3.14 (in fractions, Greeks did not have decimals). The digits of $\pi$ never end, nor has anyone detected an orderly pattern in their arrangement. Furthermore, $\pi$ is a transcendental number, i.e. a number which can't be expressed in any finite series of either arithmetical or algebraic operations. $\pi$ transcends them. And $\pi$ is indescribable and unfitted to all rational methods to locate it.

For the present, we don't know to what extend this knowledge was perceived by the ancient Egyptians. When $\pi$ was applied to the more practical works all the conditions were not necessary to bring about.

Earliest known Egyptian written reference to $\pi$ occurs in the afore-mentioned Papyrus Rhind - cf. below, note 5c - a scroll made by the scribe Ahmesis of 15th Dynasty reign (Middle Kingdom era) of the Hyksos pharaoh, Apepi I.

NOTE (5c): The advanced levels of studies by the ancients were connected to the religious-mystical tradition, and in the Papyrus Rhind the opening words state about the document's own text that it is: "The Entrance Into the Knowledge of All Existing Things and All Mysterious Secrets".

This scroll presents 87 various mathematical problems and their solutions. Problem 48 and 50 concerns the area of a circle to be found by using - probably for practical reasons - a rough sort of $\pi$ (here, 3.16049): to let the area of a circular field with a diameter of 9 units be the same as a square (quadrilateral) field having a side of 9 units.

The scribe Ahmesis remarks that he has composed the scroll "... in likeness to writings made of the ancients ..." - in this case: the time of pharaoh Amenemhet III (1842-1797 BC). The 5.5 m long Rhind Papyrus scroll, found in the ruins of a small building in connection with the Ramesseum at Thebes/Luxor, was here acquired in 1858 by lawyer and excavator Alexander Henry Rind.

Several indications for the knowledge of $\pi$ exist and are going much further back in time, e.g. the 4th dynasty, 2500 BC, when integrated into the construction of the pyramids and their manifest star-positions-related orientation.

Moreover, a precise knowledge of $\pi$ was existing even before the pyramids, thus more than 4,500 years ago. An important Egyptian measuring-unit is the cubit, which has an exact pi-relation to another Egyptian measuring-unit, the remen. Here, 1 remen constitutes the radius of a cubit-square's circumscribed circle. Thus, these two standard measuring-units were more easy and correct in use than calculating by fragments.
By the Egyptian order of right to left: The celestial bodies’ localization on Senmut’s star map showing their placements to the left of the decans of Sirius and Orion.

Furthermore, the supposed position of the planet Mars placed in opposition to the sun will be on the other side of the sky by the constellation of the empty barge/boat. Its name *tms hntt* is not a name for Mars but it seems in this case also symbolically used for showing the location of Mars at this moment because it fits precisely with the true astronomical data of that moment.
6. Astronomical Plausibility of the Original Egyptian Data

Most often it would be a premature conclusion just to state that unexpected words or forms in a text from an ancient historical material derive from being wrongly written or copied. Other possible solutions should be examined thoroughly.

The observation that the Senmut-map presents a concrete celestial conjunction 1534 BC seems to be supported by the subsequent maps in the following centuries demonstrating that these conditions are reflected here, too. These maps use the Senmut-model, but probably due to small changes in the conjunctions - e.g. in connection with Mars - the pattern, accordingly, has been changed slightly.

Therefore, in most cases these differences were not caused by erroneous copying but by accepted and necessary flexibility. Only in much later times clues may point to astronomers being less involved, or not involved at all, at the construction of the maps often giving the impression of being slavish copies.

7. Translating the Expression Signifying Mars

The treatise's translation p.166 concerning tms hntt [or tms(n) xnt.t by the Schenkel-system] has been disputed. We know that the last of these Egyptian words, hntt, is always a noun. Accordingly, the translation would be expressed like "the red in (an) upstream-sailing" (cf., too, Erman & Grapow: Wörterbuch der Aegyptischen Sprache, Band 5, Seite 309).

Concerning the planets connected to the boats depicted in their astronomical positions on the map, expressing the nature of the planets' movement (cf. the treatise's p.164 and 166), the "upstream-sailing" constitutes the most excellent description of the red Mars (in its west-to-south position) and its sliding movement towards the southern sky.

This kind of literally translation would of course be less intelligible to e.g. historians and astronomers, to whom the inter-disciplinary information of the treatise is directed as well. Nobody except Egyptologists would have a chance of knowing that "upstream-sailing" was a common phrase connected with the sailing towards the South, originally referring to the Nile as the all-dominating orientation-axis South/North.

By this the translation, as presented in the treatise (p.166, "the red travels/sails southwarth"), provides a valid interpretation of the full meaning of the Egyptian expression, bearing in mind that it is not always possible to translate the Ancient Egyptian language into plain English in a "direct form".

8. The Mars-signification in Relation to the Age of the Senmut Map

Concerning the above mentioned tms n hntt on the Senmut star map - cf. the treatise's paragraph 3 - the following note may be added: The early existence of several variants of this expression is well known, e.g. tms n hnt and tms n hnty etc., several of which go back to the star clock diagrams belonging to the early coffin groups (ca. 2200 BC). However, the precise combination in our case, tms n hntt, seems to be found on the Senmut star map for the first time.

And it would not be possible to signify Mars by other variations hitherto known concerning the spelling and combination. In the actual situation Mars fits extremely well and with a very high degree of plausibility. Being aware that by itself this is no final proof - it is, nevertheless, a strong indicator well supported by astronomy (the precise location for Mars in opposition to the sun) as well as by the very context.
Furthermore, it is a fact that by the ancient Egyptian concept Horus is specifically represented in the bow of Ra's boat - as is Horus of the \textit{Dwa.t} - cf. tradition like in the "Pyramid Texts" 1000 years before Senmut's time.

This is coupled with the fact that the bow, \textit{knt}, of this boat is signified by almost the same name (cf. Egyptian tradition of widely using strong "word-plays") as the presumed Mars-boat on Senmuts star map. This is a name/word appearing elsewhere as \textit{Hr knt} which is an epithet of Horus as a star-god (cf. that in numerous cases Horus is used, too, as an indicator of planets) - all of this also signify the existence of Mars on the Senmut map, which accordingly is showing the true location of Mars in the real sky at the very time of the conjunction. You have to see more material about the whole connection in the treatise.

9. The Eclipse - Indications Also by Tradition

According to Neugebauer & Parker ("EAT III", p.113): "... the meaning of \textit{r't} is unknown ...". Yet, this condition seems to be excluded in case of looking at the whole context concerning the decans no.31-35 on the Senmut star-map. Here, in decan no.31 the hieroglyphs spell \textit{r't Hr} (\textit{iret Her}), i.e. "Horus' eye", the meaning of which has always been accepted also as "the eye of the Sun or Moon". Being aware that in several cases some decans may be submitted to the same god, this will have no influence on the matter being demonstrated here.

In Ove von Spaeth's paper in "Centaurus" (42;3, 2000) it is shown on p.171, by e.g. the authoritative translations of "Book of the Dead" that by being connected to the word \textit{jatet} the expression in question means "eclipse" in this source as well as in similar contexts. The word \textit{jatet} is not to be found in decan no.31 or its vicinity, but there are other signs (recorded in the paper) showing the astronomical proven eclipse, which is indicated on this map very exactly. The exactitude and reliability are due to the extraordinary professional construction of the Senmut star-map.

One of the bases for this step demonstrates that reasons of tradition and readability would prohibit Senmut from changing the names of the decans or make any essential additions to them to fit his purpose of marking the (astronomical proven) eclipse. His alternative option was to move decan no.31, and hereby the text "Horus' eye", the Sun/the Moon", to about 2-3 columns away to hit the exact spot on the map, in accordance with the, already proven, celestial position where the eclipse took place. (Senmut's moving of these decans is confirmed by Neugebauer & Parker).

In this way any professional and experienced ancient Egyptian astronomer, unavoidable, would have to be aware of the little, yet unusual break of the normal sequence of decans - and, further, from the decan's text to connect to the Sun and its conjunction with the Moon - thus becoming aware of indications of the special condition, namely the eclipse, which is precisely to be located by the new placement of decan no.31.

10. Confirmed by Tradition of Seti and Ramses

The paper of Ove von Spaeth brings to light, p.172, the indication brought about by Senmut's well known (Neugebauer, "EAT") "reshuffle" of decans no.31-35 within their limited celestial sector that his action has been provided in order to achieve several benefits to this map-construction by its expression of the actual celestial event.

Among these decans a special one seems to be demonstrating the eclipse. This is in full accordance –
and an elegant move too - with authoritative agreements about ancient Egyptian tradition (e.g. making unusual changes in the layout of a hieroglyphic text or in the features of a statue intending to present an extra meaning or message beyond what is contented in the ordinary text or figure).

Furthermore, this is supported by traces of the tradition's pattern or "standard" in the context. Also the similar conjunctions on later star maps - of Amenhotep III, Seti I, and Ramses II - include new moon exactly as in the true astronomical reality. One new moon being a solar eclipse (possibly visible) in the case of Rameses II.

11. The Eclipse Time - No Option Is Perfect

Concerning the visibility at any location it should be recalled, especially because of the unpredictable Delta-T (cf. above: section 3) that not even the newest formulas as well as the newest publications of solar/lunar-planetary tables are able to prove an exact time of appearance of an 3500-years-old eclipse. Therefore, it will be contra-productive to dismiss the eclipse-date proposed in the paper and then proclaim another eclipse-time to be "more correct" by a counting based on some other of the new tables.

As stated elsewhere, this eclipse does not have to mean anything for the exactness of the dating of the map, but once discovered it was too tempting to present this information.

The basic data and facts are found in the paper in question. Whereas the text, belonging to Fig.4 on p.173: "hieroglyphic signs for a solar eclipse ..." may benefit from being expressed as: "... hieroglyphic signs, which should lead to indications of the solar eclipse ...".

III FREQUENTLY ASKED QUESTIONS - CONCERNING:

Chronology and the Star Map

12. The Time Fixation Problem

To calculate or fix precise dating of the pharaohs of the 18th dynasty is a well-known problem, and questions have been asked about this in relation to the Senmut map. The matter is, however, quite outside the framework of the investigation presented in the treatise.

On p.171 it is stated that the problem deserves its own research (and may then be supported by the data of the star map, as the exactness of astronomy still being one of the best tools for fixing the drifting or relative dating of e.g. the 18th and 19th dynasty).

Concerning the 18th dynasty, Egyptology has so far dealt with "relative chronology" in lack of "absolute chronology". At the international scientific congress about "absolute chronology" it was demonstrated that astronomy confirms a high-date time-frame and is the most precise dating method. - Cf. Erik Hornung, & Wolfgang Helck, & Kenneth A. Kitchen, et al.: "High, Middle or Low?" I-II, Acts of International Colloquium on Absolute Chronology held at the University of Gothenburg 20th-22nd August 1987.

These inferences are supported by a substantial amount of dating-material based on already existing
scientifically exact time-measurements from archaeology, dendro-chronology etc. concerning ancient Eastern Mediterranean cultures. - Especially, the dating of the Santorini-vulcano's gigantic eruption as an important agreed-upon time-reference to history and archaeology (e.g., C. Hammer et al.: "Minoan Eruption of Santorini in Greece Dated to 1646 BC", Nature, Vol.328, 1987, pp 517-519 - naturally, with more reliable details than C-14 methods applied so far back in time). All of which will cause chronology of the actual period in Egypt to be moved about 15-30 years back in time (varying, depending on which of the Egyptologists' systems being applied). This, too, demonstrates to fit exactly with the result of the decoding of the Senmut star map.

13. Senmut and The Chronology

Questions about the conjunction of 1534 BC taking place already within the earliest years of Senmut's lifetime: The date of the conjunction fits easily with the star map being depicted about 35 years later, when Senmut was the high-ranking administrator of government under Hatshepsut. Likewise, similar conjunctions in the era of e.g. Seti I, Ramses II etc. appeared within their lifetimes and even within their reigns.

Astronomy states the time of the conjunctions depicted on several star maps, and the inscriptions showing their owners. To make these persons fit in, chronologically, is a task for Egyptology, not astronomy. As a first step the low-dating (in use by a number of schools of Egyptology) of the era in question should be dismissed.

14. Senmut's Star Map - the Oldest Known Celestial Map

The decans, star clocks, and star maps varied in lengths of traditions. Regarding traditions which are older than Senmut's star map, the treatise's text p.164 refers to sidereal clocks/calendars of the decan diagram-type. For instance, the information from the "Heny's Coffin" from the time of Old Kingdom (covered by p.164's reference to Pogo 1932) is, as a fact, not sufficient to make a real star map.

Another example is an astronomical diagram from the time of Middle Kingdom, mentioned by Osing & Rosati 1998 (not specified in the Bibliography in the treatise), consisting, too, of only pre-stage elements anticipating the real star map like the one found for the first time in the case of Senmut.

IV FREQUENTLY ASKED QUESTIONS - CONCERNING:

An Extraordinary Clue

15. The Exactness In General

Skepticism is of course indispensable as it contributes to our research by obtaining better information. Given that there is no safe way of extrapolating so far back in time, it would of course be risky to give the exact hour of an eclipse 3,500 years ago, as has been the case in the paper discussed. (It was intended to serve as an additional illustration of how precise the information of the Senmut map might be). As stated above,
it is of no significance for the basic dating of this star map. In any case, the general positions in the sky for the Sun, Moon, and all the planets are correct and unambiguous.

And here the rare and unusual clue provides further confirmation: the retrograde Mars is one (but not the only one, of course) of the most important factors! (We may recall that a retrograde Mars can be of great help - as it once, in quite another and greater matter, puzzled Tycho Brahe, and from him Kepler inherited this problem and investigated it further, ending up with his new system).

Errata. For the sake of good order it should be mentioned that minor misprints unfortunately appeared during the print editor’s formatting of the manuscript and again during the last phases of the printing-process of Centaurus 42:3 - but will certainly not be of any possible effect of changing the understanding of the context.

The cases can be found (in some of the first prints) at: p.159 Seinenmut, read Senenmut; p.164 12-month circles, read 12 month-circles; p.166 Hrt dsr, read Hr dsr; p.175 (at 1533 June 10:) "Rx" is, incorrectly, moved away from its connection to Mercury; p.177 Meus, read Meeus; p.178 Helk, read Helck; p.179 n.3 1497 BC and 1496 BC, read 1297 BC and 1296 BC - and n.5 Fourier and Galliot, read Fourier and Gaillot.

And in the next issue of Centaurus (42:4) in the Index for the year 2000, unfortunately, the paper in question is mixed up with another paper.

Ove von Spaeth Copenhagen, (Sep.2000) - December 2002

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Plan of the underground Senmut tomb II, of ca. 1495 BC, with the ancient star map, at the Thebes (Luxor).

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On Continued Debates

Some discussions by News- and Discussions-groups
(examples, in various languages, from the first couple of years):

1) - Debate on the Senmut map/Ove von Spaeth's treatise - discussion groups, in ENGLISH (altogether approx. 12 mesg.):

"The Hall of Ma'at" - Ancient History and Archaeology - Re: One for the astronomers? - http://www.hallofmaat.com
... 21930#msg-21806 , Jan.18,02 pm03:00(Dave Moore),... 21930#msg-2193 , Jan.19,02 am08:19(ST.Tonkin)...

2) - Debate on the Senmut map/Ove von Spaeth's treatise - discussion groups, in ENGLISH (altogether approx. 25 mesg.):

"HASTRO-L" - Archive of the History of Astronomy Discussion Group, the mailing list for scholars in this field: mb@astunit.com =] http://wvnvm.wvnet.edu/htbin/listarch?hastro-l&sa:scmcc.archives or http://listserv.wvu.edu/archives/hastro-l.html - start with the Jan-2002 archive:

The discussion began (the very first message determinated where there is no "RE:" in the Subject line) on Jan 19th 2002 by mb@astunit.com etc. => "Stephan Tonkin" etc.
- it is msg 145 for the month of January 2002,
- =] and the next: 148 mb@astunit.com 01/19/2002 13:17:03 The Senmut ceiling star map - ... e.g. Messages Nos. ... (some of van Gent's and Conman's msg:) ... 165 ... 179 ... 183 ... 187... etc., ...

Several contributions are pro - fully or to some degree - the von Spaeth line. Above, the HASTRO-L quotations of 'contra' forms are exposed from "worst cases" only. - Altogether the exchange of messages - approx. 25 mails - continued in February and March 2002 also.

3) - Debate on the Senmut map/Ove von Spaeth's treatise - discussion groups, in RUSSIAN (altogether approx. 8 mesg.):

http://hbar.phys.msu.su/gorm/wwwboard/messages47/17700.html - 02 October 2002 at 00:36:15
http://hbar.phys.msu.su/gorm/wwwboard/messages47/17702.html - 02 October 2002 at 01:26:59 (Dimitrij Gusjev)
4) - Debate on the Senmut map/Ove von Spaeth's treatise - by other groups, in ENGLISH (altogether approx. 20 mesg.):

This specific discussion began 20 December 2003 at 02:58 by R. Avry Wilson ( avry@telusplanet.net ) post 153270, &
http://members.fortunecity.com/ravrywilson/senmut.htm

=> the thread concerning the Senmut star map and Ove von Spaeth was continued by Cesar ( CesaNostradamus@aol.com ) post 153398, 24 December 2003 at 04:42 with http://www.grahamhancock.com/phorum/read.php?f=1&i=153586&t=153270 ...etc. => ... 15703 ... 157209 ... 15803 ... 19909... etc., ... - approx. 20 mails - continuing in January 2004 also.

5) - Debate on the Senmut map/Ove von Spaeth's treatise - discussion groups, in ITALIAN (altogether approx. 8 mesg.):

http://www.newsland.it/nr/browse/it.scienza.astronomia/34408.html - 14 July 2005 at 14:36:04 (Trystero & Diego Coughi)
http://www.newsland.it/nr/browse/it.scienza.astronomia/34410.html - 14 July 2005 at 17:42:36 (Sao & Diego Coughi)
http://www.newsland.it/nr/browse/it.scienza.astronomia/34428.html - 14 July 2005 at 22:08:27 (Sao & Diego Coughi)
http://www.newsland.it/nr/browse/it.scienza.astronomia/34459.html - 15 July 2005 at 20:21:01 (Trystero & Diego Coughi)
http://www.newsland.it/nr/browse/it.scienza.astronomia/34463.html - 16 July 2005 at 08:30:05 (Sao & Diego Coughi)

6) - Debate on the Senmut map/Ove von Spaeth's treatise - discussion groups, in ENGLISH (new thread):


... The very Debate about the Senmut star-map is continuing on the Internet on several other web-sites ...

*www.moses-egypt.net*

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"... Our knowledge of the past is much more abundant than normally anticipated. Many concrete historical data about what we frequently call myths are available in many of the world's libraries and museums - unfortunately, not often studied, simply gathering dust. - My projects comprise new orientation in the collected data of which some parts in modern time were in jeopardy of "disappearing". Important Information contained in the material from history will again benefit in the future. ...."

- Ove von Spaeth - www.moses-egypt.net

INTEREST GROUP FOR THE OVE VON SPAETH PAPERS
www.facebook.com/groups/45399163234/
ABOUT THE AUTHOR - AND RELATED PUBLICATIONS
SECTION 6

- Author’s Afterword
- The Treatise accessible in Central Libraries at International Scientific Institutions
- About The Author, Editor and Archives - and his related media
- Related books by Ove von Spaeth
Author’s Afterword

In 1927, during his discovery and excavation of the second tomb of Senmut - the important Egyptian dignitary from the 18th dynasty - the American Egyptologist H.E. Winlock discovered a unique celestial decoration in the ceiling. The tomb, hidden beneath the Deri-el-Bahari temple place, appeared to be relatively intact since its construction at the time of Queen Hatshepsut, around 1500 BC.

Based on my studies in the history of ancient astronomy, I discovered that the ceiling picture was more than a mythological decoration of the night skies. In fact, it was a star map with a detailed configuration and positions of planets and stars. I have explained this in my treatise, “Dating The Oldest Egyptian Star Map” (Centaurus International Magazine of the History of Mathematics, Science and Technology, Vol.42:3, pp.159-179, 2000).

The map shows a rare planetary constellation in a certain sky sector that has recurred only four times in 2,000 years. This fact is a further indication that a connection between a real conjunction in the sky and the mapping of the planet pattern was deliberate and intentional.

We know of some earlier Egyptian depictions of single constellations. However, in the case of Senmut’s second or secret tomb, it seems to be the first known complete star map from ancient Egypt. The Senmut map depicts an exceptional event in the sky. This seems to have produced a prototype for all later pictures of similar celestial events - but with a singular exception - in the Senmut star map, the planet Mars is retrograde in the west and the other planets are assembled around the Sirius meridian in the east. During the course of the next 1,500 years, this pattern in the sky was at certain times imitated in other star maps in the tombs of later Pharaohs and in the temples.

So far, it has been demonstrated:
1. The Senmut map is a cosmological and astro-mythological expression and not only a decoration – as assumed, so far. It is an unambiguous picture of a particular and unique situation in the sky.
2. This configuration of the sky can be exactly dated: 1534 BC. Furthermore, one particular day can be identified if the solar eclipse is included as indication.
3. Egyptian astronomy 3500 years ago included knowledge on retrograde planet movements.

In addition, this star map may contribute to a better dating of its creator, Senmut. It reveals a time-picture of the contemporary Egyptian pharaohs - at least accurate to within a decade.

Also, it appears that there is a special or dominant motif on this map. This motif was gradually less emphasized and sometimes even elided completely. This motif in the Senmut star map is the World-axis. This axis appears in the skies as a result of an alignment of three most brilliant stars in the sky, i.e. Canopus, Sirius, and Lyra/Wega. This axis in the skies
should not be confused with the concept of the earth-axis. Together, these brightest three stars constitute a direct line of sight along the shining Milky Way across the sky. 3,500 years ago, the sun passed the World-axis at a time corresponding to the beginning of May.

Although Senmut’s star map contains the oldest picture of the World-axis known anywhere, the axis was called “a mast” by few Egyptologists who had noticed it. One of the first persons to have recognized the World-axis on the Senmut map was Ernst Zinner, a German astronomer and historian as well as manager of the Bamberg Observatory. In his treatise, “Die Sternbilder der alten Ägypter” in the “Isis” Scientific Magazine (Vol.16, 1933, pp.301-325), few years after the finding of the tomb, he mentions the World-axis on the map.


The Senmut star map was not too well known. However, after the publication, in 2000, of my printed treatise about the map dating, I republished it on my web site (still located there), www.moses-egypt.net, in January 2001 - and the situation changed. The publication seemed to have made a change that the Senmut concept is mostly named now as “star map” and not “celestial decoration”.

In my work with the treatise, I consulted other experts of both Egyptology and of ancient astronomy. Generally, in studies of history dealing with old records, historians have used the so-called Julian calendar, while astronomers for their computing prefer a calendar which includes a “year zero”. In my treatise, I have used the Julian calendar in order to conform to the research methodologies of historians. Astronomers can easily compute and change the counting of years to their alternative system.

Regarding my own situation, I can say that my studies and investigation of the Senmut map led me to deeply study Egyptian culture - especially of the 18th Dynasty - long before I actually published my treatise. After intensive work with a wealth of Egyptian sources, I ended up publishing five books on the subject in relation to the historical Moses. In addition, this work was based on much historical and astronomical information contained in the ancient Rabbinical Writings and many other sources of antiquity.

Furthermore, during my work with the Egyptian star map, I was also led to investigate all known historical materials about various concepts of the World-axis. From these materials, I also later published books about the axis. In our times, this is a little known subject although it had an important role in the cosmology in all ancient cultures.

I am grateful for receiving many interesting comments and opinions - all participating in broadening the concept of this star map from an ancient and very great culture. In addition, I have discovered that the map contains several layers of further information and in the future those secrets are waiting to be revealed. For me, it has been a very interesting journey so far in experiencing a crucial part of the knowledge of our distant ancient world.

Ove von Spaeth, 2015
The Treatise accessible in **Central Libraries at International Scientific Institutions**

The "Centaurus International Magazine of the History of Mathematics, Science, and Technology" (established 1950/51) has - as not unusual for exclusive topics - a limited number of copies and subscribers. However, an offprint-issue of *Ove von Spaeth’s paper* (origin. in Centaurus, vol.42, 2000) on the Senmut Star-map, and with a FAQ-list added, is accessible world-wide at numerous main libraries. His publication in 2000 made the designation be changed from star decor to star-map.

- **Historical Astronomy Division of the American Astronomical Society**, Washington DC, -
  & **Louisiana State University, Department of Physics and Astronomy**, -
  [http://www.aas.org/~had/biblio.html](http://www.aas.org/~had/biblio.html) & [http://www.aas.org/~had/ASTRO22.html](http://www.aas.org/~had/ASTRO22.html)

- **Oriental Institute, University of Chicago**, Research Archives, - [www.oilib.uchicago.edu/oilibcat.html](http://www.oilib.uchicago.edu/oilibcat.html) & - [www oi.uchicago.edu/OI/DEPT/RA/Research_Arch_Guide.html](http://www oi.uchicago.edu/OI/DEPT/RA/Research_Arch_Guide.html)

- **La Bibliothèque d’Égyptologie, Collège de France**, Paris, Cabinet d’Égyptologie, -

- **Biblioteca de Humanidades de la Facultad de Geografía e Historia de la Universidad Complutense de Madrid**, Spain, - [www.ucm.es/info/antigua/gerion/p2001Publicaciones.htm](http://www.ucm.es/info/antigua/gerion/p2001Publicaciones.htm)

- **The Welcome Library for the History and Understanding the Medicine**, London, England -
  [http://library.wellcome.ac.uk/resources/cw/archive/oct00-synopsis.rtf](http://library.wellcome.ac.uk/resources/cw/archive/oct00-synopsis.rtf)

- **Research Laboratory for Archaeology and the History of Art, University of Oxford**, England, -
  [www.absoluteastronomy.com/reference/research_laboratory_for_archaeology_and_the_history_of_art](http://www.absoluteastronomy.com/reference/research_laboratory_for_archaeology_and_the_history_of_art)

- **Library of Specula Vaticana (Vatican Observatory)**, Castel Gandolfo - V-00120 Città del Vaticano Italy, -
  (via) [http://clavius.as.arizona.edu/vo/R1024/Headq.html](http://clavius.as.arizona.edu/vo/R1024/Headq.html)

- **The Harvard-Smithsonian Institution**, Astrophysical Observatory, Cambridge Mass., -

- **History of Science Department, University of Aarhus**, Denmark, -

- **Department of Theoretical Physics, University of Lund**, Sweden, - [http://www.thep.lu.se](http://www.thep.lu.se)

- **Danish National Library of Science and Medicine, University of Copenhagen**, Denmark, -
  [http://www.dnb.dk](http://www.dnb.dk)


  - Libraries of Universities of - Cracow, Moscow, Beijing, and Tokyo, etc.
  - A great number of Libraries at other Scientific institutions of history, astronomy, and Egyptology, e.g. in Germany, Belgium, South Africa, and Egypt (Library of the Luxor Museum).
About the Author  Ove von Spaeth - History and Science: Rediscovery, Insight, Renewal.

Author and researcher Ove von Spaeth is internationally recognized for his inspiring magnum opus with news about the historical Moses and ancient Egypt and its mysteries. The author is known also for its many other new orientation texts built on a solid basis of historical and astronomical studies. He is further recognized for establishing a methodology which for the first time dates the world’s oldest star map with extremely accurately and new contributions to chronology of Moses in Egypt.

For decades the author has conducted extensive research in Egyptian history, archeology, religion, anthropology, ancient star knowledge, mystery teachings and mythology. He has, for example, prepared the critical notes with the introduction and dictionary for Gunnar Raman scientific, Danish edition of “Patañjali’s Yoga Sutras” and their classic comments. Furthermore, he has calculated and delivered astronomical keys to the accurate but earlier enigmatic dates that occur in Tycho Brahe’s great Latin poem (Peter Zeeberg’s edition, 1994), “Urania Titanía”.

”... Regarding Ove von Spaeth’s book-series about the historical Moses and ancient Egypt: it comprises 25 years of concentrated research and the results released in 5 unique works and the pioneering work on dating the world’s oldest star map (Egyptian). It is the most ambitious undertaking of research in the genre of religious-cultural and historical studies... it is also the most comprehensive interdisciplinary science project in this field carried out by an individual.”

- Hans Baron Anckarstjerna, Historian, Editor DJF, Swedano Journal.

”... Ove von Spaeth is knowledgeable of historical sciences and possesses amazing knowledge, but I am more astonished by everything else he is in addition: surprisingly well informed on astronomy, philosophy, history from antiquity to the present, legends, traditions, sagas and myths, studied in the Bible, and linguistically oriented in Hebrew, Greek, Latin and more. - But among the best attributes of all is Ove von Spaeth’s ability to intuitively pursue comparative, unprejudiced studies and research so that every source and aspect illustrates the matters and makes his texts as important - and valuable. This is more than good - it is unique excellence. ...”

- Henning Breindahl, Writer, Member of Dansk Forfatterforen. (DFj) (Society of Danish Authors).

MOSES * EGYPT * SPAETH

THE OVE VON SPAETH AUTHORSHIP

web-site  •  www.moses-egypt.net

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"DATING THE OLDEST EGYPTIAN STAR-MAP", - a treatise by OVE VON SPAETH


* The World's Oldest Star Map Decoded: The first presentation and analysis of so far undiscovered data in this ancient star map. It is of special importance to ancient history, astronomy, Egyptology, and also with influence on chronology and related science in Egypt and Ancient Near East.

* Scientific analysis of an unique Egyptian celestial depiction in a 3,500-year-old tomb. The map's configurations were considered mythic representations, are depictions of a rare gathering of planets in well-defined celestial positions. The information c in the map refers to a specific point of time.

* Re-evaluation of this and of subsequent maps, together with the data contained therein, gives birth to new perspectives. Appropriate chronology of the epoch may now be dated by greater precision.

* * *

"STAR KNOWLEDGE FROM ANCIENT EGYPT", - by OVE VON SPAETH

* The original understandings of the starry night sky in Egypt's 5,000-year-old culture is more far-reaching or integral than assumed, - and astronomy was infused with philosophical religious ideas.

* The Egyptian temple archives contained impressive records and knowledge on advanced geometry.
* The Senmut Egyptian star map, dating back 3,500 years, was considered by most to convey a star-mythology with little relevance to astronomical factuality. However, in the present author’s analysis including astro-mathematics and several other ancient Egyptian star maps, it revealed a precise representation of a specific constellation or conjunction of planets in the skies. In fact, the map thus contains valuable information of a specific point of historical time.

* An array of experts and researchers commented on Ove von Spaeth’s discovery and his reassessment of this star-map and the information in other subsequently produced maps in ancient Egypt. These comments and opinions are included in this compendium together with extensive answers to 15 key questions about the conditions for the dating of the ancient star-map.

* The facts revealed by these precise data suggest new perspectives on the subject and help to clarify matters of much-disputed chronology regarding the period in question: a dating of the main chronological sequences of the 18th Dynasty era with a greater precision is more amenable.