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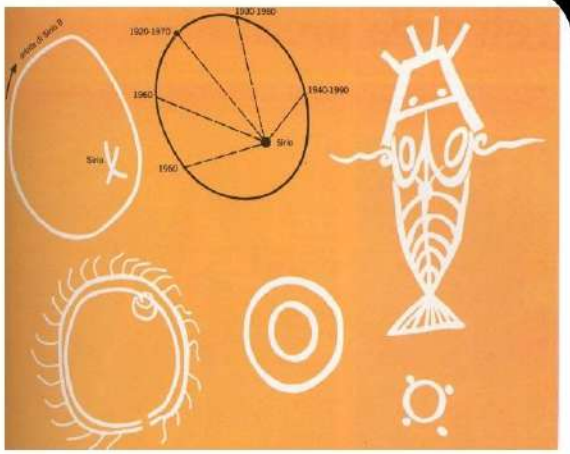

Aspetti dell'astronomia egizia, cinese e dogon
Appunti schematici

Mahougnon Sinsin

Khepert-Ankhu

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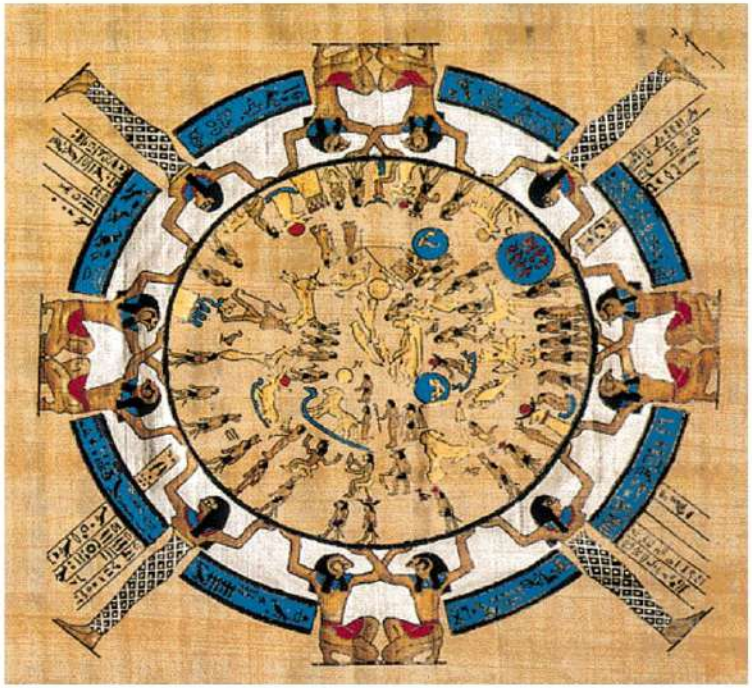
L'Astronomia Egizia



Alcune scoperte e realizzazioni

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-Concezione dell'infinità dello spazio (ḥrt pt)
-L'immensità del cosmo
-La concezione sferica e il moto della terra
-La velocità estrema del percorso della luce solare
-Il calendario (365 giorni, con i cinque giorni epagomeni)
-Le tavole stellari
-Le comete (Aristotele vanta i meriti della scienza egizia sulle comete)
Lo zodiaco e le costellazioni
-La previsione matematica degli eclissi
-Gli orologi lunari e solari
-L'orientamento astronomico delle piramidi
-Registrazioni delle osservazioni astronomiche

L'osservazione dei pianeti

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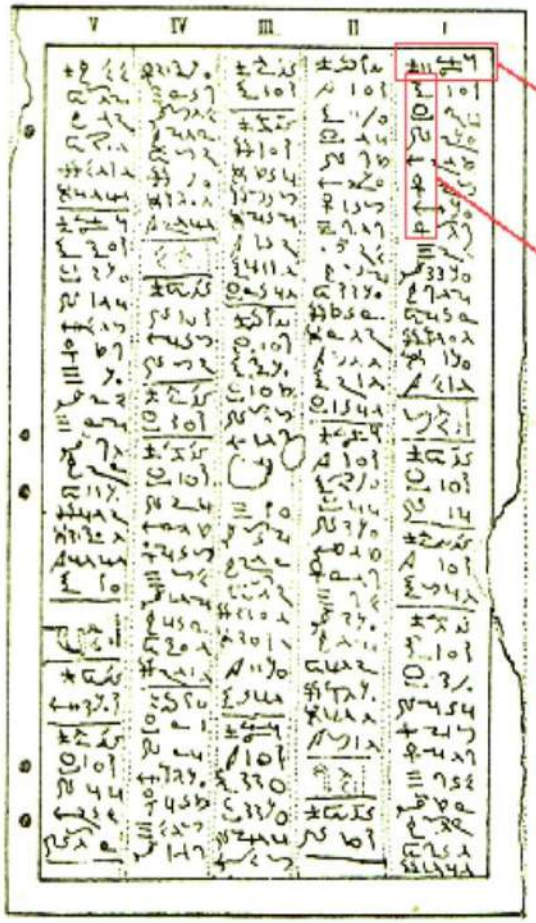


Sebek = Mercure

Signes (Vierge, Balance, Scorpion, Sagittaire, etc.)

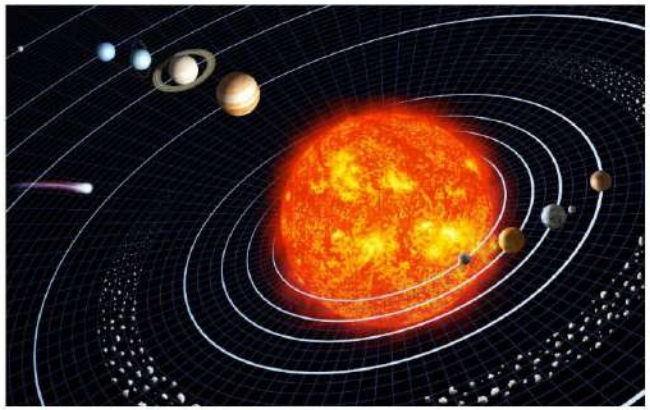
Lecture :

La planète Mercure est entrée dans la Vierge le premier jour du premier mois de l'année.

--- dans la Balance le neuvième jour du deuxième mois.

--- dans le Scorpion le vingt-neuvième jour du même mois.

--- etc.



Tablette de plâtre, découverte par Brugsch, datant du Ier siècle où se trouvent consignées des observations relatives aux positions des cinq planètes visibles à l'oeil nu, pour une durée de vingt-huit ans...

Le plus ancien écrit relatif au lever héliaque de l'étoile Sirius. Temple de el-Lahoun (ca 1800 a.C)

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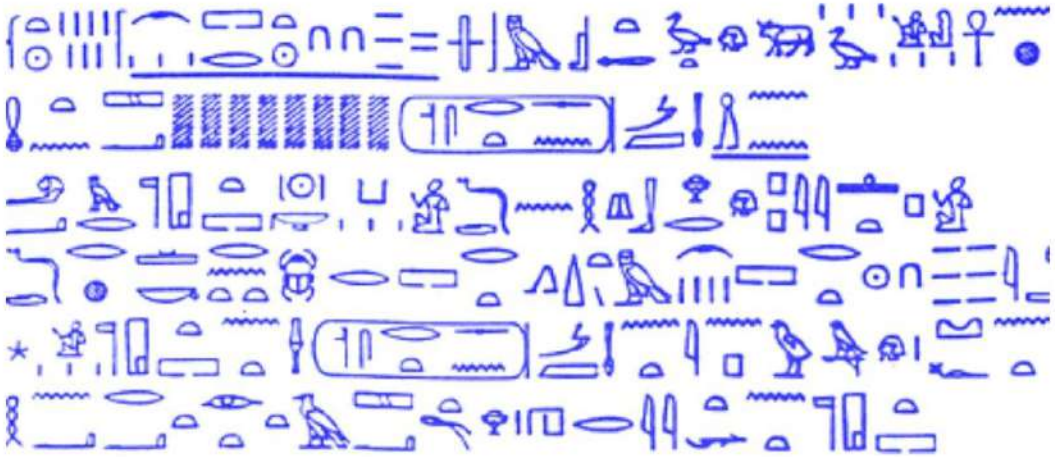
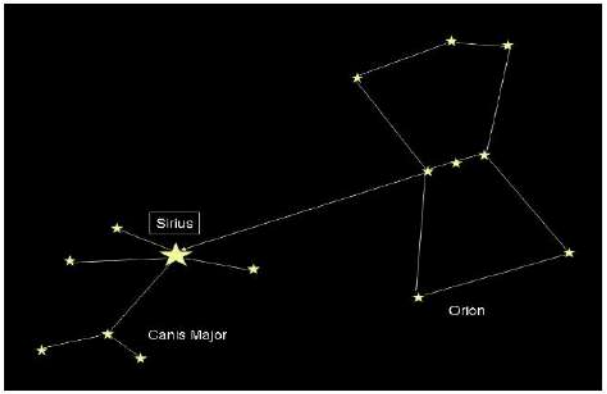
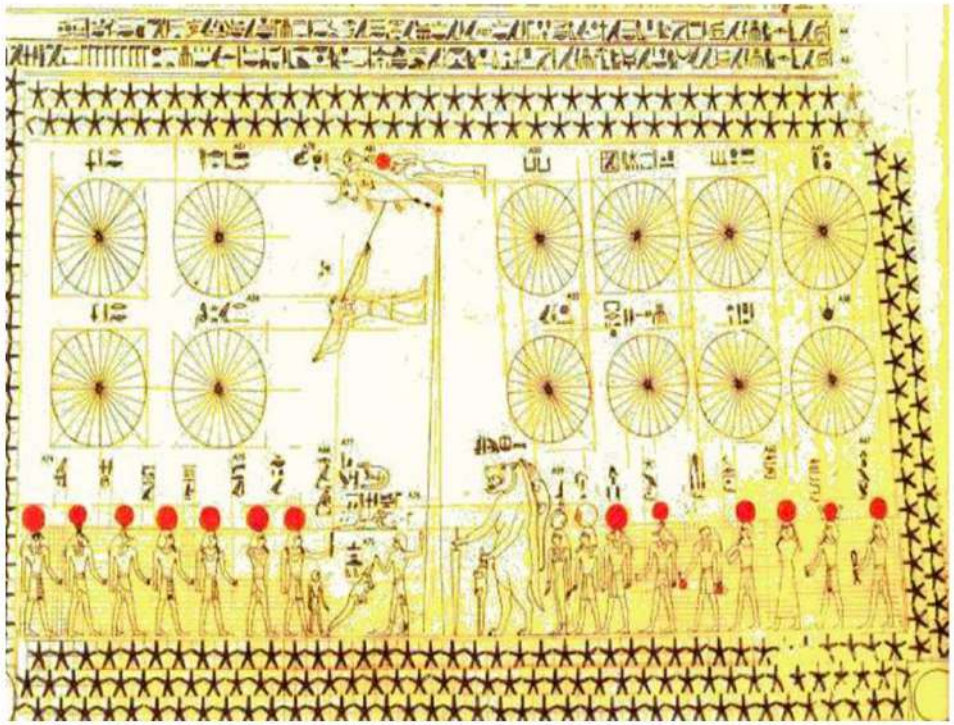
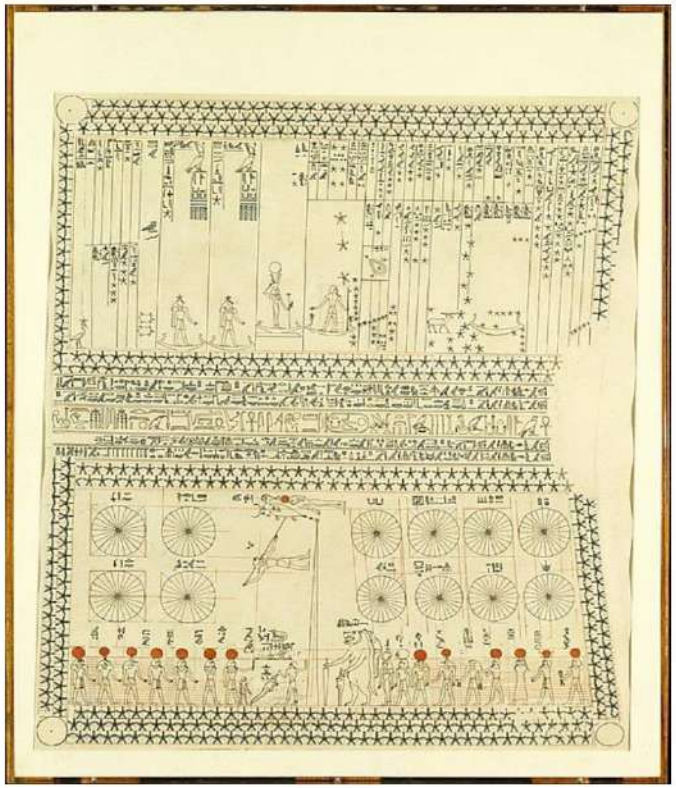




« Année 7 [du règne de Sésostris ?], [Mois] III [de la Saison] Peret, Jour 25 ...
Le Prince en charge du Temple Nebkaurê dit au Prêtre Lecteur en Chef Pepyhotep :
« Tu devrais savoir que la réapparition (i.e., le lever héliaque) de Sothis se produira le [Mois] IV [de la Saison] Peret, Jour 16 ... Tu devrais en informer (?) les prêtres non-initiés du Temple de la cité nommée « Puissant est Sésostris le Justifié » et [du Temple] d'Anubis et [de celui] du dieu-crocodile ... Et fais en sorte que cette lettre figure sur la tablette des annonces du temple. » (Clagett, 1995, pages 321-324).





Astronomical Ceiling, Tomb of Senenmut, Thebes, Upper Egypt -
Dynasty 18, Joint reign of Hatshepsut and Thutmose III, ca. 1479–1458 B.C.

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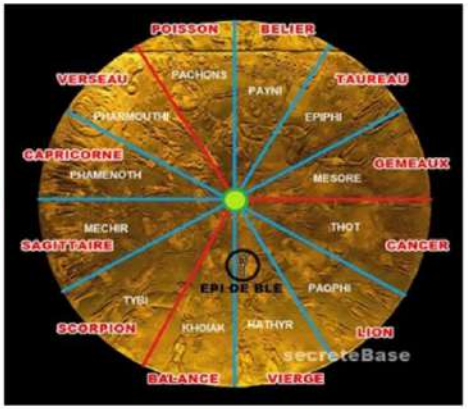
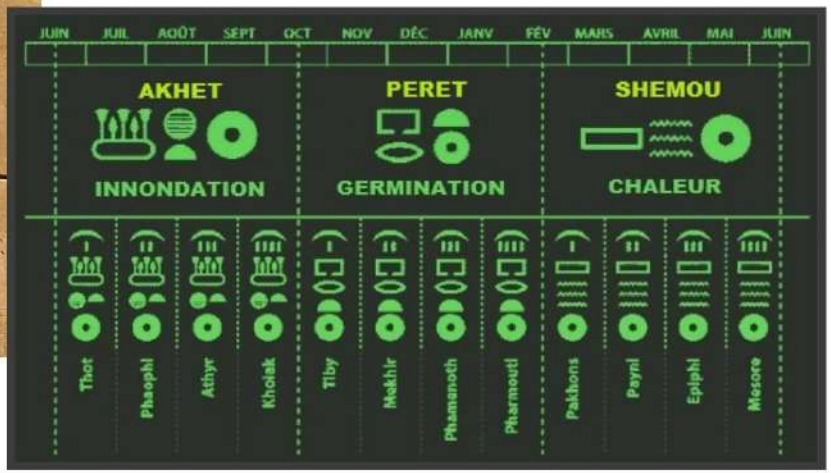


Lo zodiaco di Denderah



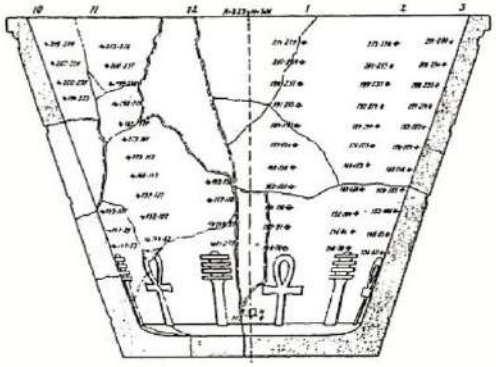
Il calendario egizio (Karnak)

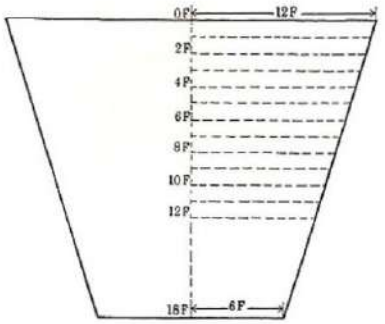
Jours épagomènes				SHEMOU											PERET												AKHET												SAISONS
				12			11			10			9		8			7				6			5			4			3			2			1			MOIS
40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	DECADES
A	25	13	1	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	1
B	26	14	2	A	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	2
C	27	15	3	B	A	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	3
D	28	16	4	C	B	A	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	4
E	29	17	5	D	C	B	A	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	5
F	30	18	6	E	D	C	B	A	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	6
FORMULES D'OFFRANDES																																							
G	31	19	7	F	E	D	C	B	A	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	7
H	32	20	8	G	F	E	D	C	B	A	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	8
J	33	21	9	H	G	F	E	D	C	B	A	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	9
K	34	22	10	J	H	G	F	E	D	C	B	A	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	10
L	35	23	11	K	J	H	G	F	E	D	C	B	A	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	11
M	36	24	12	L	K	J	H	G	F	E	D	C	B	A	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	12
Désignation des étoiles																																							

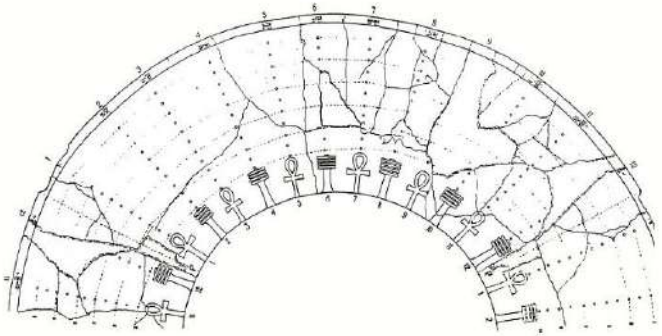
HEURES de la NUIT

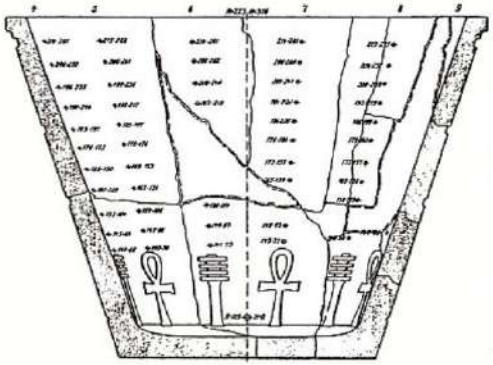
Horloge décanale et table stellaire de Mesheh (IX Dinastia)

Khepert-Ankhu



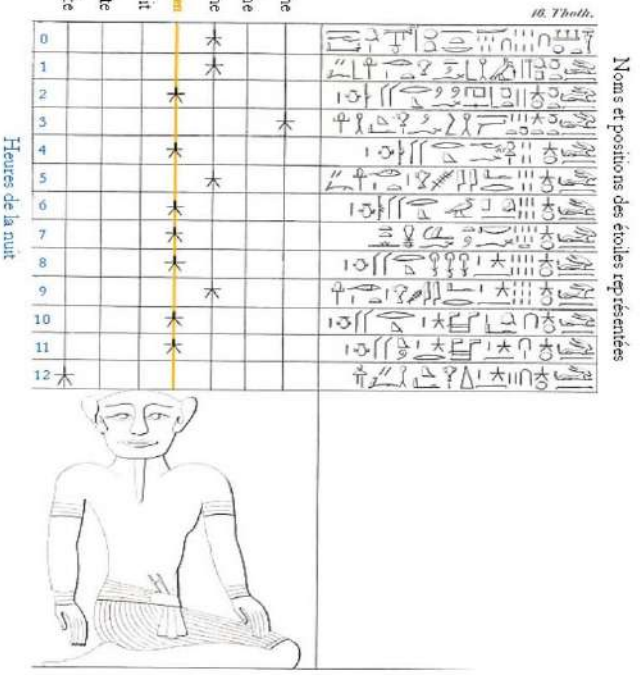




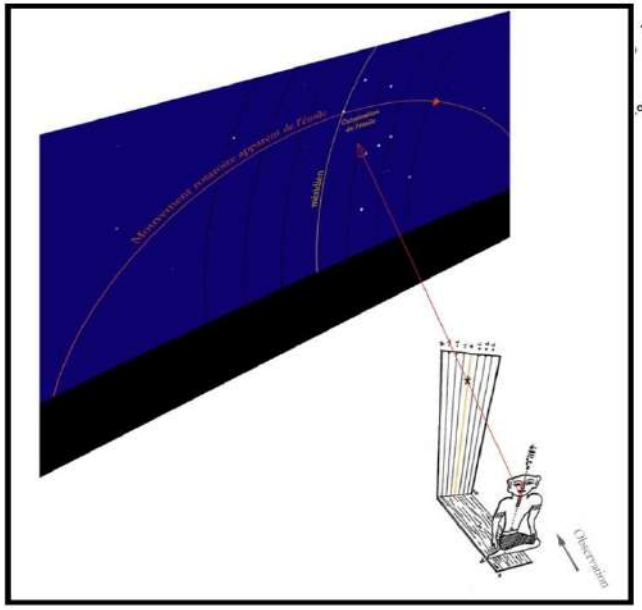


Une clepsydre égyptienne. Cette horloge à eau indiquait l'heure à l'aide des douze petits trous à l'intérieur.
L'heure était calculée grâce au niveau de l'eau s'échappant par le bas (1400 a. C.)

Khepert-Ankhu



Horloge stellaire qui donne la position des étoiles pendant la nuit. Tombeau de Ramsès VI (1145-1137 a. C.)



Fonctionnement d'un observatoire stellaire ramesside (le méridien est en orange)

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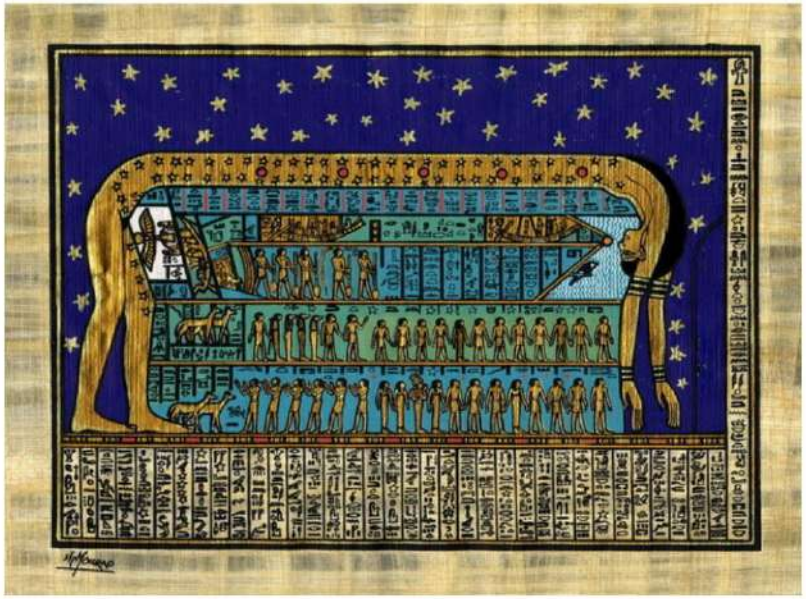
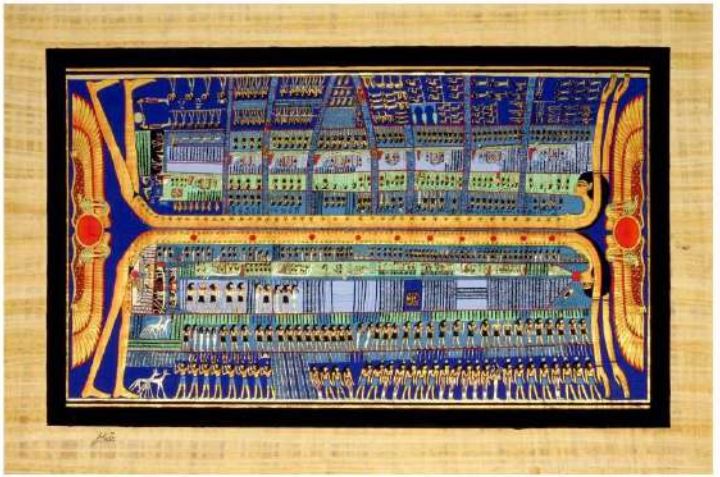
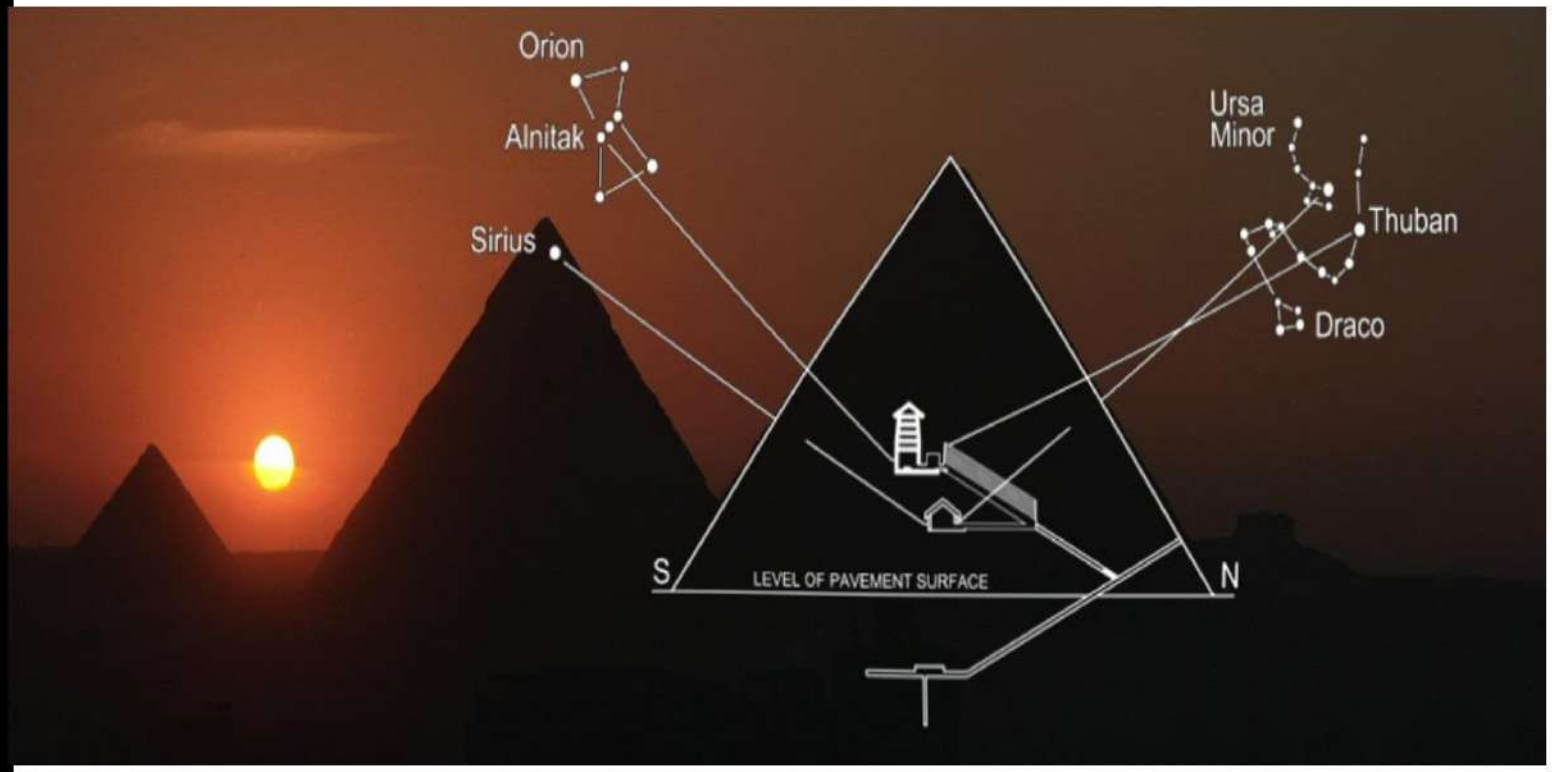




La volta celeste



Orientamentamento astronomico della Grande Piramide di Kefru

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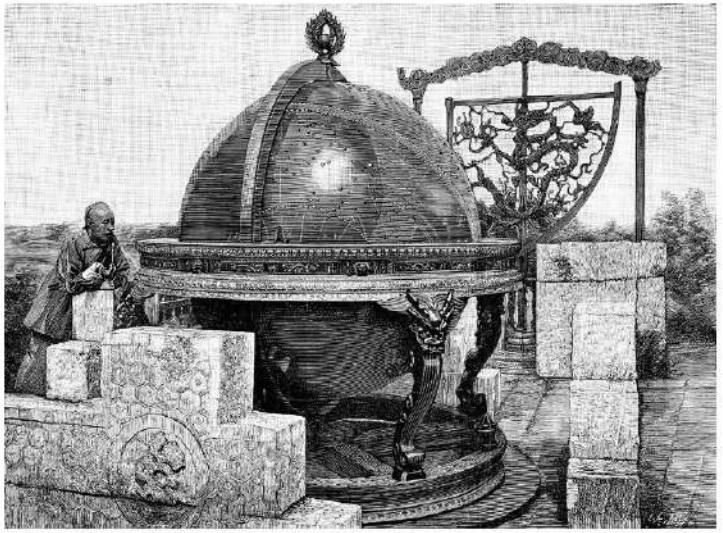
L'astronomia cinese



Alcune scoperte e realizzazioni:

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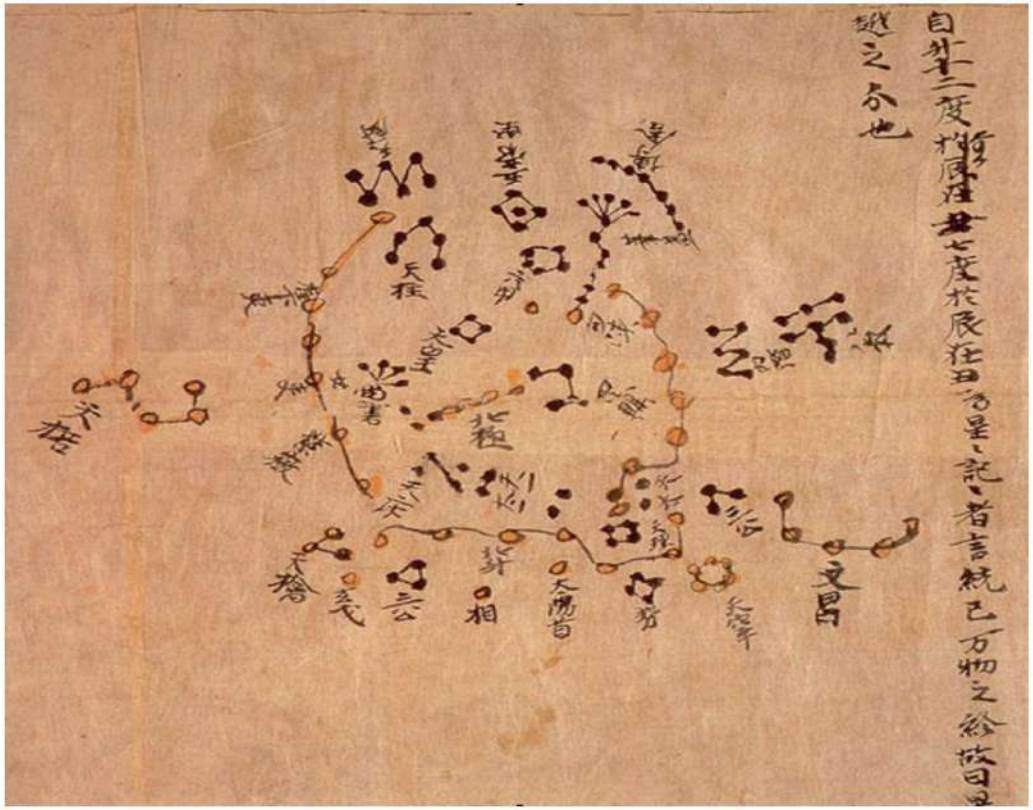
-Il calcolo della durata dell'anno – 365 giorni – (quasi contemporaneamente agli egizi).
-Calendari lunisolari
-Primo calendario cinese: quello dell'imperatore imperatore Huang Di (forse nel 2637 a.C. o nel 2697 a.C.).
-Descrizione delle macchie solari (1000 a.C.)
-Concezione sferica della terra e del cielo (Shen Dao, IV sec. a.C)
-Descrizione delle comete (360 a.C)
-Dal 484 a.C., uso del calendario solare con una durata di 365 ¼ giorni.

-Scoperta della non uniformità del moto lunare e della causa degli eclissi (durante la dinastia Han, 206 a.C. – 220 d. C.).
-Costruzione di osservatori
-Costruzione di globi celesti (Luo Xianhong e Gen Shuochang).
-scoperta della precessione degli equinozi e distinzione tra l'anno tropico e quello siderale. (VI sec. d.C.)
-Cartografia del cielo (Chen Zhou, tra 220 – 280 d.C.) → 238 piccole costellazioni per un totale di 1464 stelle.

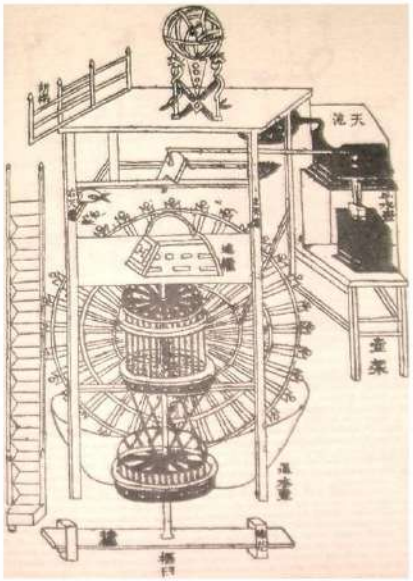
Invenzione della bussola



Dunhuang, una mappa stellare del VI secolo

Sfera armillare nel cortile dell'antico osservatorio di Pechino

Replica a grandezza naturale di una sfera prodotta durante il regno dell'imperatore Zhengtong (1439)



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Modellino in legno di un orologio costruito nel 1094 dall'astronomo Su Song

Mappa celeste disegnata nel 1092 dall'astronomo cinese Su Song (1020-1101): contiene 1350 stelle

Khepert-Ankhu

L'opera astronomica Tianyuan Fawai, in una ristampa, ampliata, del 1633, che riprende quella pubblicata nel 1461.
In essa sono raccolte molte osservazioni celesti eseguite durante le dinastie Tang (618-907) e Song (960-1279).

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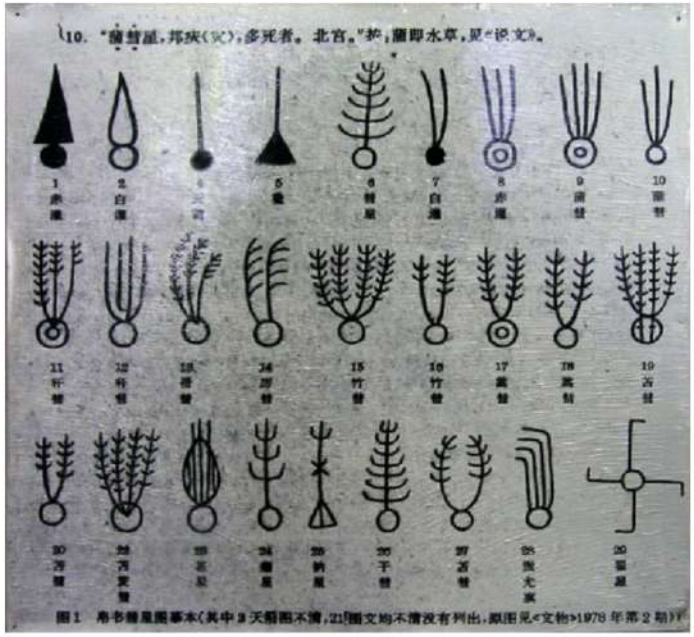
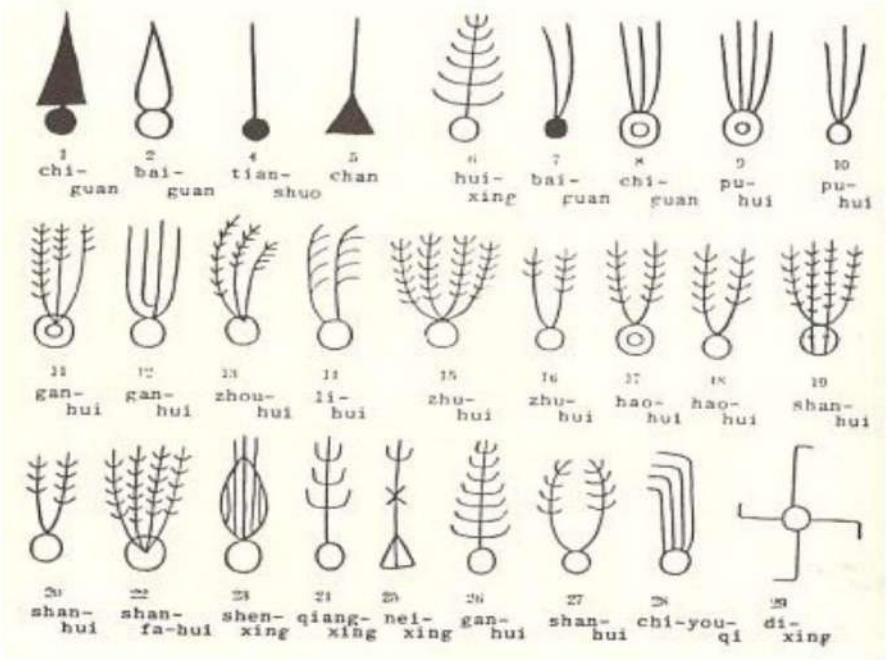
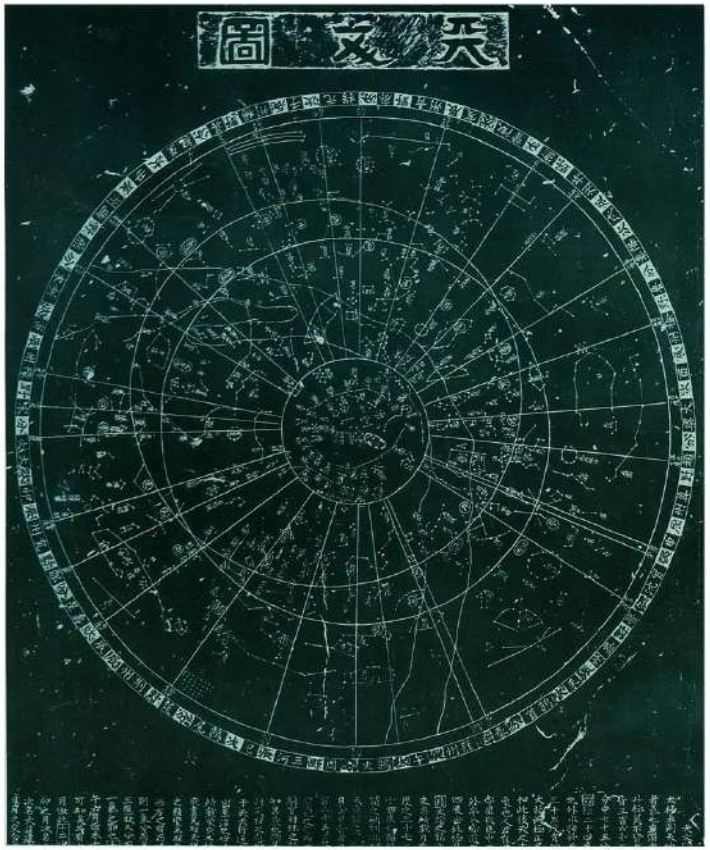
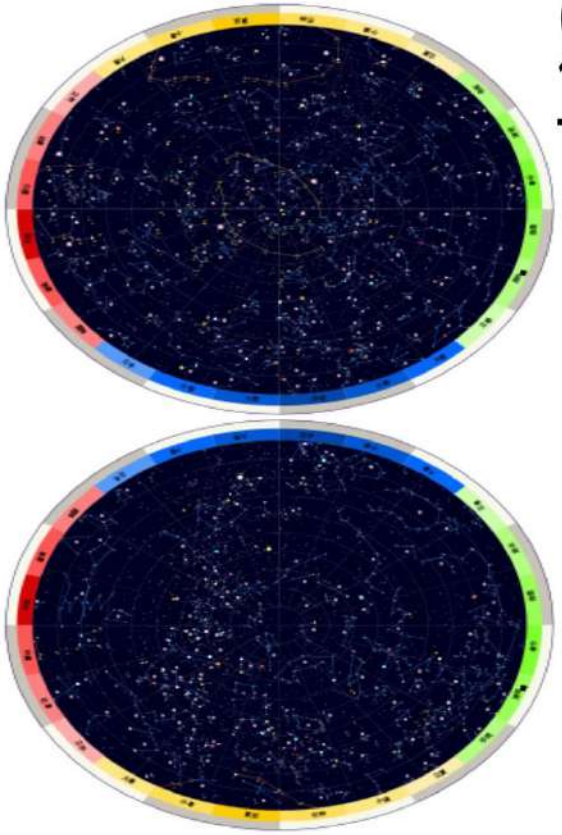




Registrazioni di comete

Globo celeste della dinastia Qing





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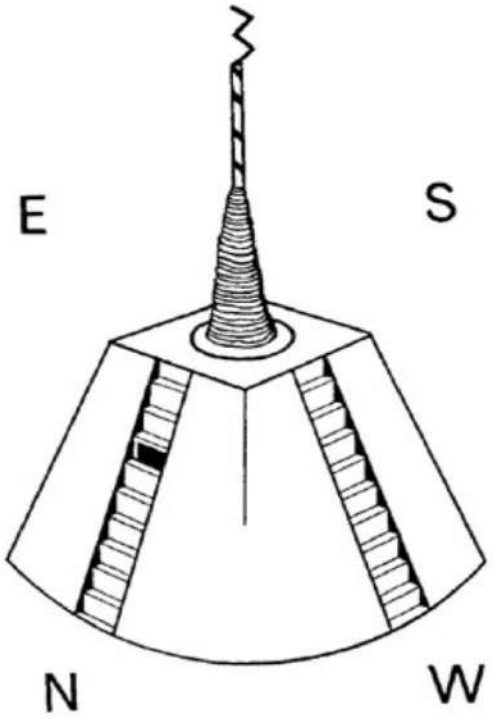
Riproduzione della carta celeste di Suzhou (XIII secolo). Le costellazioni

L'astronomia dogon



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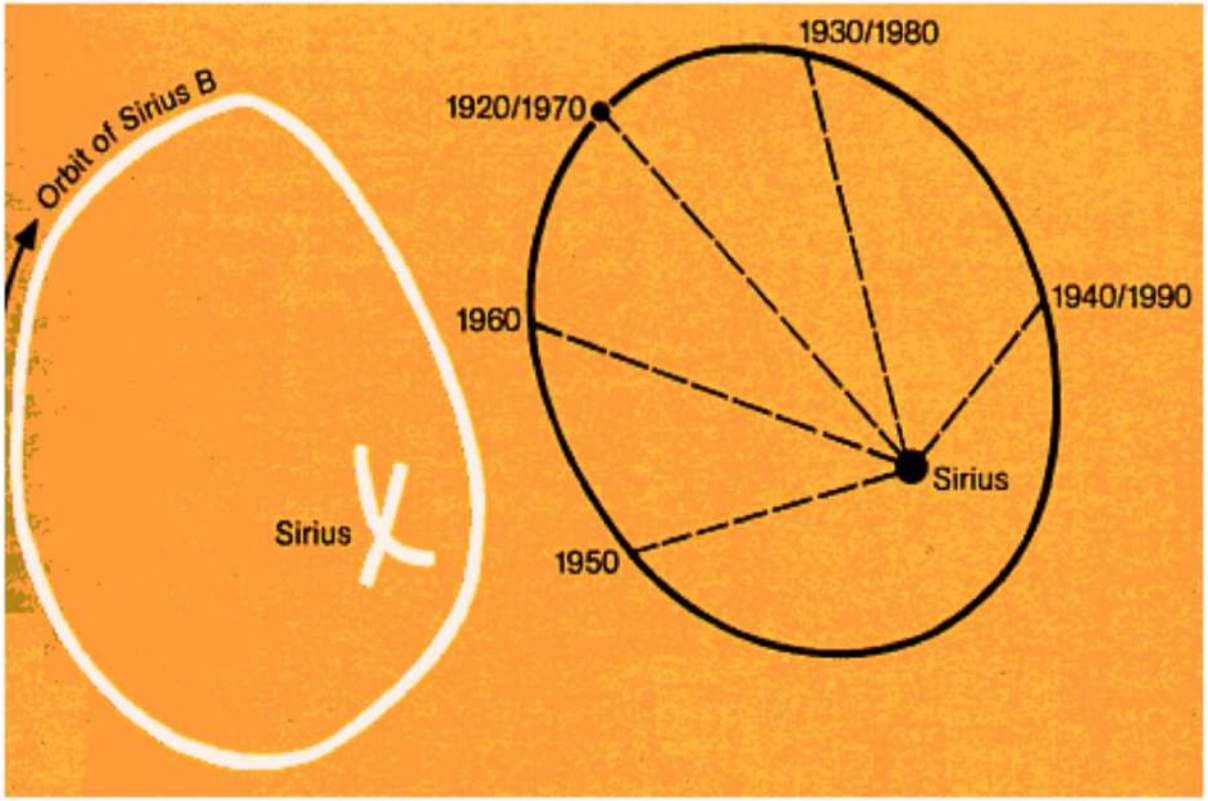

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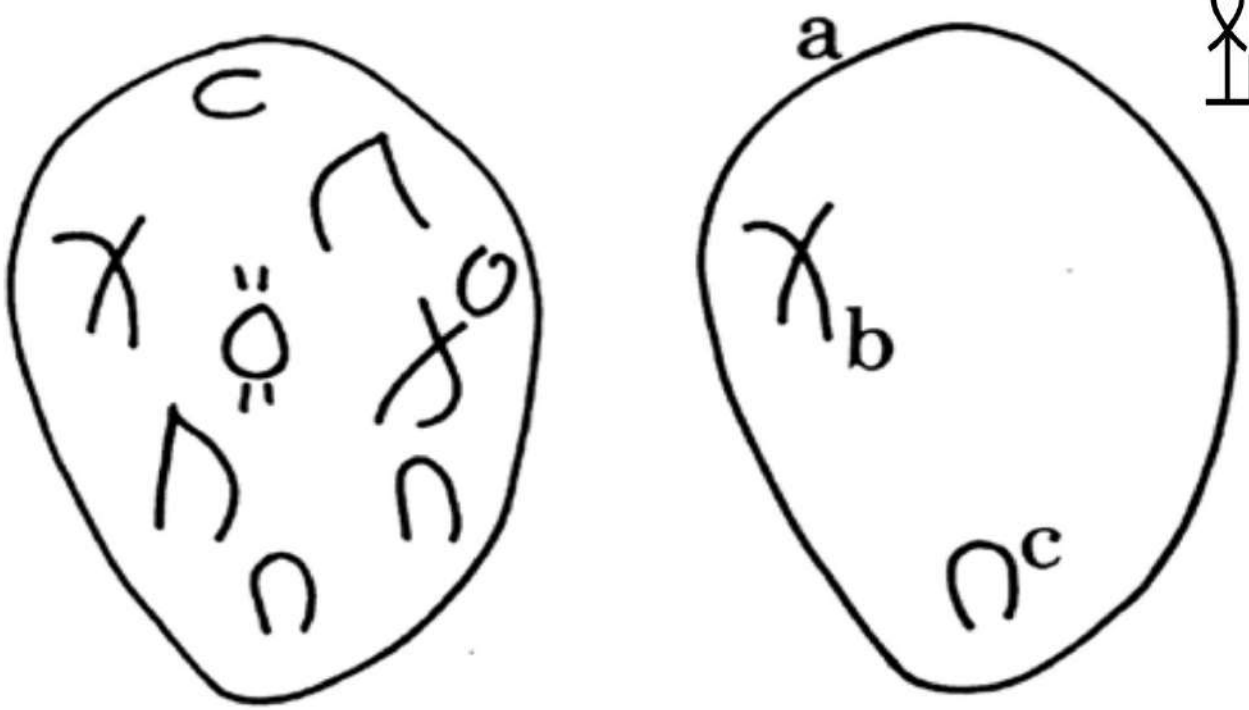
Sigi tolo (Sirius)



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a- Orbita (uovo); b- Sirio; c- stella gemella di Sirio, Sirio B (po tolo)

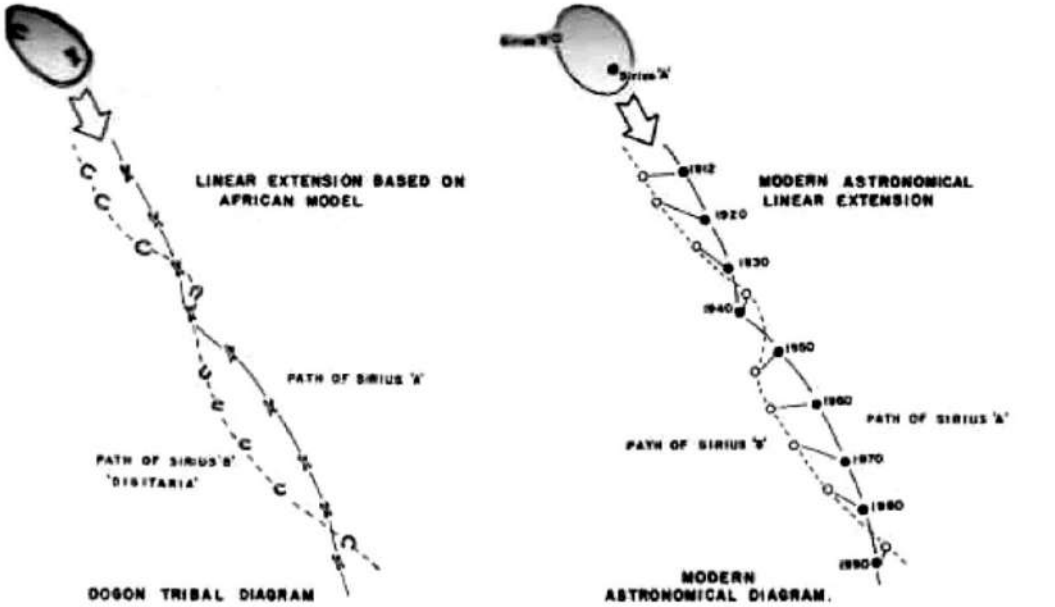


Figure 7. The linear extension on the right is scientifically reliable, based on measurements of the rate of revolution of Sirius B around Sirius A. The linear extension on the left is *not* scientifically reliable. It is a presumed correlation, for there is no way in which the *rate* of revolution of Digitaria can be known certainly from the Dogon information. These linear extensions cannot, therefore, be considered to constitute hard evidence of a correlation. It is likely, though, that they do correlate because Digitaria is presumed to move at a rate which makes astronomical sense (for if the shape of the orbit and the distance match, the period should match)

Cammino di Sirius A e Sirius B

Khepert-Ankhu

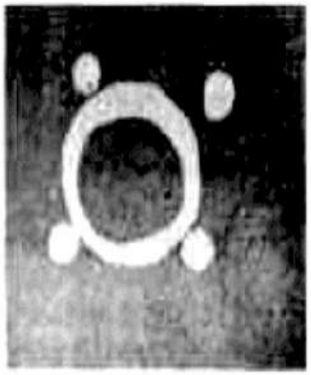
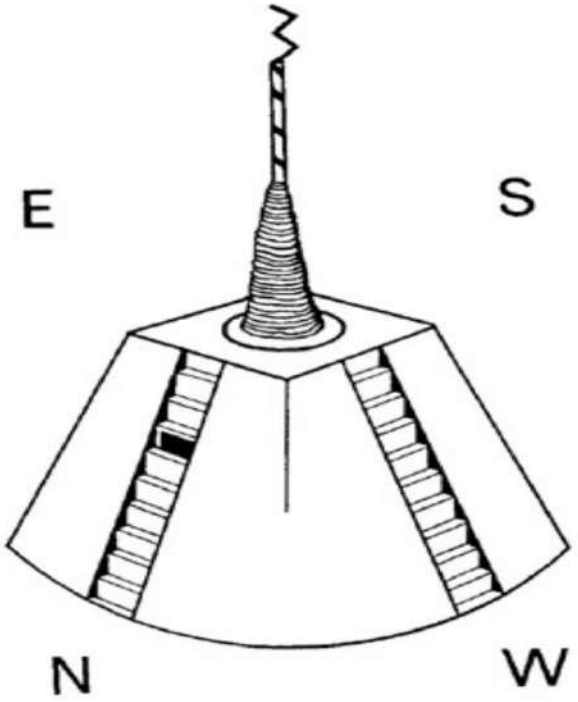


Figure 9. Dogon drawing of Jupiter with its four main moons

Figure 10. Saturn with its ring. Dogon drawing

Raffigurazione dei pianeti Jupiter e Saturno



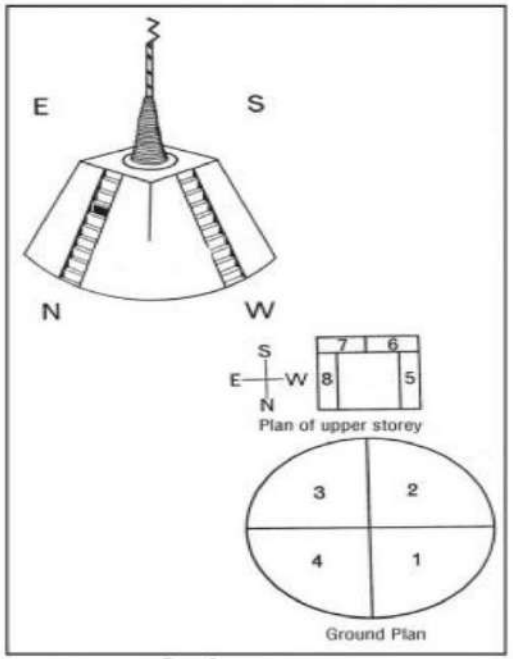


Figure 3 (Courtesy of Laird Scranton)

Raffigurazione dogon del sistema del mondo

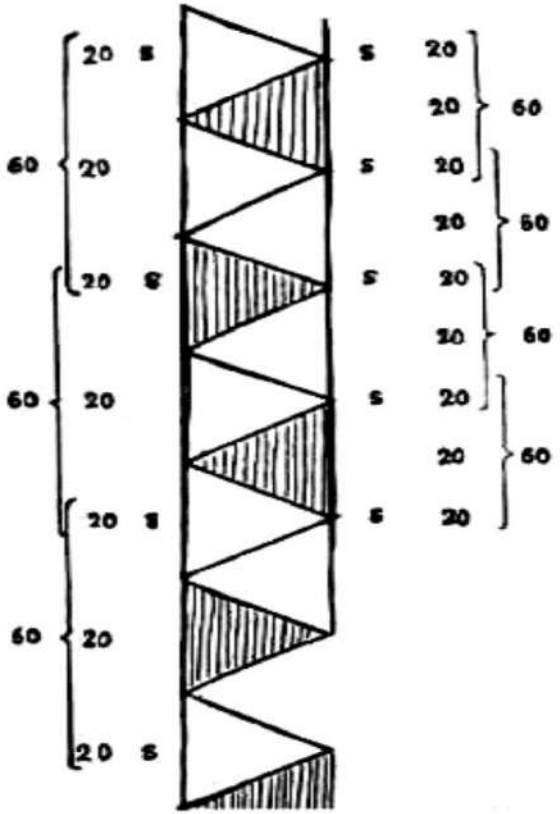


Figure ii. The calculation of the Sigui

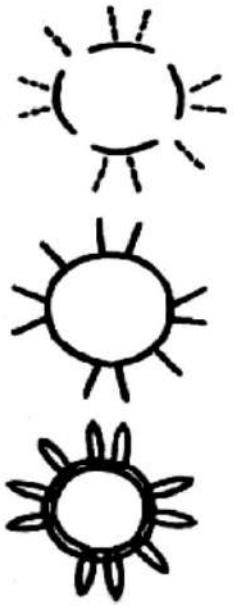


Figure 37. Three states of *ie pelu tolo* in the sky. Dogon drawing

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Strumento di calcolo del Sigui

(Ricorrenza ogni 60 anni dell'apparizione di Sirio tra due costellazioni)

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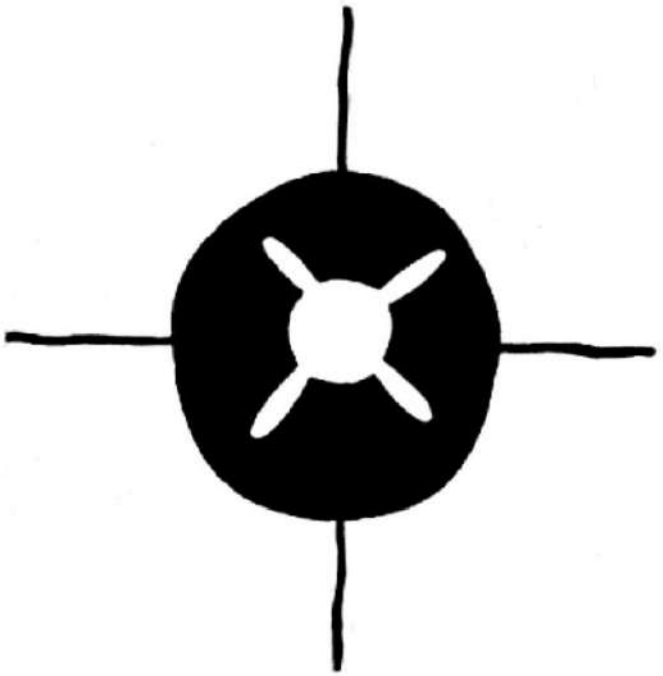

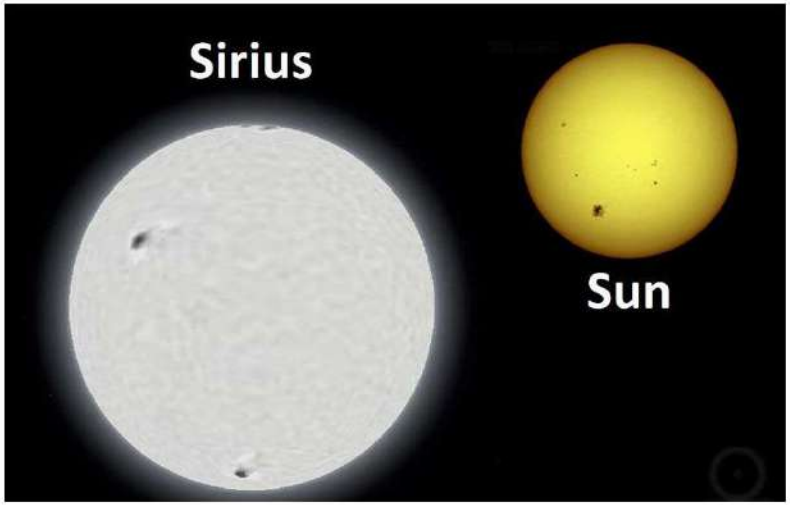

Figure 11. The heliacal rising of Sirius. Dogon drawing of Sirius and the sun joined together at this moment

Dogon Helical Rising of sun and Sirius

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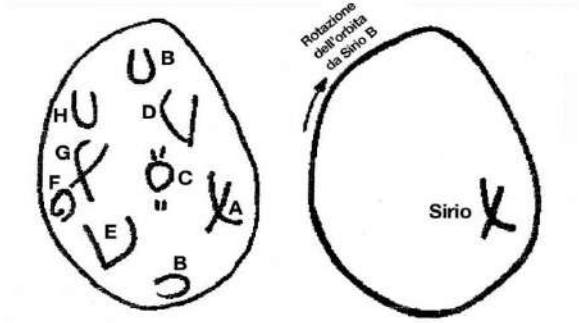
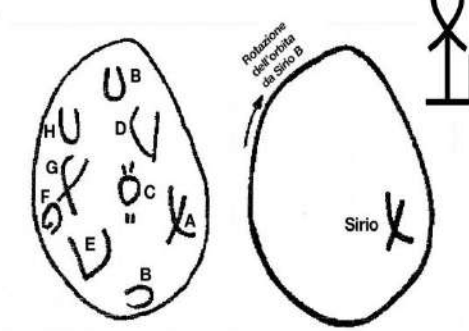
Figure vi. The origin of the spiral of creation (indigenous drawing: actual size)

La spirale della creazione





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Raffigurazione del sistema di Sirio

Sirio incontra il Sole, e le due stelle hanno una massa analoga

□Pluralità dei mondi

- Un primo mondo: Amma lo "abbandona", lo "distrugge" per creare un altro **(Cf. T. Obenga, 1996, p. 92)**
- Un secondo mondo che ha come base "l'uomo" (p. 93)
- 14 altri mondi (7 terre e 7 cieli): "Amma crée 7 x 2, c'est-à-dire une infinité de mondes" (p. 170).

- (Vedi anche Bernard le Bovier de Fontenelle, Entretiens sur la pluralité des mondes, 1686).

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•Due grandi sistemi stellari

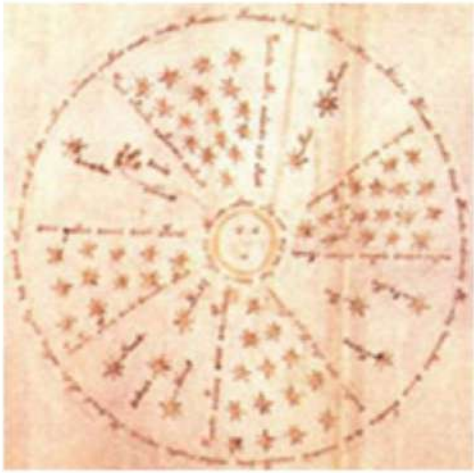
-Un sistema interno

“Il est considéré comme le moteur du monde stellaire
intéressant directement la vie des hommes
et son développement sur la Terre” (p. 321). Comprende l’astro solare.

-Un sistema esterno

« Il est constitué d’astres plus lointains ».
Comprende la nostra galassia, la Via Lattea (yalu ulo).

- Yalu ulo è una galassia spirale



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- I corpi celesti

-"Tolo" = stelle fisse. Non girano intorno a un'altra stella

-"Tolo tanaze" = pianeti che girano intorno a un'altra stella

-"Tolo gonoze" = satelliti che girano intorno a un pianeta.

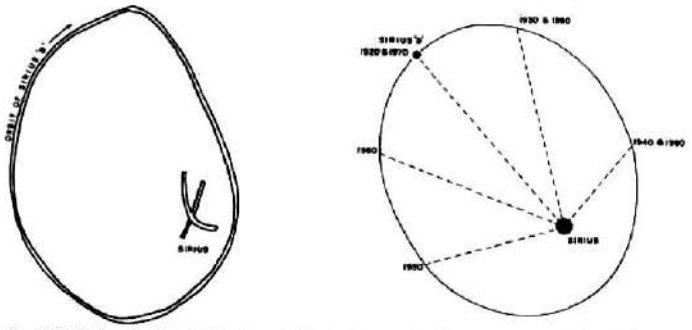

Figure 6. On left: the orbit of Digitaria (Sirius B) around Sirius as portrayed by the Dogon in their sand drawings. On right: A modern astronomical diagram of the orbit of Sirius, the years indicated being the positions of Sirius B in its orbit on those dates. Note that the Dogon do not place Sirius at the centre of their drawing but seem to place it near one focus of their approximate ellipse – which constitutes one of the most extraordinary features of their information, and matches the diagram on the right to an uncanny degree

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- Le costellazioni

-"Amma bogu tolo": Orione

-"Atanu tolo": le 3 stelle della cintura di Orione

-"Enegirine tolo": la stella gamma della costellazione del cane minore

-"Sigi tolo": Sirius (nella costellazione del cane maggiore)

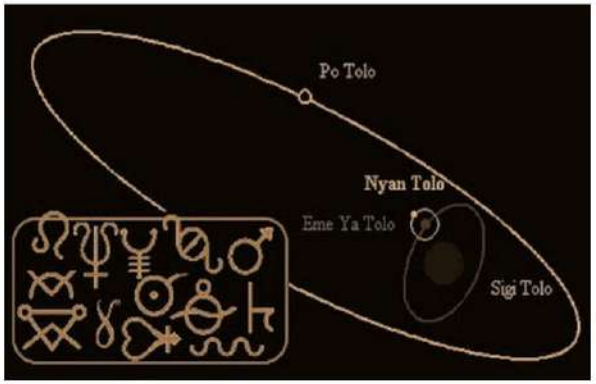
-"Tara tolo": la stella alfa della costellazione del cane minore

-"Tolo bani nenneu": la stella "rossa" della costellazione del toro

-"Tolo dullogu": le stelle della Spada di Orione

-"Tolo duno": le Pleiadi (costellazioni del toro)

-"Yara tolo": la stella beta della costellazione dell'Ariete.



•Sirio

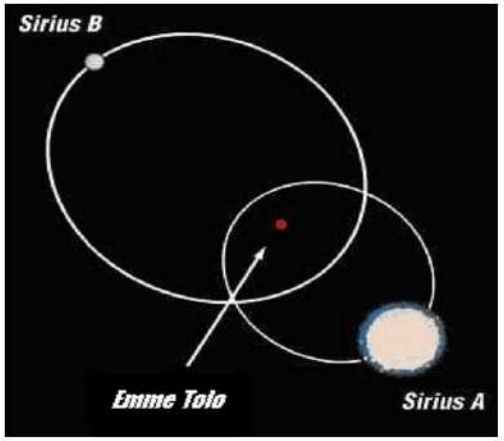
-Nome: Sigi tolo

-Considerato “l’ombelico del mondo” (sigi tolo aduno bogi).

“Le groupe d’étoiles, dans lequel Sirius joue un rôle primordial,
comprend la constellation d’Orion et un certain nombre d’astres placés non loin d’elle” (p. 470)

-Il sistema toro comprende 4 astri :

* Sigi tolo : Sirius A
* Po tolo : Sirius B
* Emme ya tolo: Sirius C
* Nyan tolo: satellite di Sirius C.



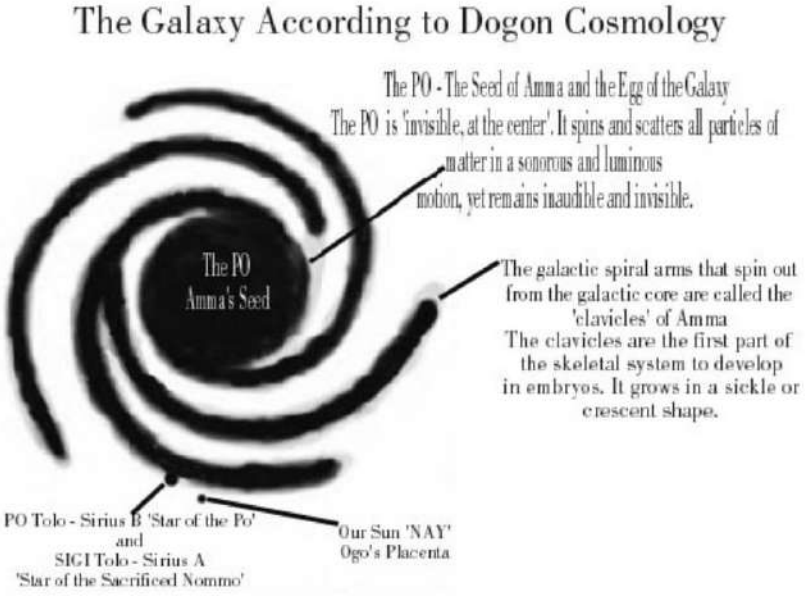
- Caratteristiche di Po tolo (Sirius B)

-Piccolissima

-Densa, pesante (35000kg ca)

-Bianca

-Vedi anche H. A. Adams (per Sirio B)
e D. Benest, J. L. Durent (per Sirio C)



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- Alcune idee generali

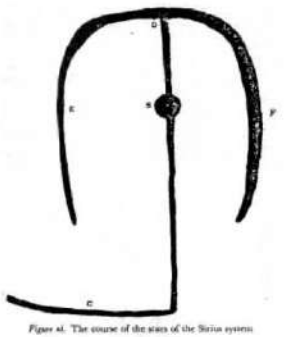

Figure 16. The course of the stars of the Sirius system

- le stelle e le costellazioni sono innumerevoli
- L'universo è "infinito" ma "misurabile"
- La luna, un satellite della terra: "La lune circule en spirale autour de la terre" (p. 477)
- La rivoluzione solare: "Le soleil tourne sur lui-même" (p. 477)
- Tre calendari dogon: lunare, solare, venusiano
- L'atmosfera come massa umida: « Le soleil envoie à la terre ses rayons ; l'humidité qu'il provoque remonte à la lune » (p. 478).

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