



**How I build up the Great Pyramid  
Imhotep jun.**

## **Imhotep jun.: How I build up the Great Pyramid**

### **Preface**

It is hilarious how many theories on the pyramid building, especially Khufu's, were invented by a variety of explorers, adventurers and also architects, may be some more – and as it seems, neither of them could explain how the heavy limestone blocks, and especially the granite ones, were transported to the positions, where they are still nowadays.

The impression emerges there was nobody to explore seriously the secret of the pyramid construction. Actually, the ability, capability and ingenuity of the old Kem artisans, architects, stone cutters, smiths, carpenters, weavers, were and are grossly underestimated...The judgment from the current viewpoint was made just forgetting the superior imagination of the ancient artisans. They have had only a modest amounts of concentrated energy on disposal – the essential difference to modern times, when the huge amounts of concentrated energy enabled the development of science and technology. All in all, their craftsmanship achieved the highest proficiency as it is evident from the artifacts in Cairo and other museums. Naturally, these artifacts originate from a very vast time period, what explains the perfection, but gives perhaps a little deceptive impression of the capabilities in the various ancient times.

The long existence of Kem as a state, a country, a political entity, with a highly organized society – in spite of some interruptions – was a warrant for the continuous development and a clever social order arrangement, with no real parallel in modern times. So, without any hesitation, may be stated all the great construction projects and their realization were exactly planned and reconsidered in the frame of technical, financial, ideological possibilities and demands. Especially those projects, which substantially burdened the state resources.

Actually is a fact to admire these achievements, but to underestimate at the same moment their builders, the artisans, not knowing how they constructed them, but looking for some almost supernatural *agens* to explain it, really a great nonsense and a contradiction to a common sense. As it seems, a lot of explorers were sitting on their ears, as diligent pupils, looking through the window in physics class. It is all possible to explain with the school physics.

Naturally supposed, if we ignore the intention to keep up the fame of secrecy and mystery, which are always a very lucrative issues, even if they are a fiction. All what is popular and beloved by the uneducated.

The unfinished obelisk of the queen Hatshepsut in Assuan, the greatest stone block in Baalbek, the unfinished Paro Moai statue on the Easter Island, the greatest unfinished T-stone block on Goebekli Tepe, which are all admired as the old artisans workmanship capability and proficiency, due to their size and weight declared as an achievement of probably some unknown technology, are just the witness of the limits of their possibility– the discarded, unfinished work, impossible to realize – probably the consequence of megalomaniac wishes of their rulers.

The future research, as always expected, will find the part of the famous legendary collection of scrolls, there, somewhere, not far away from pyramids. It will contain a wrapping of scripts, which will be with a great effort painstakingly restored and after the years of study introduced to public. The narratives and the events, which shall be learned from these scripts, will be of an extraordinary importance, and very amazing. The deeper insight on religion, mutual relations and the mindset of the ancient Kem will be achieved. Till now we learned mostly from the officially adapted standardized inscriptions on tomb walls, written or better painted by painters, who probably could not read and understand them.

The success of this research will be introduced as follows. I allowed myself as a translator to simplify divine titles, the old measures will be changed to more familiar recent ones. I will report on pyramids as much as it will be learned from scripts, but I will have to consult also the modern research to make the issues more understandable. Let it be noticed also a simple fact – each regular pyramid is uniquely defined by one angle, one edge length and with the number of sides. The relationship to the triangles 3:4:5 and 1:2:V5 (radix of 5) and some numerology explain all astonishing, magic in secret properties, related to religious symbols, to holy and divine aspects. Some additional geometry will be used for better understanding of holy principles. The illustrations, based on the modern research, are included also for better understanding.

The scripts will be here and there damaged and decayed, perhaps so much to be unreadable, therefore I will allow myself to supply the missing, to complete according to the general sense of the narrative.

In spite of all, some events will remain rather unexplained or insufficiently described. How could be the great priest Hesi-Teute the disciple of Imhotep the elder? Why Imhotep the younger does not mention his disciple Hemion? And so on...

No spirit guardian will be bothering me, while I will be translating the scanned scrolls, engaged only with zeros and ones symbolically displayed on my computer screen.

The narrative will be based on natural laws, on common human issues, and that will make the narrative equivalent if not better as all the fantasies up to date, but may remain at last just one of them.

### **Anonymous in the fifth year of the pharaoh Titkeperure reign**

These papyri I found in the collection of the ancient, forgotten and almost discarded scripts of our shrine. Judging on events and the writing style, they should be at least thousand five hundred years old, but it seems this to be impossible, as they may be at this age already decayed. They are very probable the consecutive unsigned transcriptions of an original, what impedes to estimate the veracity of the narrative – is it a complete, only a part, or just an invention. The transcribers did not identify themselves on any of the scrolls. They took the narrative probably for invented, or for too incredible, or for heretic, or for actually dangerous if mentioned to contemporaries. May be a divine story, as divine Imhotep, the great priest of Ptah was mentioned. Even there are two of them - the elder one, well known to us all, and the younger one, completely unknown, never heard of. It seems, nobody dared to destroy this suspicious script, as may by the will of gods remain preserved.

But I have to confess, no, to state – the bundle has a mysterious invisible companion, a spectral entity, an emanation, say a guardian – I feel strongly its eerie presence, when I touch the scripts. I feel his satisfaction if I rewrite the badly damaged parts, but also its menace if the scrolls seem to be endangered. It seems to be present always behind me, lurking over my shoulder with a cold breath on my neck. Sometimes I think to imagine it, but then its presence gets again to be felt even stronger. I am convinced, everybody coming in touch with this bundle felt it and was warned. To find it is destiny, to preserve it, is a will of gods.

I am conscious of the probable misunderstandings by my fellow priests being very vigilant due to the influence of some alien teachings, seemingly endangering us; so I will hide these papyri again among the other scrolls, my name should remain unmentioned. All transcribers of this script, or all being acquainted with it, wanted to remain unknown.

The script quotes, as already reported, two high priests of our temple. Some old chronicles, registering the important events of our temple, touch a story of two high priests losing the way of the proper faith, being damned by their righteous heirs to eternal oblivion and their names were removed from the holy registers. Very probable were these scripts written by one of them, namely, the younger one.

The purpose and the project of the great pyramid, its structure and the methods of rising it up are described. It is a narrative by a self declared pyramid constructor and builder. Actually, it is just a part of the project's overview, it does not contain the actual construction plans, as it is also not the factual chronicle of its building. Therefore are some parts of the script older than the rest. They were probably much used, consulted in the building phase, being already in bad shape when included by Imhotep the younger – then already very aged – in his report, so sparing him the effort to describe for him unimportant events of the actual building story, which should have to cover dozens of years.

**Imhotep the younger, the great priest of Ptah temple,  
in the tenth year of the pharaoh's Menkaure reign.**

**How I build up the Great Pyramid**

- Why did you smile?

I did not answer. I wanted to leave, but as I was still standing before him with the bent head and a smile on my face, as it is an obligation in the presence of the lord of Kem, he prolonged -

- Imhotep, I know you all to well – do not ruin my Kem!
- My lord, my master, mighty pharaoh! Did I ever cause you a damage, where from is your suspicion?

He started to laugh waving with the hand -

- You are heir to old Hesi-Teute, you are getting to be the great priest of Ptah temple, so you will be a danger for Kem – just as all these viziers are!

With the long provoking stare he measured them mockingly...

- You never asked me anything for yourself! You are not greedy, you are not avaricious, you are not lascivious – as they all are; you do not mind this all, and I know well how do you despise them. I ought actually to be afraid of you ...These constructions ...ha, your eyes betrayed you! Ha,ha .. this is your passion ...regardless costs and victims!

He feigned a great concern...

Yes, the mighty Khufu was right. He really ought to be afraid of me...As I myself, was also he not aware of how ominous was this decision, how ominous was this nice, back looking a fatal day, how fatal it will be for him, fatal for Kem... fatal and dreadful for me!

- My lord! Mighty pharaoh! I will not disappoint you - for the master of Kem, for the son of gods, his memory may be preserved by all future generations, for his eternal life the price will be high, but worth of you!

He laughed again and so made me clear, that he understood my babbling as the usual flattering, more due to the presence of others than for him. In a way he valued me. Due to my apparent feeble



body he assigned me body guards, two mighty Nubians, to be seen even from far away, where I might be – he said, being a big, a strong man himself.

I bowed again, grasped all the papyri and left hurriedly with my bodyguards. Actually, I was suspicious that he might have passed the limit on the plans ... if he would have been aware of the plan's extension. The great Djoser has cautiously followed it, the unlucky – let his name not be mentioned – stopped it and the gods took revenge on him, the mighty Snefer renewed the work and the prosperity returned, lasting. The mighty Khufu extended the work, more due to his self esteem, longing for glory, and even more not to offend the priests as of the respect to gods or the awe of them. I worried, if his attitude could eventually change...

Yes, I smiled – for his eternal life – in which I think, he did not really believe being too sober - for his memory, his name should be preserved for all future generations...but he knew – not without me!

No, just my work will be preserved, admired by all future generations – it will be still preserved when all chiseled inscriptions of his name will be ground off by the sand, when all colors will be bleached, when all papyri will be dust, when there will be no one more to remember...Yes, when also the mighty statue of Atens guardian will fall to pieces – the memory of its sculptor is already faded. Yes, I will build up something greater as this statue, which just silently staring awaits for Khephry to rise each morning... yes, something, created till now by nobody and will not be created ever by anybody more...he was right, the price will be high! He knew, that I could not resist such a temptation, to such a mighty project, not saving resources at any cost, even if unthinkable might happen – he learned this on some of my previous projects.

My hands trembled, I shivered and gasped of joy, actually not joy, but feverishly, greedy, driven by strong desire to finish plans as soon as possible, to continue preparatory activity, to start to build.

I remember well, how I proposed to the high house, to the mighty lord, pharaoh Khufu, on his order, the project for his eternal home, for his eternal glory, yes, I remember very well! Earlier, there was just a plan, intended for a mighty pyramid, but just as a temple. I remember this better than thousands petty works, events, hurdles and successes in all the years of construction...

Now, raising in front of me, heading towards the sky, shining in the setting sun, greeting Atum, it is the greatest, the most handsome, the mightiest, the most amazing, the divine, the holy Great Pyramid. The mighty Khufu, you ought to beware of gods – their jealousy is deep – none of them has such a sublime shrine, temple, as it was build by me, just me alone capable and no one more able that for, not earlier, not now and not later! And where are you now?...Solely I alone know that, the gods and nobody else!

Was I also him, of the gods chosen?...gods, probably not existing – as they would kill me having not to them, just to somebody, who should only later become a god, built this mightiness – and I know a terrible punishment is anyway already awaiting me...

Alas, very soon it will be all clear...but before I, where it is possible nowhere, leave for, I wish to explain to future generations, how I constructed this mighty, this greatest, this most handsome pyramid. Let them follow the path of my actions, let them admire how I overwhelmed all the obstacles, how my ingenuity solved the unsolvable ... yes I am proud of all! Therefore I am writing this report, that should be hidden and should be rediscovered for generations in the far future. I do not mind your opinion – you may admire me or curse me the envy for. I do not want to be humble – I am proud of me! Yes, perhaps I even admire myself, though I was possibly boundlessly daring, self conscious, not wanted to be as them, who never grasped the height of my ideas, who respected me disgusted and were afraid of me, even if capable to kill me with a single blow... they all, every one them of, who worked under my auspices, under my leadership, whom I killed – they are all mine! Mine, I like them in my way, each of them – from the simpleton to the cunning one,

from the weak to the strong one, from the ugly to the handsome one, from the water seller to the nobleman, all them, who died, passed – everyone gave something to this magic, beautiful completeness, everyone may be proud to have cooperated, acquiring an especial value among others, all under my leadership, on my merit.

I assured the means for the construction, the permit from the divine pharaoh, I deepened the envy and the hatred of the majority of viziers, by some even gained the respect for the courage and in a way understanding as they knew they were obliged to co work. But almost all expressed apparently the deep concern, praying to the gods, praising the wise decision of the mighty pharaoh – but they essentially cautiously declined any personal responsibility for the project – what Khufu also noticed. Their anxiousness amused him, the relationship of these mighty men to the for them unimportant priest – even if he occasionally the pharaoh on his policing expeditions accompanied, has several fortresses and streets built, has given even some strategic advice...

But I was actually not anymore so unimportant priest. I was the heir to Hesi-Teute, yes, to the great priest of Ptah. He was still alive, but already very feeble. He was my second father and he thought me all the secrets of priests, medics, constructors, artisans...

## **My youth**

My parents were the employees of the Ptah temple in Menof. They were in charge to take care of the visiting believers, to distribute and store their gifts, for their admission by various priests, especially by the physicians. I was their sole child, actually a very feeble one, so they considered the best to sent me to the temple school to learn for a scribe. They named me Imhotep - with the wish and the hope the name would have had a benevolent influence on my future, bearing the name of the past great priest of our temple. The name seemed really to help me somewhat – some supposed, they were even convinced, me to be the impersonation of the great priest Imhotep Ka's – my name, my position and my actions should be witnesses of it.

Years later, when my mother shortly after my father died, I let them to be embalmed and buried according to all customs in a humble, but nice room, chiseled among other tombs in the vicinity of the Great Pyramid.

I didn't a lot socialize or even not at all with the other pupils. They considered me as a good meant favor of temple to my parents as they were all from wealthier and influential families. They pushed me, kicking drove me away, if they noticed me at all. They trashed and fought among themselves, they were very superficial and offensive to the teacher. I myself, I followed the courses with a great attention and became the best pupil.

On a day the great priest Hesi-Teute himself visited the class. They nicknamed him Thoth and really there was a certain similarity between him and the depiction of the god. He had a bony bald head on a long meager neck and a very long thin bent nose, a long and a meager body – and nobody knew his age. They all, priests included, were afraid of him. He was pharaoh's counselor and a renown builder. He had various servants, some younger priests among them, who all had their own tasks. Among the elder was his personal servant, who had to take care more of his papyri, of his collection, than of his personal needs. This servant died and Thoth has chosen a new one, but he, from reasons unknown, soon drove him away. So, he has come in the school to choose somebody, to educate him accordingly to his wishes for his aide and to care for his archive.

He whispered to the frightened teacher. The pupils were also afraid of him, so they didn't dare to move or to speak. The teacher proposed him some of them, naturally those from better families, which Thoth after a couple of words with them, immediately discarded. He then walked slowly among us and scrutinized the wax tablets on which we wrote. He stopped by me, looked at me and asked to look him in the eyes. I did it, looked him attentively in the eyes and then surveyed his face.

Then he asked me for my name and I calmly told him. He somewhat pressed his narrow dry lips – later I learned this to be his smile – and said

– I want this one,

and to me,

– I hope your reputation will justify your name...

So I continued to visit the school, but in the meantime I performed various tasks in his archive, I learned arithmetic, measures and measurements of length, area, volume, time, weight, the properties of triangles, circles, cubes, pyramids and their relations, astrology, calendar, positions of stars, geometry, levers, water flow and aqueducts, forces of gravity on land and in water, properties of light and mirrors ... all the issues used by priests to bewilder the unlearned and to stage the miracles of light, fire and water by the divination, worship and sacrifices.

I accompanied him by visits to artisans, when he gave various orders and directions to – glassblowers, smelters, smiths, carpenters, weavers, stone cutters, builders... We visited also the masters of arms, wagons, ships, cooks, brewers, tailors and some more... all the artisans contributing to the wealth, power and glory of Kem...

I scrutinized all actions very attentively. Frequently Thoth let me stay at an artisan to learn, to overview and to co work on his order. So I learned and collected knowledge. Thoth sometimes left me some minor building orders, and slowly the majority of reading and writing, having already a weak sight and a trembling hand. He had anyway a piece of glass, which enabled him to see the writing magnified, but a little distorted. When the object of interest was far away, he sometimes looked through the small hole on the dark screen, holding it just close in front of the eye. He said this enabled him to see sharper as without it. He had a collection of mirrors, made from various metals – copper, silver, gold and bronze – that were plain or bowed in various ways. So were the reflections very different, the light paths changed. He used them at the sacrifice offerings for special light effects...

You, the reader who reads this, because you can read and probably know this all issues and maybe more of them than I have listed, probably you use some of them every day, yes, therefore I will not dwell on them any longer.

## **The history of the project**

My late and renown namesake, the great priest Imhotep, left in his heritage also the plan of this Great Pyramid. He proposed it to the pharaoh Djoser, who would have been happy having really such a pyramid as his tomb, witnessing his might, but he decided not to rely on building it. Factually, controlling the calculations, he found out that the pyramid would be never finished in his lifetime, even if he could live extremely long. Therefore he let the more humble, well known pyramid, to be built. Never the less, it demanded quite a lot of resources. Also he did not want to offend the gods, as Imhotep planned the pyramid to be a temple for Ra – assuring the success and the reign of Kem for the next three thousand years. So he let some work to start under his reign leading by Imhotep, the great priest.

Thoth took over – he said from Imhotep, but I think really after the demise of Imhotep's disciples - the care for this pyramidal temple, but he had to fight for necessary resources – especially for the work force as the amount of stone blocks grew to be unbelievable, their transport and placement not to mention. So he the responsibility and the guidance of the construction transferred to me later. I

changed and adapted the plans – more on this issue in the following– and I persuaded and convinced pharaoh to let the pyramid become his majestic tomb, as well also the temple of Ptah and Ra, in which would he, the divine Khufu, the almighty Ptah and the life sustaining Ra, be worshiped.

The measures and the position of the pyramid were planned to enable Aten, on especial occasions, on festivities, to illuminate the pyramid in an especial way, according to each festivity uniquely. The pyramid would be built according to the divine shape rules. So also other priests, due to the religious reasons, did not dare to oppose to constructions, which were already long underway, but very slowly. Actually it was not yet the real construction, but only the preparations for it.

The great priest Imhotep planned the pyramid according to the height of Aten's disk at the summer and winter solstices as well at the equinox at midday, at noon. He considered also the directions of the sunrise and the sunset on these days; all issues as much as possible in agreement with the divine rules of shape, with the numerical relations to pyramid parts.

It disturbed me that in the pyramid shape, there were not all relations, according to Aten, in agreement exactly with the constant holy relations of shapes, especially the triangles 3:4:5 (rem.: Pythagorean triangle) and 1:2:V5 (rem.: 1,2,radius 5) according to Ma'at. I mentioned this to Hesi-Teute.

He looked at me very seriously and he said,

- If it would be all complete and perfect according to Ma'at, it would be just once unique and single, being and remaining ever the same. It is an essential question, if in this case it would be movable at all, changeable, as each deviation from the perfection would have caused the imperfection, but this was not allowed to have happened! That means, the perfection of Ma'at would have been only then fulfilled, for ever. At any change Ma'at should have tried to follow and to correct all the consequent changes and the result would have been Nu. Therefore was Ma'at just partially fulfilled, always differently, and so we have a partial order in all times, as well we have to accept also a partial disorder. All repeats itself in the long term movement, also Aten's, who tries to attain also the perfection... so the most ordered state will be achieved in approximately three thousand years – as the angles of Aten's height at noon will be almost perfect according to pyramid, in our land as we live here in the heart of the holy Ptah's creation, the land of Kem. The movements of stars make this all striving evident. Somewhere in the south are these relations at the time more precise, but that region is not the origin of the whole world creation.
- The perfection in this sense has to contain order as well as disorder, as in other case it would not be the completeness.

Now I may say, this comment of him convinced me to acknowledge also his doubts and questions on the reason of all this disorder among the gods, and not just that – the same as me after many years – he considered all this stuff for just a narratives aimed at unlearned folks. He with his knowledge called the divine miracles at offerings. The miracles, which could be made by anyone with sufficient knowledge, for the audience with sufficient faith. But this faith is in agreement with Ma'at and assures the order in the land according to the rules of Thoth.

## **The holy task**

Hesi-Teute continued...

- The will of Ptah is to build up this pyramid as it by itself represents the symbol of his creation, its measures are the symbols of the divine rules, fulfilled and unfulfilled according to Ma'at. The great priest Imhotep received the Ptah's order, the pharaoh Djoser could not realize it, therefore was this task turned over to us, especially to both of us, and at last to

you! The pharaoh Khufu is mighty enough to fulfill this order and if he will the pyramid it would be also his tomb. With it would be worshiped Ptah, Ra and Khufu in all the future times, so nobody dares to impede or prevent its construction.

He meant with this remark the majority of viziers, which were skeptic of its construction, mostly due to costs involved. They were supported by the priests of Ra as they as well as their temple would be obliged to bear significant funds for the realization.

He straitened his back, his eyes flashed, he deeply sighed and almost breathlessly shouted -

- Ptah is All! Ptah is Limitless! Ptah had been existing, has been existing, will have been existing and will always be! Ptah is the Will! Ptah is the Power! Ptah is the Action! Ptah is the Essence!

He raised the hands and continued -

- It is a great mystery...why did Ptah create?! No he did not create, he is All, he was the Sameness, the Identity, the Eternity and the Eternal, the Perfection, the Completeness, therefore he emanated with the Thought out of himself all ... and so he called the Completeness and the Perfection to life and divided them with the Word... He is the beginning and the beginning is just a single one, only once, unique...
- From the Will came out the Wisdom, becoming Thoth, came out the Order, becoming Ma'at, the principles which are holy. He divided them on two principles, one masculine, and one feminine, all in his perfection!

He paused for a moment -

- One without the other is not perfect, both together are just His part of the basic rules... From the Power came out the Humidity, becoming Tefnut, and the Air, becoming Shu, they both also the holy principles. But they both were Nu – confusion, disorder, till they were ordered by Ma'at the balanced according to Thoth, the wise. They divided the light and the darkness. From the Action He bore through them the Soil, becoming Gheb, and the Sky, becoming Nut. These born principles are due to their origin just divine. Gheb and Nut bore Usir, Eset, Nebethet and Seth. Therefore are they just gods, divine principles, mortal, limited and fallible.
- And who is Ra, who is Amun and who is Amunet?
- Ra is Ptah's principle of overall Action, Ra so impregnates Nut to bear the sun disk Aten, in the morning as Khephry, and she swallows it as an exhausted Atum in the evening, everyday, according to Ma'at in the division of light and darkness, for the order due to disorder. Amun and Amunet are Ra for the people talking in another language, and they have therefore different names. Ra enables the sun disk Aten to fertilize Gheb and Nut, gives light and travels through Nut, and they call this Amunet, which is Mut for all between Nut and Gheb with the help of Tefnut and Shu.
- With Usire, Eset, Nebethet and Seth emerged the shortage of wisdom and order. Due to them and the greed, Seth killed and dismembered Usir. Eset devoutly assembled his body, she revived him partially and she impregnated herself with him to bear Heru, the father of all pharaohs ... and the avenger of the prime murder.
- So emerged the principles of death, underworld, good and evil, love and hatred, all other and all gods, becoming the destiny of the divine pharaohs and of all the people. They are born just from divine emotions, from their tears of sorrow and joy.

- In this the striving to unite, trying to attain again the completeness and perfection, it is the struggle between the good and evil, between the creation and destruction, between the building and destroying, between the love and hatred...
- Why divided then Ptah himself, if there should be the final goal of the divided to unite again in the whole?
- You see, this is the greatest mystery... this is the destiny, it is all under his might and he did it in spite of it; if he would just allow it, he would not be the master of all ... and what is his purpose? Every path to final perfection? Let the almighty Ptah forgive my impertinence to try, as his devote servant, to explain his holy aims – however, he has this all have done, then he will perhaps allow also my attempt, and my punishment may be my misunderstanding of the most important, of the mightiest, the holiest – of his Actions.
- Imhotep, take that papyrus there, from the table. What do you see on it?
- Honorable teacher, it is clean and empty, whole the same, unused, there is nothing on!
- Yes, because it is overall the same, you say, there is nothing on it. You may to stain it, to write or to paint on it, as you wish, or in agreement with the rules. Then you will say – it is full, it contains something, it means something...Why? With these actions you divided it ... in parts, which may mean something, which may say something, which may become something else but they remained the parts of the same papyrus, they were present also before, but invisible ... and there is infinitely many of these invisible parts as much as there are possible ways to divide this papyrus reasonable or not!
- So I may try to interpret Ptah and his action – it is all, the infinite and the whole – as an infinitely large papyrus – which he had according to rules divided in parts. These are meaningful and they interact according to rules, to remain or to become again the parts of the whole, which divides itself continuously and incessantly further, acting imperfectly, perceived by us as the flow of life. The gods serve to survey the course to be reasonable and to preserve the whole, but are anyway also fallible ... they serve also to us, so serves also divine pharaoh to us, we serve with our petty actions to common wholeness of existence and movement. With all the mistakes...

For a moment he kept silent -

- With this division and repeated unification Ptah created from the prime wholeness something more – it is like a new sense, actually he showed previously invisible sense, just as do the writing and the painting on papyrus.  
The majority is not conscious of this fact, they have their own stories, own principles as gods, their own wishes, their greed and their fears, but we direct them to the righteous life, according to divine rules...  
It is so and therefore Ptah inspired the great priest Imhotep the idea and the wish for the Great Pyramid.

All what Hesi-Teute explained me, was in detail reasonable, logic and understandable, coherent and thought out, acceptable, yes, truthful and therefore real...

- Why to him and not to divine pharaoh?
- The ideas, thoughts and wishes are the domain of Thoth and Ma'at, so are our tasks, as the servants of Ptah, to propose them, to guide them and to take care of their realization. We advise the pharaoh on all these issues, and he ought to realize them. The will of Ptah is

supreme and more important, more powerful than the pharaoh's. The pharaohs, as we also, we share a part of disorder. Therefore are we also fallible, we may act erroneously. The will of Ptah, promoted by Thoth according to Ma'at, to the holy rules, is infallible and the pharaoh himself is obliged to subordinate to it.

- The Great Pyramid should be the symbol of Ptah – constructed according to principles of Ptah according to his action in the image of Ra, the symbol which should represent the highest rule for thousands of years, in glory of all gods and deities, which are Ptah, which are the whole. The Great Pyramid should also represent the dignity and the power of the united Kem, of the mighty pharaoh and his actions, of his people and their industries.
- So it is our greatest task to build the Great Pyramid. The great priest Imhotep, my great teacher, started to plan it, the preparatory works were continued by me and some other priests all these years after his death. The viziers, as also pharaoh, were reluctant with the resources to continue the construction. The work till now – stone blocks, water conducts, the pumps – was possible to use for other projects, the construction of pyramid sole they did not like.
- At last the majority of new generation accepted the will of Ptah and subordinated to the will of the new reign of divine Khufu. The pyramid should be also a temple, the shrine of Ptah, of Ra and of him, his resting place prior to his divine ascension, the witness of his ascension and divinity.
- I know, some people take you for the embodiment of the great priest's Ka, my teacher's. Yes, till now was this erroneous notion very useful for our task – as you have experienced, you were also in audience at the talks on the pyramid construction in the high house – but be conscious, you do not possess Ka of the great priest, neither his distinctions, nor are you his embodiment. What do you have from him, is his knowledge given to you by me. Your is just the will, your strong, hard, persistent intention to build, your self esteem and courage to realize this project. I know, your strength will be sufficient to realize it, that you dare to defy not only the divine pharaoh, but also the gods. You are sufficiently smart and you are the protege of Thoth and Ma'at.

I was 15 years old.

- The pyramid should be divine, shaped according to rules of Thothh, balanced according to rules of Ma'at, supported by Gheb, raising to Nut, lightened by rules of Ra, build by people according to principles of Usir and Eset, surveyed and controlled by priests of Ptah according to all principles.

So frequently preached my great teacher Hesi-Teute, the great priest of Ptah. He initially started just with some remarks till he get convinced I was to be trusted and that I understood his explanations. These were really purposeful and had sense. For the majority of priests, even the learned ones, they would have been unacceptable and also possibly incomprehensible.

His most important conclusion in this issue he confined me just before he left us to go to Usire – also the divine pharaoh has to subordinate or bow to the realization of this pyramid – unavoidable and unconditionally.

I agreed – we construct it for Ptah and for millennia to come!

## **The military expedition**

My position in the high house, by the pharaoh, improved after the expedition in south and the skirmish with Nubians. Somewhere is the official report, so I will here the events there less mentioned describe.

My teacher Hesi-Teute was already to feeble to accompany pharaoh as a physician and a counselor on military fortifications. So I was ordered to accompany the expedition.

The aim of this expedition to south, was just to establish the state of affairs in the border regions due to some incursions of Nubians, to secure the borders and to find the strategic positions for fortifications and military posts. My task, beside the medical service, was to estimate the land characteristics from the strategic and construction viewpoint. The soldiers initially mocked me in their rude way, but not much, due to my bodyguards ordered by pharaoh to accompany me on every step. After some medical interventions – the rotten teeth, diarrhea, broken bones, wounds, inflamed eyes etc. their relations to me changed essentially.

We crossed the Nubian border and understandable declared the region as ours, when our scouts reported the numerous and well armed Nubian military units on the way, led by a warrior queen. The news on our arrival already spread long before and the queen had time enough to organize a sufficient number of soldiers on the spot.

The high military leaders wanted to retreat immediately and to return later with the greater force. After a short consultation I proposed pharaoh to remain in the vicinity and just retreat back to the hills, where we could easily operate to defend ourselves, to ambush and to attack the numerously stronger adversary. I sketched the positions, the distribution of our forces, the ambush positions and the directions of our attacks and movements on the plans, which we have already earlier drawn for our military posts.

I remembered Hesi-Teute's teachings, and I advised – very daring related to my position – pharaoh:

- Permit me, supreme commander, to remark on an issue, which would also Hesi-Teute, my teacher, bring to your notice...
- Speak!

It sounded somehow absent and irritated, but I continued:

- Our trade with the south is very lucrative, a large scale war would destroy it, it would have undefined costs, years in the future the military and the financial engagement in the south. Let us do nothing what would endanger essentially our relations, perhaps forever set the enemies on our south border. The Nubian queen was also chosen and enthroned by the will of gods. Let us in any case do no harm to her, especially nothing to enrage the gods, and make the Nubians for our eternal enemies. Let she be honored as the queen should be, no matter whatever.

The pharaoh understood the issue and ordered to seize the queen alive, to try not to harm her, and deal with her with all the respect.

My strategic plan was right – the Nubians, not cautious enough, trusting to their numbers, walked in the ambush. The queen was surprised and swiftly isolated, her very brave warriors tried hopelessly to defend her, but she herself was also very brave, dangerous and bellicose. With the extreme effort, we had to respect the pharaoh's order, was she seized. The moment was decisive, when our warriors knocked away her weapons, disarming her, threw the net on her, successfully prevented her suicide, retired to the proper distance, knelt down on one knee giving her the royal greeting. She was so surprised that she did not defend herself any more. The news of her seizure was a sign to Nubians to retreat and to stop the fight.



The queen was led to the pharaoh, where I actually saw her. She was very beautiful, well grown Nubian woman, a very nice view, very proud and compared to our women tall, muscular and stronger – a masterpiece in ebony...

The pharaoh offered her, through an interpreter, to refresh herself, to cure her wounds in the especially set and guarded tent. To her army was sent an emissary to fetch her physician, her servants and her outfit. My services she resolutely declined. The Nubians somewhat calmed after they learned their queen was treated as the most honorable guest. Their wounded were taken care of and sent back to their troops.

Once more I advised pharaoh

- Pharaoh is pharaoh and a warrior, this queen is queen and a warrior – do not humiliate and offend her!

He invited her by himself, not by a messenger, as a warrior to warrior, to dinner in his royal tent, in the circle of his military commanders. They all scrutinized her attentively, admiring her. I was also present myself. She was very dignified, for us very strange and a real feast for eyes, even if we are used to Nubians. My impression of her was to be a very strong personality. Also the pharaoh, no doubt, noticed it. The conversation was slow, each word has to be translated and properly explained. Her title was – Amon's Daughter, Big Mother of the Nation. I was astonished that pharaoh, before he learned her name, turned to her initially with a title – Wise Queen, Big Mother of her people. She sat with a pride, slowly eating and drinking – Khufu alone tasted before her food and beverage, to show her it is not poisoned or drugged. Meanwhile she also scrutinized and judged us successively. For me was important and astonishing as she unexpectedly addressed me, with a straight look, saying something with a smile. Naturally I did not understand, but the sound of words and a smile let me conclude to be something as an acknowledgment. I bowed politely. The interpreter translated...

- Without you, your pharaoh would never conquered me!

Khufu laughed loudly, but he knew to be the truth, and he remarked -

- Yes, the gods always fulfill his prayers!

Her answer was just a triumphal smile.

From then on was I equal to viziers. After the talks we presented her the appropriate gifts, accompanied her solemnly to her troops and take farewell. Later we exchanged again occasionally deputies and gifts. Till she reigned was the trade in the south free and rich.

### **The alien woman**

As the great priest, I had a free access to the high house to see the pharaoh, but had not the whole influence and power on all issues. The influence of viziers was worrisome, especially when I was not present at their meetings and the meetings with the pharaoh. Hesi-Teute has had some paid servants, to report him on our issues, but I did not trust them as their messages could not have been verified. When they appeared to be erroneous, they assured him the changes happened in the last moments.

The pharaoh himself, preferred to engage himself with the hunt and military undertakings. He let the economic issues to priests and viziers. Some of them also preferred to accompany him to hunt and to fight. The pharaoh was somewhat restrained to Hesi-Teute as he advised him to unite preferably the lands in the bed and less with the warriors. It costs much less, doesn't destroy the

lands, which serve us better as trade partners than as enemies, impoverished and overpowered, which have to be then always tamed with no trade and revenue as it was before the war. The booty is however soon wasted. Naturally only Hesi-Teute dared to allow himself such a remark according to his teachings on holy issues. I joined him later when I comprehended the wisdom of his thoughts, inspired by Ptah.

At last I concluded to organize my own intelligence, a secret service to be devoted to me voluntarily and not due to the payment, unconditionally devoted! I knew that this could be achieved only on the informer's emotional level, in other case is the person not to be trusted, especially in the need of eventually an especial service...

Hesi-Teute explained me the effort of the goddess Eset and her quest to find the parts of Usir's body in his way, from a slightly different viewpoint as usually told:

- It was less the love to Usire – the last what she found, was the divine phallus, and she impregnated herself with it, she was not impregnated by the action of Usire! This is the woman's aim – to be impregnated and to bear the children; who is the father is therefore at that time just the best choice! So take the women in account, take care of them and not only because of their generosity to temple – they donate frequently the richest gifts – they rise and educate the children, our future devotees! They will betray anybody and merciless revenge, if they are prevented, impeded or disappointed to fulfill this wish! Equally reckless is their competition for the good of their own children.

So there was the only way, I realized, over the pharaoh's harem. Even the queen herself, the main wife to bear his successors, was for pharaoh politically almost invisible, even more the rest of them. They were around as a decoration and an amusement, free moving in the palace rooms, which were inaccessible for others. They talked, chattered and intrigued, competed for the pharaoh's affection. The pharaoh kept them for more or less as an outfit of the palace, to be used when necessary, like a meal to be eaten when hungry...he liked them, they amused him, but he was not in love with any of them, he treated them well and amicably, but his favorites were quickly replaced. What he never noticed, was their longing for love, their unsatisfied passion, their wish to be cherished, their wish to bear, being the sole man who may have touched them...

To me, this all was very obvious. As the last in the row of heirs, the heir of the great priest Imhotep, and the disciple of the great priest Hesi-Teute, was I their physician, having unlimited access to harem. As I have already said, nobody hold me for a "real" man due to my short size, razed head and an apparently feeble look. They kept me for factually a eunuch, what showed to be very useful. Even the eunuch guardians did not take me for "dangerous" in spite being almost betrayed by my voice.

These women actually in a way liked me. They confided me their very intimate secrets, they confessed the issues, which they would never trust anyone else. I kept this all for me, and they knew their secrets to be safe with me. I helped them by their troubles – the most effective was the boiled water with herbs and the regularly hygiene, especially below, and only then the perfumed oiling of the whole body, reduced use of the eyelid darkener and sweeties, the younger not sitting everywhere as they were in the palace mostly clad in just slippers, a decorative girdle and a wig with ornament. Naturally also a child care...

I studied them, who would be trustworthy, not a gosling, not stupid, not interested only in jewelry, harem's gossip and intrigues, and who would be attached to me, to me as a solicitor. They took me as a smart juvenile, unmarried and alone, childlike, in a way somewhat suspected me, actually subconsciously knowing me to be a man, but amusingly behaving like mothers to me. Somewhat in opposition to their wishes to be solicited in their intimate issues.

At last was it obvious to be most convenient for me, none of our women, but a stranger, more bought as a slave woman than a princess for the pharaoh, presented him due to some friendly relations of some very distant country in the east.

She was actually from somewhere in the north, not originally at home in the presenter's country, she spoke hardly a word of our language. Therefore I made a sincere effort to understand her, to be so her the sole serious, but occasional companion. She was very pale skinned, as being made from a white alabaster, very delicate and fragile, slant dark eyes with a dark green hue, dark, long, rich and fine hair, her shape was a little bit less curved and smaller as our women have. She herself was gentle, somewhat melancholic and absent. I advised her to darken the skin in the sun and to bind the hair in our way, not to look to alien, to be accepted by others and to not provoke a distrust. She was just a short time pharaoh's favorite, her art of lovemaking was not so proficient as it is a habit of our women, trained especially for this purpose. So was she soon discarded, remained by side, pretty alone and sad among favorites, pregnant women and mothers.

A next step was to be made. Sometimes complained some women of similar troubles, which were more invented than real. To their satisfaction I declared that these troubles could be cured only in the temple through the divine power and they were happy to leave safely the palace with the eunuch guard, which accompanied them to an especial room of our temple. There were the eunuchs not allowed to enter and both parties not allowed to enter in the temple.

I commanded the women to wash themselves, kneel down and pray so long as the intoxicating spices smolder on the altar, silently in the dark and solitude... a priest disciple in a remote room sounded the gong at each turn of the water clock and determined so the healing period. The women restrained to come to healing even the second or the third time, it was contrary to expectations very boring! Just my strange Beauty was the sole to come. She was relatively frequent patient and visitor, each time we talked a lot, forgetting the cure. After a while she complained of some pain in the stomach, which I examined and found out to be just a pretext...

She was very passionate and pleasantly surprised of my capabilities, which she did not expect of me.

Her visits I limited to a reasonable number. Sometimes I prescribed again to other women the temple cure to cover her visits, but they avoided to come and they hold my Beauty for a religious fanatic and not a very sound one.

But she could just stroll around, sometimes serving, among them and listen to the conversations, which she was supposed not to understand, but she did it due to my lectures. She informed me regularly, but she preferred to cure with me...

She was intelligent enough not to exaggerate and was satisfied with the given. She became cheerful, the women ascribed that rightfully to my cure, but they refrained cautiously any remarks or questions.

I never asked my Beauty for her real name, later it was said to me her original name being Ai Ai, but I took it for a harem joke...

## **The pharaoh's tomb**

So as the construction proceeded was clear, that the pyramid could be never finished to be Khufu's tomb, even if he would live long past the normal age. As Hesi-Teute assured and inculcated me, I could not risk the construction to be stopped, if Khufu, conscious of this fact, would suspend the means. He was vigorous and healthy, in spite the years. The information from my Beauty was not very assuring – even if it was clear, that he knew the construction progresses to slowly, he did not undertake anything to stop it. The responsible were also the viziers, which took part in directly to survey the various tasks, however they, somewhat silently, unofficially, but mandatory, subordinated to my guidance. At troubles or obstacles they did not have a choice – their knowledge was to meager, and I helped them out. In spite of all, I came to conclusion, that something in the case of

loss of his support or his death had to be undertaken. After a long and throughout consideration – to endanger to fulfill the holy task, not to realize ideas, time consumed, resources spent, lives lost, effort of thousands and mine– all possibly wasted!

As the last resort remained the fact the sooner the divine Khufu dies the better stand the chances to realize the project – before he could decide its termination or suspension. Due to the respect he enjoyed from the people and the priests, would nobody of heirs dared to stop the construction of his tomb and temple.

But a replacement tomb for a meantime will be necessary...

To solve this issue I demanded some workers with the families from the Ta Shemau, from Vo'se, from the upper Kem, without the relations and relatives here by us, to be sent to me. On my order a priest from Vo'se has found them. I let him know, that we did not have enough workers and these people would stay a longer time by us and very probably would not return ever. I got also some armed guardians, which were glad to change to us, also there from.

On a journey in the west desert, where we have surveyed some time ago the places for eventual outposts, I recalled the rocky hills, where we rested to cool off. So I composed a caravan of both parties, supplied them with provisions and led them to that hills. On selected spots we left some water and food buried for the way back. The caravan was divided in two parts on a protected place, a spot to be revisited to store or fetch provisions hidden in the sand. One part, the workers, their families and some guards continued with me, the other part should wait for me to return.

In the hills I have chosen a narrow gorge. There they had to chisel the tunnel passage and a wider chamber in the rock according to my drawing. They may also dwell later in and expand it to the desired size. But they should not return to Menofer till my order to do so. I will come myself to survey the works and the progress regularly from time to time. So it happened. The caravan from Menofer has brought the provisions to the chosen spot, we waited for the workers to fetch the provisions and I left with them to control the progress. Thereafter they accompanied me back to the caravan, which returned with me and a list of next provisions and tools to Menofer. Everybody knowing of caravan in Menofer was convinced the caravan has some trade with desert tribes to do, and for the security reasons all has to be hidden and secretly dealt with, The gossip listed jewels, metals and much else.

After almost a year the passage and the chamber in the hills were large enough. I ordered them to provide stone blocks and material to build a smaller fortress, which should give shelter to a military unit protecting Kem from this side – able to attack the enemy in the back.

The moment has come to misuse my Beauty for this fatal aim. I have to confess to have been fully aware of it. The aim, which I disgusted, hated from all of my heart, but I had to fulfill this holy task, now getting to be dreadful...it was unavoidable...

The mighty pharaoh must die...

### **The death of the pharaoh**

I hoped to get the right opportunity – a sickness, an accident, a fight wound...It had to be soon, the caves in the desert were almost finished, but the pyramid far from that.

The misfortune terribly rewarded my impatience. The pharaoh attacked a panther, which he had just hit with an arrow, with a sword, however the panther was still very alive and it teared a deep wound in the pharaohs left thigh. The pharaoh was still in the far south when the wound inflamed. There was no proper physician on the spot, as the travel should have been just administrative and a short one.

Only after his return to Menofer was I summoned to him. I gave him some relieving drinks and cleaned the wound, called the gods, especially Usir, the heavenly hunter. Priests of Ra were ordered to do offerings and pray for him. My Beauty was arranged to serve and to nurse the pharaoh.

On an occasion later, I gave her, disgusted and horrified of myself, discretely an especial drink to serve it to pharaoh.

She took joyously the little vessel, but she immediately stiffened, when she looked at me and saw a dreadful horror in my eyes. She understood in that moment all, she realized to be a victim, to be intentionally and voluntarily sacrificed by me and that I have just already done it. She was leaving very slowly, with heavy steps, silently giving me a very, very sad and serious look. She knew this was the end of all, she turned and I never saw her alive again.

I hoped for the best, also for her, but it came out the worst.

With her help the pharaoh swallowed it – he died swiftly, painless – but at that moment the pharaoh's body guard took her by surprise, immediately assessed the situation and stabbed her. He was shocked and feared to be probably accused as her accomplice. In his fear he did not rise an alarm, but he summoned me to help him to clear the situation. He was afraid of me and he hoped me to protect him.

I expected to find the dead pharaoh, but I was terribly affected to find dead also my Beauty. I do not know how I could have kept me calm, kept sound head, deadly enraged and not showing it.

I reassured the guard to make a proper examination, collected the vessel and the mutilated and desecrated body of my Beauty and let her to be brought to temple.

In the following dispute among the pharaoh's sons for heritage, the circumstances of his death were not questioned. The flesh around the wound was already rotten. I let it be known as the cause, but in certain circles I raised the question of the guard's behavior – he was soon afterwards also embalmed.

The embalming of pharaoh was immediately undertaken and I took care to embalm also my Beauty. Later I buried her in the cave with my parents.

I was very furious and very sad – I lost the only two human beings to which I cherished a closer relationship. I was loyal to the pharaoh, who was always very friendly to me – actually I would have been his best friend if he would not have been a pharaoh. And my Beauty – an infinite sorrow and a heavy and terrible burden of my guilt. But I had to fulfill the will of Ptah unavoidable and it was my fault, guilt and crime, not to find any honorable, proper way to achieve it.

### **The funeral of the great Khufu, the late pharaoh of Kem**

With this conscience I continued with my task. It was the pharaoh's funeral, which I intended to realize according to all rules as much as possible, protecting his body for the eternity by all means. Nobody, especially not his heirs, should disturb and desecrate his rest. I knew, he will forgive me – it was the will of Ptah, the holy will, the will higher as divine forces. But Ptah will punish me, punish in oblivion. It will be so, Ptah being the supreme Being ... and if he cares at all.

With the obligate rules we performed the worship, he was properly embalmed and a wealthy outfit was set for eternity. The pyramid was of course not ready for his entombing. Therefore I let a staged entombing to be performed to be seemingly put to rest in the unfinished pyramid.

A sarcophagus was brought, it was damaged, but it served good for a fake burial – the stone for a new one was still in the quarry. The sarcophagus was placed in the unfinished royal room. The treasury room I ordered to be closed. The stone blocks were released with the ropes led through the shafts.

The outsiders had the impression the pharaoh has in the royal room been entombed, the other were convinced of the temporary and secret burial in the treasury room, only some of the closer engaged suspected this not to have been the case.

I declared solemnly the unfinished pyramid for a temple and so only the chosen priests and workers were allowed to step in or on the certain construction sites. So was the access to the chambers for the most forbidden and the means to continue construction assured.

The real story was somewhat different. When we were moving the pharaoh's mummy and the treasures – all well bound in the usual linen and over covered with the more profane rags on donkeys – by a caravan to the pyramid, was the burden with animals handed over to an another caravan. It happened hastily and silently in the night, so the first caravan get the impression, the second one would transport all to pyramid and then seal it off due to secrecy. But the second caravan was the one which usually transported provisions to the desert place. They were told also some goods have been added for trade with the desert tribes and some more outfit for the outpost.

In the same night we left and in time arrived at the usual meeting place. There already awaited the guard from the hills. They took over the cargo and me, and we left for hills; the caravan stayed waiting for me to return.

I ordered the whole cargo to be stored in the rock caves, to fill the passages with sand and stones, and to seal the entrances. The workers were somewhat astonished as they considered the caves to be dwelling for the military. I calmed them saying that we are only hiding provisions, tools and weapons for the eventual need to defend us from this side.

It was known the military in a case of war usually hid provisions in regularly distances on the way to remote places.

I promised them a rich reward in Menof, but when we came sufficiently far, I ordered the guards to execute them all, including wives and children, and to bury them on the spot. The astonished guards, which were afraid of me as an evil sorcerer, did it. I then performed devotedly the funerary rites and prayers for the dead. I informed the guards to be all according to the will of Ptah, the slain fulfilled their task and they deserved the full respect. It was not allowed to rob the dead, a rich reward awaited in Menof, they have not to question and comment the religious issues.

I myself felt strange, weird, as not being myself but somebody else. After the death of my Beauty, was I more and more alien to this world, getting to be very calm and cold, as would have been an actor and a spectator.

We returned to the meeting place, where the caravan waited to leave for Menof, The guards, which returned with me, were all, after the meal and drink, also killed in the sleep, and buried according to my order. For them I performed also the funeral rites, calm, observed by the bewildered and scared executioners.

After the arrival to Menof, they were paid off and I ordered them to return to upper Kem. My helpers from temple, who cooperated in the secret transport of pharaoh's mummy, were ordered to accompany them in the boat and take care of them not to talk too much. Officially were they declared as visitors to temple in Vo'os. They felt all somewhat strange to be ordered to travel together, even if they sat in different boats. After the Siut every traces of them all were lost, as an unintended favor of a vizier, who was convinced to have to remove a bunch of conspirators from upper Kem – yes, they endanger the new pharaoh, yes, also some younger priests are among them. The lands of Ta Shemau did not forget to have had their own kings, the long gone independence and now a heavy burden of contributions demanded by north, the means to build temples and a pyramid spent far away.

The vizier ordered his people, according to payment, to keep silent as the slain may have some mighty allies, who could take revenge on them. For the slain, in spite some of them have been my disciples, I did not perform any funerary rites.

So, the eternal peace and undisturbed resurrection was assured for the great Khufu. There was no chance for his tomb to be robbed, no possibility to desecrate his mummy and I knew that his Ka was standing on my side, satisfied. Now, I am the only one to know where the noble Khufu rests and soon there will not be anybody more.

## **The times after Khufu**

The construction was continued, we somewhat arrived to compose the great ramp and the great passage. The pharaoh Djedefre did not stop the construction, but it was slowed, paced down, as I had to plan and to construct with my disciples his pyramid and a mighty temple with a great causeway to the plane on the hillside higher than the Great Pyramid's position. He was very haughty, arrogant and greedy. I suspected him to tolerate the further construction only to assure the real tomb of Khufu would be at last the Great Pyramid and he could access the treasures. Somehow he suspected his father have not been there buried. He also suspected me to be the only one to know where the real tomb of Khufu was laid. Yes, he was right...

We both had an aversion to each other, but he had to rely on me as a constructor and even more as the high priest of Ptah, whom he has to respect in a way. He respected also my power, which originated in the priesthood and especially in the fear and respect of the people, maybe due to my reputation to be a sorcerer – momentarily a benign one - with the mighty magic powers. For him were these very convincing facts as his reign and his power based on the fear mostly.

He seized a part of material for his own pyramid, what bothered me very much. But at last, he did not live long enough to have his pyramid and temple finished.

Actually he already suspected his pyramid will not be finished for his funeral as he got very sick. His physicians – he did not want me to be among them – kept it also secret. But it was obvious – he could not almost walk, his body was swollen, the hands trembling and from moment to moment he shivered. Clear, some combined malaise struck him, but as I did not examine him I could not the real causes find out.

The construction of his pyramid was pushed forward and I was summoned to official audience in the high house – to deal with me in public, so I would not dare openly to oppose pharaoh. He ordered me to pause completely the construction of the Great Pyramid and to channel all efforts in construction of his pyramid. I knew this could be the fatal blow to finish the Great Pyramid ever. All the time, victims, effort, resources would be wasted and the holy task not fulfilled...

So I stood before him, he sat on the higher positioned throne, somewhat grayish in his swollen face, breathing heavily... I stood upright, with only slightly bowed head, looking straight at him, to show the obliged respect, but due to my position not a servant's subordination, and I intended to dispute politely the issue. I put forward my objection.

He understood the situation, which he took for the covered rebellion, but he wanted to dominate-

- As your master it is my decision and you have to accept it!

This was an open insult – he should refer to me as a pharaoh and not as my master, he should to express his wish and not to give a command to the great priest. So I decided to strike back -

- O mighty pharaoh, we both are servants to Ptah, to our people and to our country ... I am obliged to fulfill the holy will of the supreme Ptah, but I will do what I can ... and with your permission let us ask the gods...

It was a clear no and he was enraged trembling even more than before – I knew, he would try to murder me as soon as possible, but covertly. I put himself and myself on the same level as Ptah's servants, a covered insult. He knew, the divination, if permitted, would be performed by me and the

result would be surely in my favor, so would be his order really annihilated. The audience stood motion- and speechless, bewildered of the show...

I was then dismissed, I greeted officially, and tried to guess, who could be appointed as my successor.

The people usually avoided me, so I could not find out if I was already doomed and nobody wanted to be in my company, so I sat the temple to calm down and to think over the situation.

The temple hall was completely deserted, in deep silence, I sat there the whole rest of the afternoon, the sun sank slowly, cicadas started to chirp when somebody slowly approached and somewhat frightfully, with a great respect, timidly, asked me to excuse him to bother me. I bowed and remained silent...

– The mighty pharaoh Djedefre passed this afternoon...

He was one of my disciples and he hastily left not waiting for my answer...but the almighty Ptah has given it!

Everybody was convinced – according to my reputation – the pharaoh Djedefre has fallen under my magic spell or the almighty Ptah have been my protector, and I only represented him. The pyramid of Djedefre was finished provisionally and he was buried in.

The new pharaoh Kafre let the construction of the great pyramid to continue. He was understandable more interested for his own, designed also by me, but the construction was led by my disciples. The following pharaohs Baka and Menkaure also did not interfere – they seized only some material and manpower to build their pyramids. To all was common the use of the water channel and the sand transport sledges. I let the survey of these constructions to my disciples, but to the last stone I took care and surveyed the construction of the Great Pyramid.

With my age growing, my guards brought me in my sedan-chair to the construction spots.

Sometimes emerged grave problems on the site, so they hove me also to the highest level of the stone block layers. I gave the advice to solve the problem. Usually was problem to find out the most feasible dragging rope paths and configurations to move a heavy burden to the aimed spot, when all remained stuck due to some accident or estimation error.

From the death of pharaoh Djedefre, his followers did not appoint me ever more as their counselor, even less as the official physician of the high house. We met only on occasional festivities and offerings, they were polite but they kept a distance to me.

Also the ordinary people shriveled, bowed the head and cast their eyes, and accelerated their pace by encountering me. But I performed my duties as a priest, a physician and as a constructor as well and as usual.

I noticed, that the majority already forgot the mighty Khufu and if not, they all were convinced he was there in the Great Pyramid buried. Almost all, who knew him in person, died one after the other slowly.

The constant control, the survey and the last construction actions prevented the probable attempts – by them, who should prevent them – to break in the pyramid. Maybe, they gave up in spite of their greed, and let it in their striving for power to the later times. But for sure, they did not want to offend the temple priests, us, especially not me. Our support to their power and the loyalty of our believers were too important.

### **The pyramid: The principle of the plan**

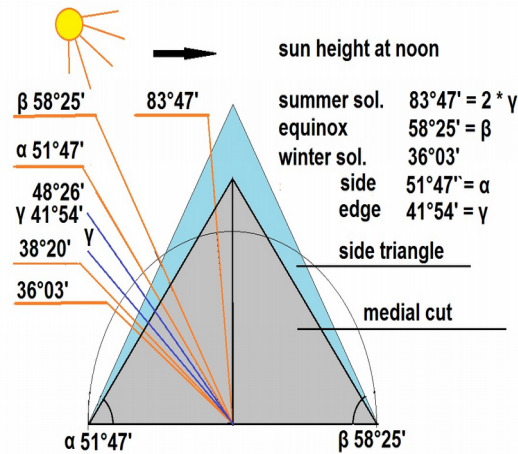
The pyramid should be divine, shaped on principles of Thoth, balanced on principles of Ma'at, let it be supported by Gheb, let it strive to Nut, let it be lighted by Ra as Aten according to principles of Thoth and Ma'at, let it be built by people according to principles of Usir and Eset, let it be surveyed by the priests of Ptah according to all rules.



These rules were to me by the great priest Hesi-Teute in detail cleared, explained and justified. I remember very well his first lessons based on the Imhotep's design.

The figure 1 displays the principles to shape the pyramid. It is the view from the east – along the diameter cut through the middle in the north-south direction. For the comparison the triangle of the pyramid's side surface is in the back, shaded.

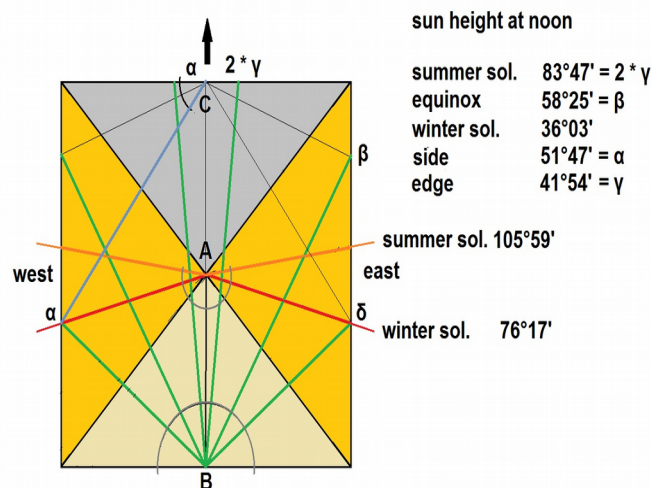
Fig. 1



These principles are laid according to the angles of the Aten's height at noon at the most important dates – the summer solstice, the equinox and the winter solstice. Thus, the base angle  $\beta$  of the side triangle equals to the angle of the Aten's height at noon at equinox, the angle  $\gamma$  of the edge slope equals to the half angle of the Aten's height at noon at summer solstice. Even with one of these angles is the shape of the whole pyramid already given. Also is the inclination angle  $\alpha$  of the triangle side thus fixed. It has the relationship to the angle of Aten's height at noon at winter solstice.

The ground plan of the pyramid (fig. 2) shows all these relationships.

Fig. 2



The base sides of the pyramid have to be exactly in the wind rose directions: north-south and east-west, and the main axis is to be north-south. The directions of the sunrise, of Kephry, and of the sunset, of Atum, at winter, as well at summer solstice, are the angles centered on the point A. The angles centered on the point B:  $\delta$  is the direction corresponding to the Aten's height angle at winter solstice,  $\beta$  is the direction corresponding to the pyramid side angle,  $2 * \gamma$  is the direction of the Aten's height angle on summer solstice, all at noon in relation to the south base side. All directions are symmetric in the other half of the ground plan. It is also evident that the directions divide the

half of the base in the similar triangles, and that they also cross on the east and west edges of the base.

The difference of the angle on winter solstice east-west  $151.5^\circ$  and the angle on summer solstice east-west  $205.2^\circ$  is  $53.70^\circ$ , the half of it  $26.85^\circ = 4 \times 6.71^\circ$ , where it approximately corresponds to  $90^\circ - 83.32^\circ = 6.68^\circ$ , which is the difference between the vertical and the Aten's height at summer solstice. So are the angles of Kephry and Atum at solstices connected with the height angle of Aten at noon at summer solstice and the vertical. The largest annual movement is then given with the angle  $26.51^\circ$ , corresponding approximately to the inclination angle of the passages and ramps ( $26^\circ 31'$  in the rock ground). This angle corresponds approximately to the smaller angle  $26^\circ 31' 1''$  of the holy triangle 1:2:V5 ...

The direction  $\delta$ , the height angle  $36^\circ 03'$  of Aten at noon at winter solstice is smaller than angle  $36.87^\circ$  of the holy triangle 3:4:5, which is also smaller than the angle  $38^\circ 20'$  of the perpendicular on the pyramid side; the angle  $\alpha$  of the pyramid side  $51^\circ 38'$  is smaller than the angle  $53.13^\circ$  of the holy triangle 3:4:5, the difference of the solstice angles  $53^\circ 43'$  somewhat bigger. It is evident that only the divine, but not the holy rules, are fulfilled...

Rem.: The angle  $\alpha$  of the pyramid side is the angle cited to be the one chosen for the stable build up of the pyramid, following the unsuccessful trials to build the ideal (according to holy rules) pyramids by pharaoh Snefer – the red and the bent one. The shape is then defined by the pyramid height. The angles I cite in the modern units, the ancient Egyptians used (co) tangents – the fractions of the triangle sides. The figures are drawn and adapted according to the narrative.

Thus the shape of the pyramid was defined according to the divine positions of Aten at noon, according to the rules of Ra at the solstices and the equinox. The pyramid size has to correspond to the might of the pharaoh, his power and dignity, but the dimensions have to reflect the divine relationships.

The pyramid has four sides – north, east, south and west – so is the number 4 a holy number and the relationships to this number are already given. The circumference of the base is  $4 \times 44$ , the height  $4 \times (4+3) = 28$ , where the number 3 the triangle sides of the sides represents. The royal dimensions were given with the factor of ten of these values in the royal cubits – the base side 440, the height 280 royal cubits. So are the pyramid shape and dimensions completely defined.

## The structure

The great priest Imhotep planned the pyramid more as a temple, a temple to be seen from far away and not as the usual temples as the buildings with the altars, rooms, corridors and yards. As a temple, the pyramid would have had the permanent clergy, performed offerings, worship and received the believers, their gifts and sacrifices. Thus he planned just one room under the pyramid as the tomb for the pharaoh. The permanent survey of the pyramid by priests would have disabled any robbery attempt.

To me, it was too credulous, the times also changed, therefore I changed the plan according to my ideas. Thus was this pyramid getting to be the Great Pyramid.

If the great Khufu would have been really entombed in the Great Pyramid, I would not now describe its structure. I would never permit any description to be left over that would enable to facilitate the eventual robbery.

Actually the great priest Imhotep planned the pyramid according to the sun movement, to Aten, to Ra, and not according to holy rules of shapes. Why?

As previously explained, from the Action of Ptah emanated the principle of Ra, who is leading the movement of Aten and enables the life. The duty of pharaoh is to take care for the terms of life with

his actions. In this way the pyramid has also to be the symbol of our world, our life, of us and of our pharaoh. These actions enable our, as well as the pharaoh's resurrection after the death by the final unification with Ptah. Therefore the pyramid has to be built according to the divine rules of the Aten's movement, which are not holy, not perfect, but just tend to be.

So has Imhotep taken the decision on position, direction and shape of pyramid according to these rules. It was my duty to complete the plan of the inner structure, size and construction.

To do that I have foreseen two rooms – the pharaoh's royal chamber and the treasury chamber for his Ka and his assets. My estimate was that the easiest way to break in the pyramid, in the foreseen royal chamber, would be from the top of pyramid. The structure was correspondingly adapted.

Layers of granite stone blocks, which are not easy to break, due to the weight not easy to remove, were foreseen over the chamber. To remove them it would be necessary to dismantle a part of the top of pyramid. The access to the chambers was clearly evident during the construction, therefore these defenses only in the far future, when the structure would be already forgotten, would be efficient.

I decided the passages to be used as ramps to transport stone blocks, and also as gliding ramps for counterweights. They would be thus located in and not outside pyramid. This justifies the solid build up, the ramps need not to be after their use dismantled. The material would be saved, spared and they would be an integral part of the pyramid itself. Also the already built parts of the outer sides of the pyramid could be used as ramps - thus everywhere as they are not covered by any temporary ramps.

The inclination of ramps was defined according to the holy relations of the triangle  $1:2:\sqrt{5}$ ,  $\sim 26^\circ 31'$ , corresponding to the difference of the sunrise or sunset at the both solstices  $\sim 26^\circ 51'$ , as the Aten travels yearly.

The inner structure of the pyramid should be accordingly the symbol of the divine rules, the gods Tefnut -Humidity, Shu -Air, Gheb -Soil and Nut -Sky and of their children.

Tefnut and Shu are the Essences, the Beings, changing, impossible to embrace, always moving, but they had been, have been and will have been always embracing all, they will enable the construction with their properties – water and air. Thus will be the pyramid and its surroundings always their symbol.

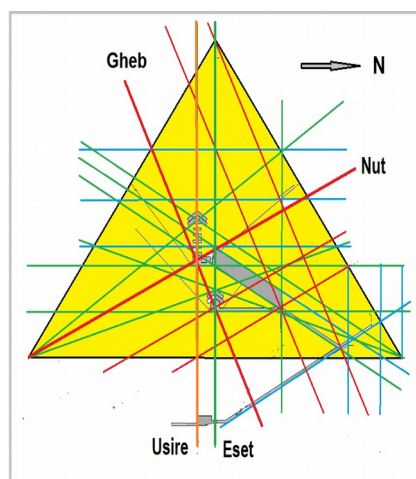
The symbol of Gheb are the stone blocks and the base rock of the pyramid, which will strive to Nut, to the sky. Its symbols are the divine directions in the structure – to the navel of Nut, the center of the star movement, which is perpendicular to the direction of Gheb. This direction is leading the charioteer Heru of Aten. All these directions connect also their offspring Usir, Eset, Nebethet and Seth together. They all let be related to the holy directions of the triangles  $3:4:5$ . and  $1:2:\sqrt{5}$  with their angles to the divine ones.

The main units of the inner structure are the great royal chamber, the treasury chamber, the empty chamber, the great ramp with the great passage, the passages to and from the chambers, the shafts out of chambers. The passages may be used as ramps, the shafts as leads for the pulling ropes. The royal chamber should be the symbol of Usir, the resting place for pharaoh, his descendant through his son Heru, to wait to be resurrected. The treasure chamber will be the symbol of Eset, the devote companion of Usir, the protector of home, the savior and the divine mother as it is the royal duty of queens. The empty chamber will be the symbol of the defeated Seth, subordinated to all. The passages and the ramps are in the divine relationships to the divine directions – they are all the symbols of the reconstructed body of Usir, the efforts of Eset and the help of Nebethet, all mutually connecting.

The position of these structure units was planned along the medial north-south diameter cut, but set off of it not to be easily located. Every resource at this position inside or outside can be used right to the final works, to the top of pyramid. The structure of the royal chamber was planned with the granite blocks, bigger and heavier than the lime blocks of the pyramid body. All passages have to be adapted as ramps and their floor surfaces for the foreseen counterweights. The position of the royal

chamber should not be in the middle, due to the divine and building reasons. Namely, it would be above the treasury chamber and its weight may probably overburden it. The divine reason is the imperfection symbolized by this position; Usir was never completely revived, his life power stemmed from the might of Eset, but as a lord he has to have the highest position. The treasury chamber, the symbol room of Eset, is in the middle of the pyramid, but lower than the royal. It is also the symbol of life and welfare from Gheb, being in his proximity. As already said, is the Seth's chamber a room of disorder in the underground, burdened by the whole divine pyramid weight. The positions of all units originate from divine and holy directions, as well as their sizes, designed accordingly to the construction constraints, given by the size and weight of stone blocks.

Fig. 3



Rem.: In the figure 3 is depicted the pyramid diametrical cut, the position and the structure of units, which are defined by the divine and by the holy directions. Gheb – the equator, Nut – the north star, Usire and Eset – south up, north down – ecliptic. The cut is given according to the modern measurements, the directions according to Imhotep's description. The precision of depiction is limited to the line thickness, which could be considerable – the order of magnitude of some cm or even dm – off in the line crossings defining the position and the size of units. These facts confirm the planning by Imhotep the younger. But the position of the treasury chamber arises the suspicion to be already planned by Imhotep the elder, to be foreseen as the main burial chamber and the present royal chamber could not have been positioned above, due to overburdening.

Hesi-Teute continued -

- The viziers and the great priests of pharaoh Djoser wanted to build the perfect pyramid to the glory of pharaoh, but they realized that neither one nor the other would be finished in the common life span, as I already mentioned.
- The pharaoh Snefer wanted to continue the construction of the perfect pyramid and as you know, he did not succeed because he did not honor the will of Ptah. Not only that his vizier was not capable to fulfill the perfect measures, the construction obstacles prevented the successful accomplishment of the already started one. The pharaoh Snefer was therefore entombed, according to the decision of the great priests, on a secret place and not in one of his pyramids, which are not divine.

According to the measures originating from these rules I defined the sizes and the shapes of the granite and limestone blocks, for chambers, ramps and for counterweights. The greatest challenge was the planning of the great ramp and the great passage construction, which demands a significant number of the equally sized precisely ground blocks. The structure alone is not complicated, but the construction will be the most complicated proceeding due to its position, inclinations and balance, closely adjusted and adapted delivery, placement and anchoring of blocks. It should alternate with the construction of the adjacent layer of lime blocks. The caution is necessary when setting the

lower north part, which will bear the most of the burden. In the uppermost layer of the blocks, which are still to be laid along the passage, are foreseen notches ground inclined to the passage. They have to prevent the cross blocks of the roof layer to slide down the along upper laid blocks. The functioning of the great ramp is essential for the construction. Therefore will be the great passage the greatest part of the inner structure. It was especially designed as a structure to enable to deliver the heavy blocks for its own structure and for the royal chamber. To achieve that were on the ramp the especially adapted gliding surfaces for the heavy counterweight with the simple equally distant brakes along the ramp foreseen. More on that later.

The structure and the measures of the chambers are not complicated, but planned according to the divine rules. To check the structure and to enable the final workout of blocks as much as possible precise, I ordered the model chambers in a very reduced size to be made first, then their shape and their position in the model real structure to be tested. Out of the both chambers two pairs of shafts leading to surface of the pyramid are also foreseen. They will be used to lead the pull ropes and the chambers as the places to link the ropes in the desired connection. These shafts are also directed according to the divine rules. After the entombment the access to the chambers will be blocked with the blocks released with the ropes lead through these shafts.

Rem.: The plans of the chambers and of the great ramp and the great passage were not in the script bundle. The up to date research on pyramid structure was used to clear the Imhotep's instructions.

As the royal chamber may be accessed most easily from the top of pyramid, I decided to reinforce it additionally. The roof layers of granite blocks, which are hard to remove, due to their size and weight, and also hard to chisel off – and thus each layer being anew an obstacle – were therefore foreseen. Between the layers should be some distance – the layers should have raw upper surfaces. These raw surfaces are more difficult to chisel off, or to remove the block. Such structure demands an extra effort to remove the proxy blocks of the pyramid body. Each break in, from the side in the royal chamber, would be for the culprit fatal due to the weight of the piled on blocks, which are not bound tightly in the pyramid body and the roof can so cave in.

## **The passages**

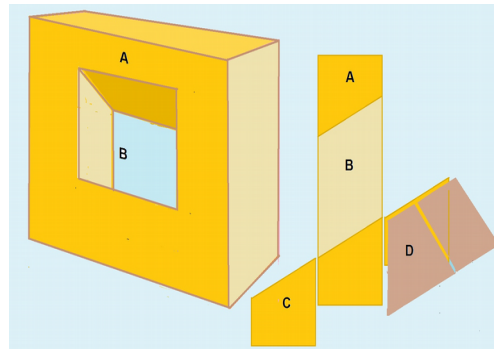
The lower, Seth's chamber and the passage were chiseled out from the rock base already in times of the great priest Imhotep the elder, before the rock plane to build on was ready. However only the smaller pyramid of the divine shape was planned as the temple and the pharaoh's tomb. Actually there were foreseen two descending passages, the finished one towards the north and the unfinished from the chamber towards the south. The north passage exit on the rock plane betrays the size of the primary planned pyramid. It descends under the angle of  $\sim 26^\circ 31'$ , according to the holy relations of the triangle 1:2:V5. I decided to use it as the ramp for the counterweight to pull the blocks to the construction site.

With the height of the block layers already set, should the passage be prolonged and connected to the foreseen ascending passage. This passage leads to the great ramp and on their junction should start also the horizontal passage to the treasury chamber.

The rock surface of the descending passage should be checked on the smoothness by the light rays of Aten. The surfaces should be ground, the ones to slide on also additionally polished. The lower chamber should be partially enlarged and a vertical shaft in the floor added to collect the lubricant from the ramp to protect the crew. This crew should take care of the rope links and its task is also to lubricate, to brake and to release the counterweight.

The ascending passage has to be, due to the connection to the great passage, constructed with the greatest precision and care. It is also foreseen to be blocked with the granite blocks, which have, after the entombment, precisely to fit in.

Fig. 4

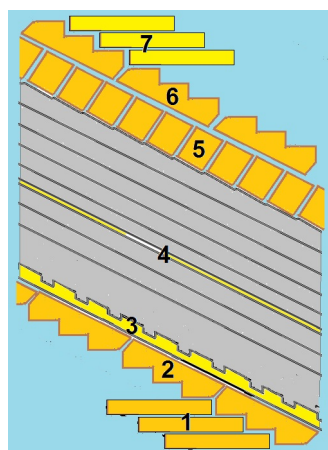


To achieve the desired precision and measures, the special blocks **A** with the openings **B** equal to the passage size and the passage incline angle should be produced. To anchor them the blocks ground under the passage incline angle **C** and **D** are foreseen. The blocks on the side and on perpendicular side of the passage wall should be slightly wedge like ground. They have to fit tightly with the vertically set blocks **A**. The wedge form should enable the precise positioning of all blocks to enforce and to stabilize the passage with the weight forces lead side warts in the pyramid body. The blocks mutual positions should prevent their contact surfaces to extend more than the single block length. The whole construction of the passage should be tested by the stone cutters already in the quarry prior to delivery and placement. Just small corrections would be tolerated on the construction site. Each block has to have already defined and known position in advance. The vertical blocks with the openings should be built in at the prescribed distances.

### The great passage

The especial care will be devoted to the construction of the great passage. To distribute evenly the final burden the foundation with the staircase structure under the desired angle must be reinforced. Then the foreground blocks should be laid in this staircase structure and the final grinding completed. The desired angle should be controlled by the water balance and the mutual position with the Atens rays along the incline. Only then the previously ground blocks of the floor structure, then the blocks for the ramps and then step wise the blocks of the shelf side structure should be laid. The last should be built from down up, exchanging alternatively with the construction of the pyramid body blocks, protected with the exclusive reinforced structure at the top of the passage. It is not necessary to mention that the adjacent pyramid blocks have to be enforced not to press on the passage walls. They have to be placed and stabilized prior to the placement of the great passage blocks.

Fig. 5



Rem.: The figure 5 shows the structure of the great ramp, great passage, according to the current knowledge but completed with the Imhotep's plan to build (the sizes are not to be scaled).

The principle of the construction is shown in the figure 5. On the raw blocks **1** will be laid the staircase like chiseled blocks **2**, which are with the final grinding polished to the desired inclination angle. This will be surveyed and checked by the water balances. Only then will be laid the blocks of the ramps **3**, and then the rest. With **4** is marked the groove to set the provisional roof, which should protect the ramps from the above falling sand and stone particles during the construction of the upper layers.

As already said, the great passage will be built as the shelf structure, with the blocks shifted rectangular to the passage, the shifts progressing to the top with each layer. The top will be finished with the blocks **5** laid across the last layer in the notches cut in an angle to the passage length incline. In this way the top blocks can not slide down, the pressure is evenly distributed over the upper blocks along the passage. The structure of the passage would be stable and balanced enough, but the whole weight of the pyramid upper body blocks may be eventually too much for these overlay blocs, which compose the roof of the passage.

To avoid overburdening, a structure over the great passage has to be built to lead this pressure in the full side part of the pyramid body. To achieve this a layer of blocks **6**, ground staircase like, should be placed on the roof blocks. In this structure will be pressed the layer **7** of blocks, which should be mutually shifted and pressed together, thus preburdened horizontally. Such self bearing layers will be capable to prevent the full weight forces to act on the passage roof. They, fully pressed in the adjacent layers, will lead the forces on all sides in the pyramid body on the layer level. For such a structure precisely ground blocks in two sizes, ground lightly wedge like rectangular to the layer will compose, mutually shifted, the structure as in the figure 6 shown.

Rem.: The forces are compensated in the fore burdened layer. Two sizes of blocks precisely worked out are needed

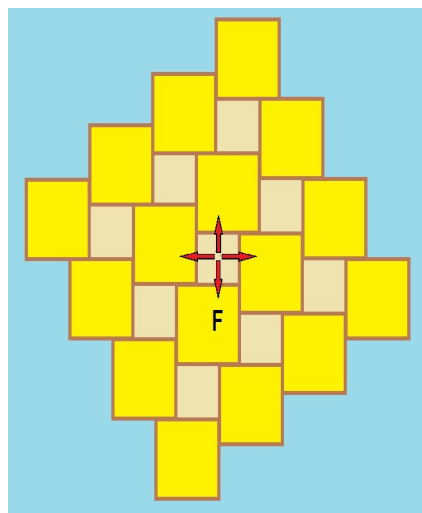
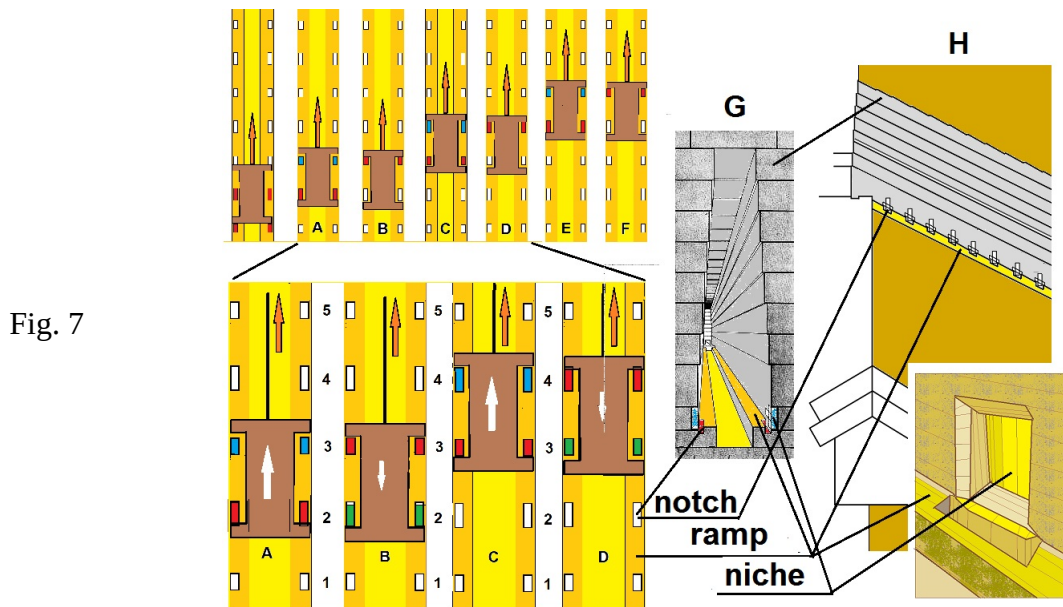


Fig. 6

An especial care has to be given to the pair of glide ramps in the great passage. On an especial support will glide on both the counterweight, which will be, after the entombment, used to prop the ascending passage. A part of the ramp itself and all granite blocks of the royal chamber will be pulled up and delivered by applying this counterweight. Both ramps have to be precisely ground, fully equalized and adjusted. The passage between them will be the final ramp of the prop, so the counterweight has never to fall there in before the end of the construction. The already mentioned support will glide only on and over side ramps, the passage under the support will enable to access the whole length of the ramp regardless of the counterweight position.



In any case the counterweight with the support might not slide or block unintended. Its movement has to be sternly controlled. It dare not move freely by itself. Therefore I foresaw on the ramps a series of notches, parallel and adjusted, equally mutually spaced, along both ramps. In the notches may be set stone plates as brakes, which will limit and stop the movement of the counterweight. At each notch – save the extreme – a niche should be in the wall to save the unused plate. The notches should be alternatively longer and shorter, all spaced according to the pull step of the elevator. The figure 7 shows the principle of the counterweight movement.



Rem.: The figure 7 - Above is depicted the general view of the ramps with the counterweight support in the various sequential positions, in view down the chosen cases from A to D are shown. In the position A is the support braked with the brake plates in the longer notches 2, the pair of the shorter 3 is ready to be used for braking. In the position B is the support slightly freed and held by the brakes in notch 3, the notches 2 are discharged. Then the elevator pulls the support in the position C, where it is braked by the brakes in the notch 3, the pair of longer notches 4 is then charged and burdened by the support in the position D, the notch pair 3 is discharged. The brakes are removed and the support may be pulled to the position E, where the procedure will be again repeated. G shows the great passage interior, H the cut out part of the passage medial cut, the notch and the niche. Not to scale.

The pyramidologists ascribe an especial great religious, unknown and deeply mysterious role, with much of fantasy, to the notches and niches of the great ramp, with no task to be performed at the construction.

The brake plates fit tightly in the short notches, in the longer notches are they shorter than notch and may be partially moved along the notch to discharge them unburdened without freeing slightly shifted counterweight. This enables easy alternating charge and discharge of brake plates, to remove or to insert them in notches at support pace like movement as well as it enables to adapt to the various sizes of supports.

## The water duct

It was intriguing to use the water power, the power of Nile, to reduce the necessary number of workers and animals and to build faster. Namely, from the certain number of people nothing is to be gained on power, the people hinder themselves or they have to be distributed on the too large distances from each other, what disables them to possibly effectively co work. Also the rope lengths, say by pulling, are too large and each pull may be consumed by elasticity before becoming effective.



The great obstacle is the position of the construction site high over the Nile waters, which even at the highest floods do not reach the plateau. Thus I decided to provide water on two ways – the first in the immediate neighborhood from the channel discharging water in the lower artificial lakes. In these lakes was stored the amount of water for the most urgent need in dry seasons. The water amounts were necessarily always limited, because we have to use dams to take advantage of the water current power by pouring in the accumulation lakes.

The second way - on the height of the plateau - I have foreseen a lake, which should have been filled by a channel, actually a water duct. This would have been a rather long one demanding a lot of manpower and time to build. At first we studied to build a channel from Siut to the building site. The water should have been taken as far the Nile upstairs as possible, to provide the water drop strong enough to deliver the necessary amount of water. The great vizier of waters did not object – there were already irrigating problems in the valley westwards down the Siut, demanding the deep watering channels and shadufs. He provided enough manpower to dig the upper part and to build the walls in the lower part of channel. It looked like ascending in the west hills along the valley. But it was obvious the drop of water to be too small, to even assure the water throughput further down, the construction too expensive and time consuming.

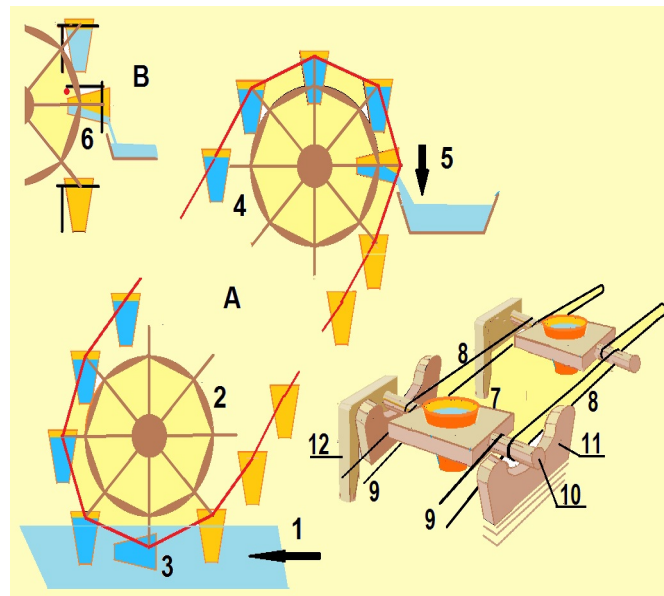
Therefore I decided to enlarge the channel by Shedet, discharging the Nile water in the lake Usir in the lowlands. My teacher Hesi-Teute proposed it at the very beginning, but the great vizier of waters did not like the idea. Maybe already the great priest Imhotep considered this possibility. At last was this the sole feasible solution. The already existing bed was enlarged to channel enabling the navigation for the block delivery from the quarries there and a greater water throughput.

With the water duct therefrom the height difference to the plateau was augmented for at least a quarter, but the duct length was reduced tenfold. The power of the rushing water from this quarter height was then possible to be used to elevate water above the plateau height, to fill the water duct dug there up towards the plateau. A dike was constructed to take the full advantage of the water drop, over the short distance. The upper channel, actually the water duct – as it was in no way navigable - was built from Gizeh towards south, upwards to Nile. The rock plateau is some 80 cubits (rem.: ~ 40m) high over Nile, so the height of at least 100 royal cubits (rem.: ~ 50 m) was to be overcome in the distance of 3.5 iters (rem.: ~ 35 km) from the construction site. The water was continuously elevated and so it permanently filled the accumulation lake on the plateau, also filling over night. A crew was organized to clean and take care of the duct not to be covered over by sand for a whole time of the pyramid construction.

To elevate the water we used an elevator somewhat copied from the water wheels used on the eastern rivers (rem.: Euphrates, Tigris). Namely the water wheels are driven by the water current with the paddles mounted on the circumference of one wheel, the other attached on the same axis, driven by the first wheel, has vessels mounted on the circumference, which are in water filled and up emptied into the trough. The wheel of the necessary diameter for our needs can not be built, therefore I decided to use the vessels in holders attached and mutually connected with ropes, similarly to a necklace or a closed loop rope ladder. The whole composition should be lead over two wheels, one down on water to fill and the other up on the desired height to empty the vessels. Several versions were built, various amounts and distances tested, to achieve the best results and efficiency at various water flows at Nile floods. Nowadays are they already obsolete as there is no need anymore for them. The pyramids are built, the farming on the plateau is not feasible, the channel maybe here and there recognizable in the sand.

The figure 8: **A** shows water flow **1**, driving the lower wheel **2** filling the vessels **3**, which are with the necklace rope links elevated to the upper wheel **4**, where are they emptied in the trough of the upper water duct. **B** shows the action principle of the lever to overturn the vessel **6**, **C** shows the principle of the vessel holder structure **7**. Each holder is connected to the next holder with the rope slings **8**, with the previous holder with rope slings **9**. Such slings are stretched between the axis **10** of all holders. The axis **10** fit on the wheel in the notches between the paddles **11**, which are in pairs

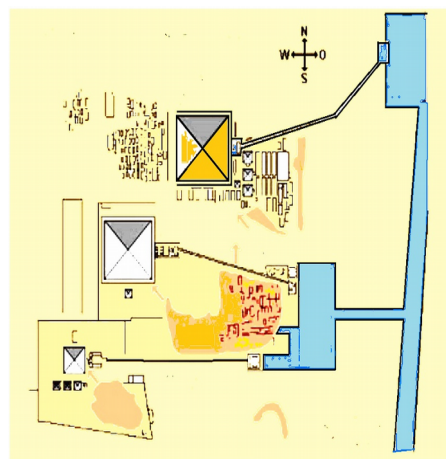
Fig. 8



fastened on the wheel circumference. Over the notches and axis is the power of wheel rotation transferred to the rope slings to pull the vessels and their holders. On the axis is provided the lever **12** to overturn the vessel (**B6**). The water vessels are conically shaped pottery, simply to produce, to exchange and to fasten. The rope slings are made from the multiply round wound ropes to ensure the proper strength; they are simple, fast and reproducible to produce. They enable fast and immediate repair or exchange anywhere on the loop. The whole structure enables to realize the convenient lengths of the elevators, which should be adapted to the various water levels at floods. Naturally are all parts so much as possible light weighted, but enough strong to enable to pull up speedily the necessary amounts of water.

The position of the pyramid is evident to everybody, the positions of the elevators at the site varied according to the need.

Fig. 9



## The water elevators

The transport, shift and lifting of the stone blocks were usually achieved with the boats, with the human and animal power, with the sledges and levers, rods and counterweights. This is really possible, but it is questionable how many people and how much time may the whole construction

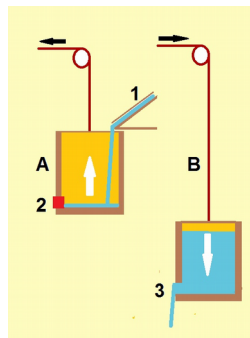
take, especially considering the very heavy and sizable stone blocks and the heights to place them on.

As already mentioned, the people in these numbers disturb and interfere with each other, due to their proximity on the space limited construction site.

Therefore I decided to use the water power where possible. The navigable channel was already built to the plateau base and the port at the quarry. To the base were the blocks delivered by boats ... but this is all evident and well known, I do not want to repeat it...

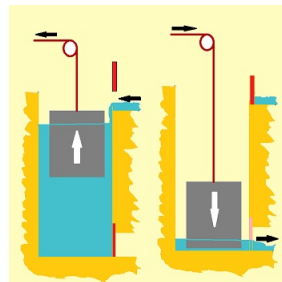
The water on the plateau was foreseen mainly to enable the shifting and heaving of blocks on the construction site. For the various weights were constructed various elevators. The most simple one, which were used to heave the blocks, was just a simple container filled with water as counterweight, pulling by descent with the rope around the bar the burden up (fig. 10).

Fig. 10



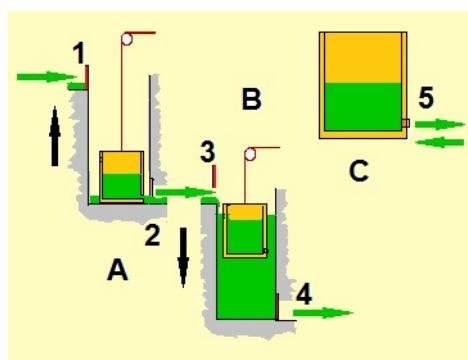
For the greater burdens was planned a counterweight immersed in water (fig. 11). By letting it to swim, to drown or to be without water bath, the pull or release should be regulated by the amount of water in the well bath. The buoyancy enables a light rise, with the empty well acts its weight as full pull force. The rope should be lead over the poles or cylinders to pull the burden in any direction set by them.

Fig. 11



The longer pull distance, to make a most of water should be achieved with the consecutive elevator structure. To have just one well deep enough is not feasible, it is hard to clean or to maintain, and also hard to realize. The figure 12 shows the elevator pair with the sparse use of water and a variable counterweight to reduce the power to heave it.

Fig. 12



In the upper elevator **A** was the counterweight lowered to the bottom, his pull finished, the water supply is cut **1**, the filled in flowing out of well **A 2** and of counterweight container in the well of elevator **B 3** heaving by buoyancy the empty container in the upper position, the pull continues by filling the container, then draining the shaft **A 4** and at last the container (**C5**). It is clear that the ropes have to be braked and linked anew at the change of elevator. The pulling power starts with the filling of counterweight container, remains constant by draining the well till the container sinks, at the bottom of the well the pull power rises, but without a movement. The burden is immobilized, the container drained to be hove again, and in the upper position reconnected to burden, all repeats again with exchange of the rope links.

## The sand elevators

As the counterweight in elevators is the water more convenient, as it flows by itself in and out. The inconvenience is the deficient water supply on the plateau and the lesser weight per volume compared to the weight of the blocks.

Thus we are bound to use also the sand elevators – the weight of sand is greater than that of water of the same volume, the sand is abundant on the plateau level and higher, but it has to be delivered to the desired site as well as to be removed after the use. Therefore I have foreseen the box containers on the sledges, rolling on cylinders or gliding, pulled by cattle or donkeys, on the wooden tracks laid from the sand dunes to the construction site.

The sand could be load in the container, pushed under the dune, by simply pushing and pouring it down from the dune.

The sand elevators were therefore foreseen mostly to rise the stone blocks to the plateau. The sand used was released the base of plateau and then dug away or used as a boat ballast by unloading or loading blocks to stabilize the boats immersion level. On the plateau were the sand elevators less convenient due to the additional work necessary to remove the sand used. The figure 13 shows the functionality of the elevators planned.

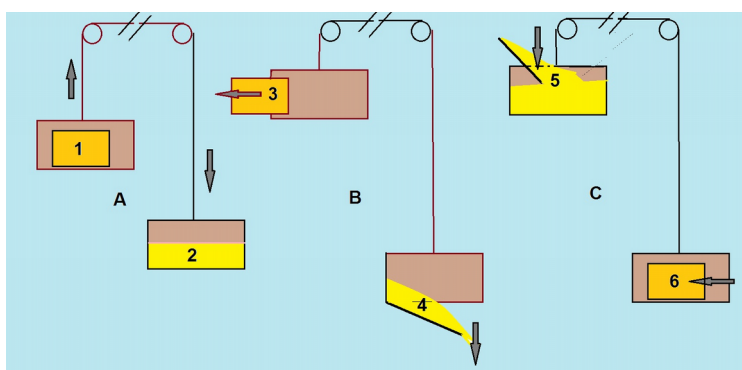


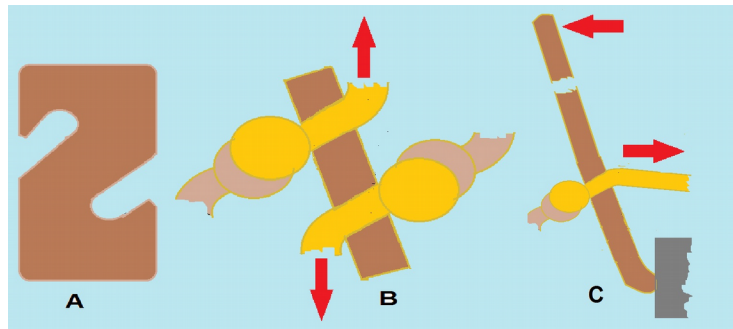
Fig. 13

The elevators enabled to alternate the role of the burden and the counterweight. **A:** the block **1** is hove by the sand counterweight **2**, at **B:** the block **3** is disloaded in upper position, the counterweight discharged in lower position, **C:** the sand is loaded in the upper box **5** to be the counterweight, the lower box loaded with the block **6**, and all repeats again. Naturally are box containers conveniently adapted to be easy and fast charged or discharged.

These are the simplest elevators to deliver the stone blocks from the port to the plateau. They can be used however everywhere as they could be simply, according to the need, positioned on the convenient site.

## The pull ropes

Mostly will be the burden moved in steps, in short or long shifts. This is very cumbersome, each step depends on the weight, shape and position of burden, at each step start a sticky force has to be overcome, and then the resistance of the rope and burden gliding or rolling. As already mentioned, it will be necessary to transfer the pull from one to another elevator for the longer pull paths or higher levels. Therefore the rope lengths have to be adaptable – to shorten or to elongate them according to demand in the working length.



The figure 13 shows the simple joint to connect and disconnect two ropes fast and easy. **A** may be wooden or metal plate with the opposite slant cut notches in the size of the rope thickness, **B** is the side view – the ropes possess in the convenient mutual distances knots, which prevent the ropes to slid out of notches when burdened, the unburdened joint enables the ropes to be easily removed and reconnected with the other pair of knots. The rope may be pulled also with a suitable notched anchored lever **C** using the rope knots where short shifts and a great force are demanded.

## The counterweights and the ramps

With the elevators is possible to move the burden only in steps. The steps are mostly much shorter than the distances of burden to be moved. Between the steps, on an inclination, the burden has to be braked, solidly fastened not to slide uncontrolled down the slope – a very cumbersome inconvenience and an unproductive work. The sticky force at any start of movement was already mentioned, it consumes power additionally and aggravates the movement even further. So I decided to construct the ramp with a counterweight on sledge support to glide along on the ramp's ground, polished and lubricated surfaces. The counterweight should be pulled up by the elevator, by each step it should be directly, simply and easily fastened on the ramp. The procedure is repeatedly reproducible and therefore simplified by routine and the structure. The counterweight should be able to be released from any position on the ramp to slide continuously down as far as demanded, pulling with the rope the burden to the desired spot. The movement of the burden would be so also continuous on a longer path.

Such actions would enable the simultaneous loading and unloading of blocks, heaving the counterweight and fast sledge movement over a greater distances.

## The leading of ropes

The pulling power from the elevators or the counterweights may be transferred to the burden with the ropes led on and around the fastened poles, columns or pillars in any rectangular direction from

pole. The sliding parts of the ropes have to be free of knots, ropes and poles should be well lubricated with fats and oils. The pulling power with the corresponding configuration of poles may be transferred to any spot on the site. The above described link serves as a speedy switch of power from spot to spot.

Also the consecutive – for a longer way – and parallel – for a greater force – elevator and counterweight actions are possible to realize with rope links and pole configurations. The pyramid shafts, the chambers and the passages could be used for such a case, which will surely be the positioning of the heavy granite blocks.

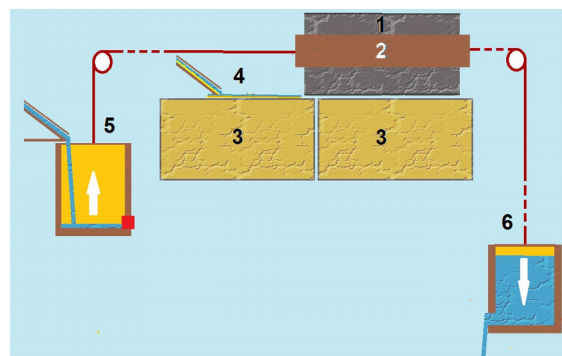
Rem.: Imhotep don't mention here the pulley configuration. The historians consider generally that the ancient Egyptians did not know such a rope configuration – to reduce the pulling power with the elongation of the pulling way. I think this to be a blatant underestimate of the old artisans, which have bound the planks in the whole ships with the ropes, and have built such a monumental buildings, that the such rope use had to have been found out naturally. What they did not posses was the pulley wheel – they just could not fabricate it – but they used the cylinders as poles, pillars etc. with polished and lubricated surface.

### The grinding of stone blocks

The water elevators, to drive the reproducible grinding of stone blocks to the desired dimensions and angles, were also foreseen. The shadufs provided the water from nearby stream or lake in the quarry. The blocks were ground also to the desired smoothness according to later need. The figure 15 shows the block **1**, with the frame **2** connected with the ropes to elevators, moving over the blocks **3**, which are ground with the mixture of water and sand **4**, poured, according to the movement of elevators **5** and **6**, on the blocks' surfaces. The block **1** was usually of the same stone hardness as the blocks to grind, for the surfaces more precisely ground and polished was used a harder stone.

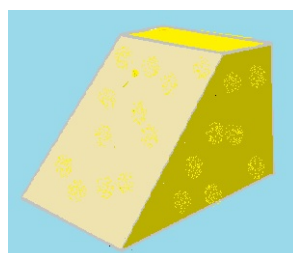
So was enabled the simultaneous grinding of more blocks to equal sizes and angles.

Fig. 15



This procedure was very useful to produce the decorative blocks (fig. 16) for the pyramid cover, which have to be ground precisely to the pyramid side angle. To the stone cutters a number of the corresponding triangles were given to control the slope to be ground.

Fig. 16

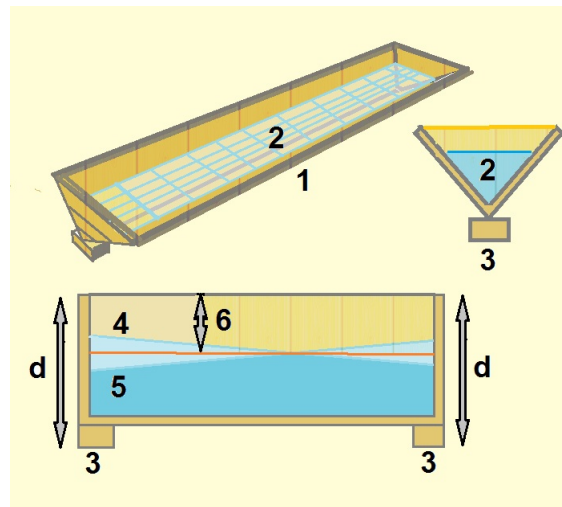


## The water balances

As one of the first construction steps that ought to be accomplished was to level horizontally the base rock surface on which the pyramid should be erected. The leveling should be perfectly horizontal, corresponding to the motionless water level to prevent the eventual pyramid sliding, bending or breaking due to its own weight. A device to measure the inclination, the imperfection and to control the quality of the rock surface leveling was needed.

For this task I let to be made water balances of various lengths to enable to observe and to measure the height difference of two measured spots. The structure of these water balances is shown in the figure 17.

Fig. 17



They are actually troughs **1** of different lengths filled with water **2**. The trough is modeled from two equal planks to the vessel to be broad at the top and to narrow down to bottom. On both ends are mounted the underlays **3**, which are fit to assure the distance **d** from the upper edge of the trough to the underlays foot on both sides to be equal. In the horizontal position is the water level **6** along the whole length equally distant from the upper edge of the trough. In the opposite case, the differences **4** and **5** are easily visible by alternating the trough position on the same spots. Thus a possible inclination may be detected, but a care of the eventual underlays wear out should be taken.

On the inner surface of the trough are parallel to the upper edge lines drawn to enhance the visual estimate of the water level. The water may be colored for a better visibility, the planks should be impregnated with oil or wax. The water amount has to be sufficient, but it is not necessary to be always equal, what simplifies the use.

With the transfer of the trough from spot to spot, in all directions, always keeping one already leveled spot to level the next one, a net of equally leveled points in the horizontal plane is obtained. According to these points the whole surface may be worked out. The various lengths of troughs enable the speedy survey of the leveling over the larger distances. A number of the water balances may be used to expand the point net from the starting position also speedy and easily simultaneously in many different directions over the whole rock surface.

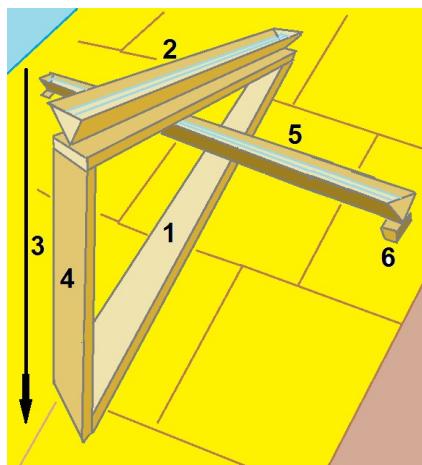
Over the very long distances the imperfections, the eventual bumps may be detected with the Atens rays reflected in the very low angle over the surface.

The plane of the pyramid base is not the only surface, which should be precisely worked out. By the construction it is necessary a constant control of the pyramid side slope and the horizontal leveling of the block positions.



For this task, a combination of water balances, plumb-line and a leading triangle according to the figure 18 was constructed.

Fig. 18



The triangle leading side **1** leans on the slope to control, the horizontal side with the water balance **2** assures the proper angle of the slope in the relation to the gravity, the plumb-line **3** controls the vertical side **4** of the triangle to ensure it as the proper perpendicular water balance position **5**. This water balance has two underlays **6** positioned in the same plane as the triangle side **1** and enables to set and to control the blocks and their positions in the same slope plane over the whole pyramid side. A number and various sizes of this devices enable the simultaneous work on many sites.

### **The bent in of the pyramid sides**

Actually, the any whole side of the pyramid was not foreseen to be completely in the same plane. Namely the rays of Aten, falling almost parallel to the side make visible any slightest imperfection on the stone block surface or of its position. So it was foreseen each side to be slightly broken in along the medial line of side triangle from top to bottom. The Aten rays should, due to the necessary slightly larger infall angle, at first only the half of the triangle pyramid side, being previously whole in the shade, and then under the even slightly greater angle the second half, to illuminate. So are the eventual imperfections rendered invisible.

### **The orientation**

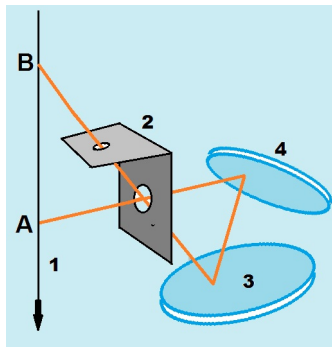
The next to the leveling of the rock surface the orientation of the pyramid according to the divine directions – east, north, west and south – ought to be set. It is clear that the constants of the nature should be referred – the motionless water level for horizontal plane, the plumb-line for its perpendicular direction and the always repeated position of the sun at the given day and time. This was possible to be foreseen according to the lessons of my teacher Hesi-Teute, his knowledge on light rays and their reflections from mirrors.

### **The direction device**

The direction device is the device to define and connect the horizontal plane with its perpendicular – the vertical - and the Aten rays, as shown in the figure 19.

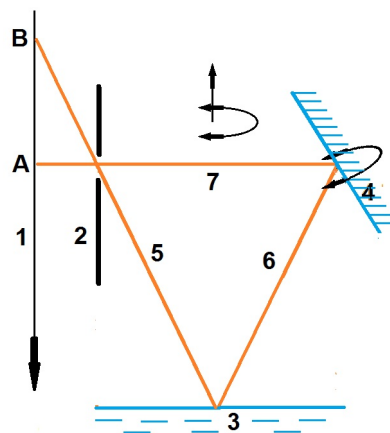


Fig. 19



Its function illustrates the figure 20

Fig. 20



The device consists of the plumb-line 1, the screen with the opening 2, the horizontal mirror (water surface) 3 and the mirror 4, which can be rotated on two axes – the perpendicular to the figure plane and the vertical, parallel to the plumb-line. The cord of the plumb-line is positioned in front of the screen opening.

Looking over the point A on the cord, the cord covers its reflection of the point B, which traces the ray 5 through the opening on the screen 2, is then reflected on the mirror 3 as the ray 6, with the rotation of the mirror 4 directed as the ray 7 to the point A. The plumb-line is perpendicular on the mirror 3, which plane as also the mirror 4 plane, are perpendicular to the plane defined by the rays 5, 6 and 7. In this plane lays also the cord of the plumb-line. The position of the point B may be conveniently chosen. With that procedure the device would be adjusted and the vertical axis of the mirror 4 should then be immobilized. Naturally, all parts should be built and fastened in the wooden box, the device itself so structured to be turnable on the axis defined by the plumb-line.

### The north-south direction

The figure 21 shows the principle structure of the system to detect the north-south direction with the position of Aten at noon.

The direction device in the figure 21 is illustrated simplified as the diaphragm 1, mirror 3 and plumb-line 7, and in the functionality schema in figure 22 depicted with all of its essential parts (framed).

Rem.: The whole structure is something like “camera obscura”. Its aperture is on the diaphragm 1, through which the sun rays 2, reflected on the mirror 3, render a picture of sun on the screen 4. The text and drawings are adapted according to the original description.

Fig. 21

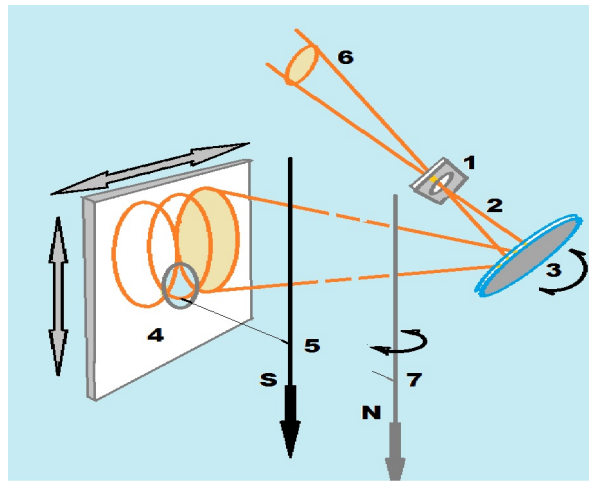
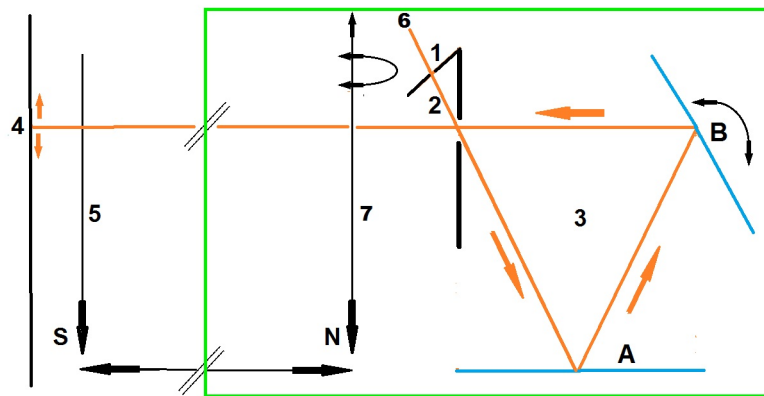


Fig. 22



The direction device may be rotated on the axis defined by its plumb-line 7. This should be exactly positioned – let it be on the foreseen northwestern pyramid corner. The plumb-line 5 is bound to the screen 4 to stay always in front of its center or of its opening. Both, the screen and the plumb-line, may be moved in the directions shown.

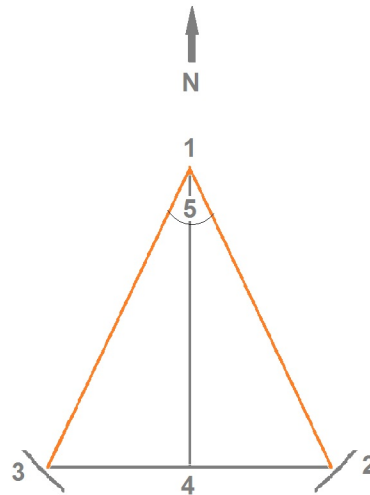
The size of the light spot – the projection of the Aten’s disc – depends on the aperture 1 and on the distance of the screen 4. This is the angle size of Aten – the virtual diameter of Aten’s disc 6, which renders the poor sharpness of its picture and restricts so the determination precision. It is most convenient and feasible to observe directly the reflection (on mirrors A and B, fig. 22) of the edge rays (6 through 1 and 2 apertures, fig. 21, 22) of disc through the screen 4 opening keeping the cords of both plumb-lines in the same line of sight. With the slight rotational movement of the direction device on axis (plumb-line 7) and the shifting of the screen in its plane, the symmetric positions of the reflection disappearances on the opening edge may be detected. The screen, being shifted up and down, ought to catch the extreme upper or lower edge – as in figure 21 shown light spot - of the disc projection. The horizontal shifting – left and right - enables to detect the position of the spot symmetry axis. Exactly at noon is sun in the highest position and so the upper or lower edge of the light spot in the extreme position. To trace and to observe one of these positions, the mirror 3 (fig. 21) respective B (fig. 22) of the direction device, ought to be preset by a slight oscillation around the horizontal axis to send the ray at noon as much as possible precise to the screen 4, but should be then immobilized for the procedure.

That should be repeated – maybe some days consecutively – and the average middle position of the plumb-line 5 gives the south point of detected north south direction in the relation to the northwestern pyramid corner defined by the plumb-line 7. The procedure shall be repeated for the eastern pyramid edge.

Rem.: The pyramid is according to the current measurements oriented with the precision (+- ?) of 2' 28'' in the north-south direction, somewhat more than 2 minutes, probably only some medium, probably smaller value concerning the strongly damaged pyramid sides. This angle corresponds to ~16 cm at 220 m, light spot moves over this distance in ~ 10 seconds, the reflection the half. This lays in the limits of described procedure.

An alternative procedure may be used, according to figure 23:

Fig.23



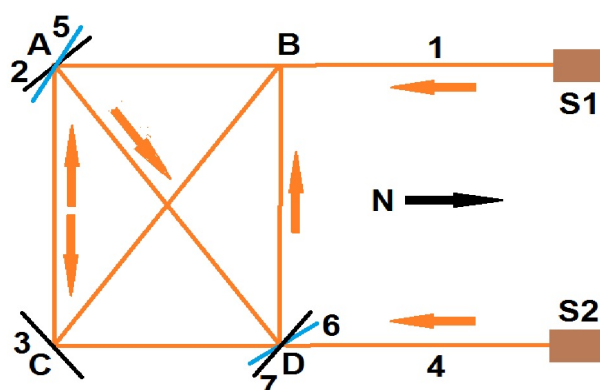
Let be the northwestern corner point 1, let be chosen the most convenient Aten's position – the direction and the height - of the sun in the forenoon. With the above described procedure the point 2 is set – the east point. Then let be detected the direction at the same sun height in the afternoon, giving the point 3, where both points 2 and 3 are equally distant from the point 1. These directions are symmetric to the north south direction 1-4.

Rem.: This procedure may be more precise as the previous, as the angle precision augments with the distance, the sun may be traced – shown with the arcs (2,3, fig 23) – the problematic is the precision of the distance reproducibility, and the earth movement over the measurement days.

## The pyramid position

The procedures above should be repeated to determine the east base side of the pyramid. The distance between them should be equal the base side length and should be determined on the common way to start with. All base sides of the pyramid should give the regular equal sided quadrangle. The figure 24 shows the corresponding procedure using the direction devices and some additional movable mirrors.

Fig. 24



Let it be started with the direction device **S1**, The southwestern corner **A** is set on the western side line aimed on by the light ray **1** of **S1** in north-south direction. The mirror **2** in **A** reflects, under the angle of  $45^\circ$ , the ray **1** to **C**, the point to be set as the southeast corner. The mirror **3**, under the angle  $45^\circ$  on the ray **4** of the device **S2**, is set in **C**. The light spots of both devices should cover each other if the position of **C** is properly set – perpendicular to the ray **1** in **A**. This can be verified with the screen anywhere along light paths and corrected if necessary by moving mirror **3** along the ray **4**. The mirror **5** in **A**, under the angle  $67.5^\circ$  to the ray **1**, reflects it to **D**, the mirror **6**, parallel to mirror **3**, reflects it further in **B**. In the proper position of **D**, the mirror **7**, under  $45^\circ$  to ray **4**, reflects the ray **1**, reflected in **C**, in **B**.  
The mirror angles should be set and determined with the model of equally sided rectangular quadrangle, set and determined by the triangle 3:4:5. The size of it significantly influences the precision.

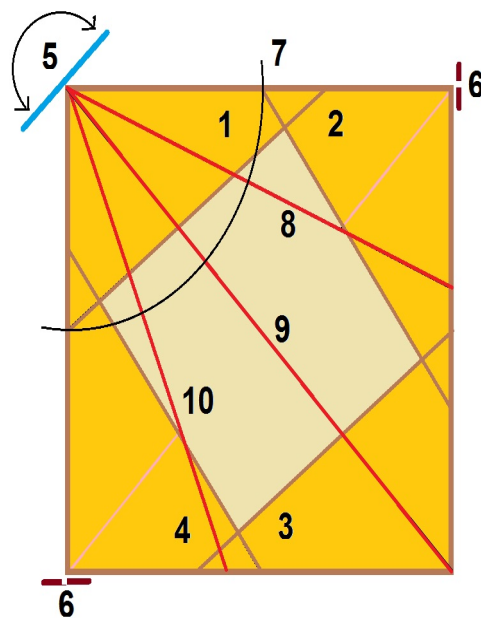


Fig. 25

The figure 25 shows the principles to set the mirror **5** positions **7** to the angles needed to orient the pyramid. The device is composed of the overlapping Pythagorean triangles **1**, **2**, **3** and **4** to compose the equal sided rectangle,  $90^\circ$  on the corner axis the turnable mirror **5**, and diaphragms **6**. The bow **7** of a circle illustrates how the desired angles may be found out and the positions of the handle to move the mirror to the aimed position set. The mirror **5** should be turned to be perpendicular to the directions **8**, **9**, **10** or along the sides of rectangle in the procedure necessary to adjust the device and then to set the pyramid corners. The diaphragms **6** serve to adjust the device to the direction devices (**S1**, **S2**, fig. 24). These devices in the corner positions aimed to be set, ought also to be movable, on the same level and adjusted to each other. The devices may be made of wood.

With that are defined all pyramid corners. The procedure may be repeated in the opposite direction to check and to verify the corner positions. Repeated several times may enable to find out the most precise positions as the mean of the positions detected.  
Each position should be taken for the position detected as the middle of the symmetric positions at which the rays quench off.

For the better visibility in the full sun all parts containing mirrors should be shadowed.

## **Pyramid: The construction**

Rem.: In the following I added the drawings of the pyramid inner structure. In the original script is missing a lot of the descriptions, which I allowed me to complete. I think I have done that sufficiently corresponding to the lost original descriptions as they relate to the technicalities of the construction. Very probable have the builders, after finishing the works, the precise and detailed plans of various parts, their measures, their composition and their positions in the whole structure destroyed, as ordered by Imhotep the younger, to protect the secret of the pyramid structure. He reports just an overview, but enough to establish how the pyramid was constructed. However, the individual stages of the construction may be entangled, especially by the great ramp, great passage and the royal chamber combined with the filling up the block layers. It is clear, that the construction from the beginning to the end has been precisely planned. The plan of Imhotep the elder had the burial chamber in the rock base and possibly the treasury chamber foreseen only. Imhotep the younger has planned the rest obviously. In the original plan was very probably the shaft from the ascending passage to the rock chamber entrance not foreseen. It was very likely the necessary solution to remove the consequences of an accident in the descending passage. This was probably blocked by the counterweight detached from the ropes and slid uncontrolled down the passage, where it got stuck.

So is here just included the Imhotep's plan for the construction foreseen, and not a report on the actually realized course of construction, what saved to the already very feeble old man a lot of writing, actually painting, effort.

The construction should follow in stages according to the planned structure, mostly given by the layers of the stone blocks as shown in the figure 26.

Stage A: Partially already finished works **1**, the construction of the elevators, water ducts surrounding the site, leveling the base, the directions and the position, the hole net for the rope pole leads.

Stage B: The layers to the treasury chamber **2**, omitting partially the layer parts **3** to construct the ascending passage base ramp broad enough to deliver the blocks for the chamber, the chamber and the next part of layers **4**.

Stage C: The completion of layers **4** to the height of the royal chamber, the finishing of the treasury chamber passage including the base of the great ramp without the layers **5**.

Stage D: The royal chamber and the lower part of the great ramp structure construction.

Stage E: The construction of the ascending passage, the elongation of the descending passage and the completion of the layers **3** and partially **5**.

Stage F: The construction of the great passage and the layers **5**.

Stage G: The construction of the layers **6** and the parts of the royal chamber roofs.

(In this stage was the treasury seemingly filled, a fake burial as a temporary one performed, and the chamber sealed by releasing the blocks through the shafts.)

Stages H and J : the completion of the parts **7** and **8**.

After the entombment the royal chamber should also be sealed, passage access blocked, all released through the upper shafts.

Rem.: It is evident that ~ 50% of blocks are already built in to the height of the treasury chamber ~ 30m, ~ 75% to the height of ~ 50m, to the height of the royal chamber (fig. 27). From the report is not clear how much was already set under the leadership of Hesi-Teute. Also the volume of the base rock built in is not known, so the number of blocks built in may be less than calculated for this part and so also for the whole pyramid.

Fig 26

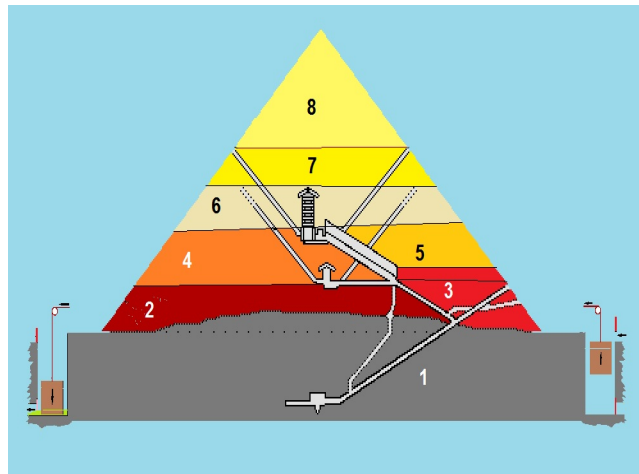
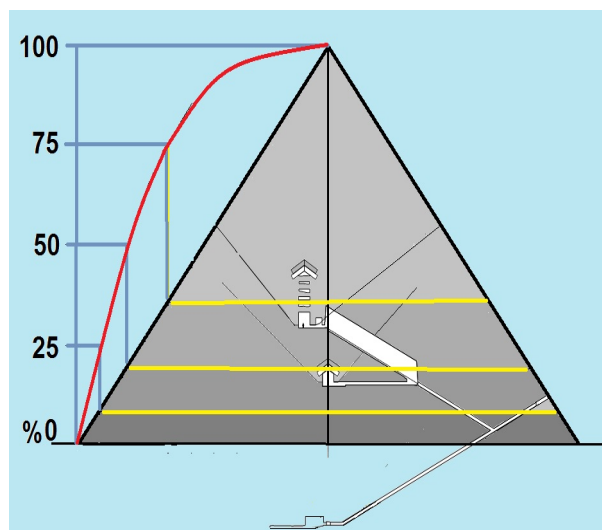


Fig. 27



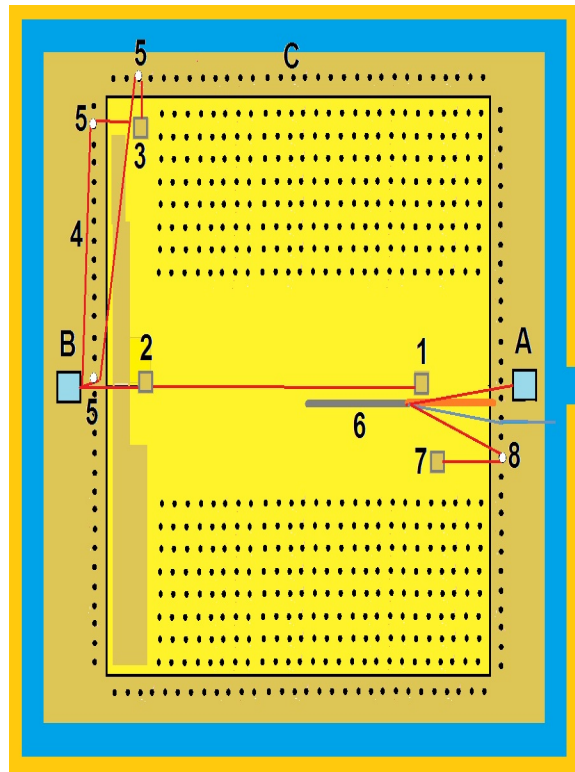
**The water elevators** should be placed on the north and south side of the position foreseen. Here is just one type of them as an example depicted. The other types and the sand elevators should be built temporarily on various convenient sites when necessary. The whole site should be provided with the water ducts. Also the routes for sand delivery should be planned and set according to current need.

**The surface of the rock base** should be leveled by chiseling, grinding and checked with water balances. The grinding should be made with the preground block and the mixture of sand and water, driven by the elevators.

Around the foreseen position of the pyramid, in the rock and also partially in its base bedrock, should be in the convenient, equally spaced (10 to 20 royal cubits) distances drilled the holes **C** (fig. 28) , net like distributed. In these holes should be possible easily and speedy the straight, round and smooth poles, pillars or columns, to fasten and to take out. They should serve to lead the ropes from elevators in the desired pull directions. With that the stage A is finished.

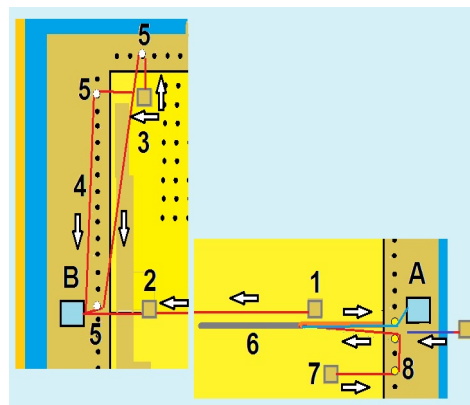
**The delivery and the moving of blocks** (fig. 28, 29): Let the south elevator B pulls the burden from the position **1** to the position **2**, then the rope will be changed to the poles **5** and the burden will be pulled in the position **3**, where it will be linked to the rope **4** to be drawn in the desired position. It is evident that in this way it is possible with the least effort to move and to place the blocks using elevators and if necessary also human power. After finishing the current layer, the

Fig. 28



poles **5** should be placed anew. To drill the new holes will be probably not necessary as the poles may be also fastened between the already placed blocks.

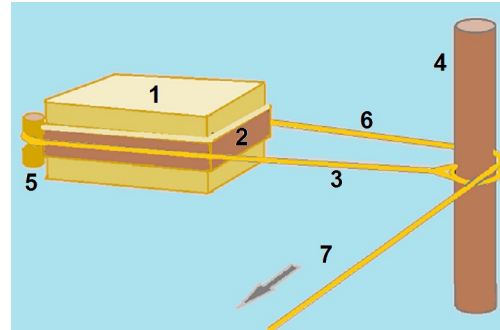
Fig. 29



The fig. 29: In this example is shown the north elevator **A** pulling the counterweight in the descending passage **6** to the upper position, the counterweight is then reconnected to the burden **7**, and released to pull the burden with the rope led by poles **8** in the desired position. These procedures enable to deliver, to move and to set several blocks simultaneously and consecutively on various sites in coordinated effort.

**The link to pull and to set the blocks:** In the figure 30 is shown the way of the simplest rope attachment. On the block 1 is put over the wooden frame 2, around which is led the rope 3, on one end fastened to the pole 4, anchored in the frame groove 5 and returning from the other frame side 6 to the pole to direct it to the pulling elevator. By the pull the rope glides around the frame and the pole, the pull force is halved, the pull way doubled.

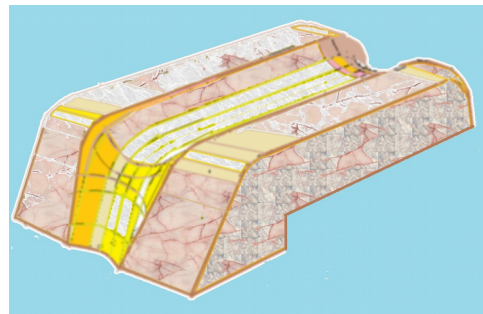
Fig. 30



Rem.: Here Imhotep described the pulley rope connection. The role of the pulley wheel is taken by the sufficiently lubricated frame. The frame was of the standard size to fit on the majority of the blocks.

However, as the layers grow, the ropes should be led also perpendicular to the layer constructed. Therefore are the stone blocks with the especially ground groove or notch to lead the rope foreseen. They, smaller and lighter should be easily moved by hand (Fig. 31). They should have also a stair like chiseled bottom to be easily immobilized on the big blocks by the rope pressure.

Fig. 31



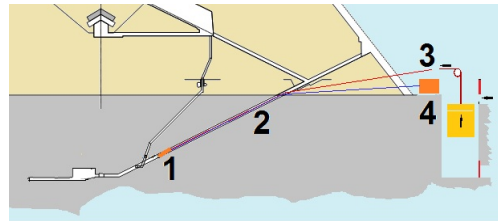
Rem.: The exact positions of the elevators are not known, they were removed after the pyramid completion. Imhotep did not consider it to be especially mentioned as the poles and the grooved blocks enabled to direct the pull in any chosen direction. The position somewhere in the middle of the north and south side may be concluded from the side of the block delivery to the site, the same distance to the elevators, and the position of the ramps and passages in the direction north-south. Nevertheless also at the spot by the highest part of the pyramid side to be useful till the end of the construction.

**The placement and the fastening of the blocks:** The site, where the block should be placed has to be covered with a reasonable thick layer of sand over the blocks of the lower layer, the thickness depending on the roughness of the block surfaces. The block to set should be moved with levers alternately in short shifts on the sand layer around the end position. This will enable to precisely line the rough block in the surrounding blocks as well as also in the height and level, the sand removed will fill the slots between the blocks of the lower layer and partially of the same layer to immobilize and fasten the position of the block itself. The rough blocks are of the approximately same size, therefore they should be placed mutually shifted along their sides to prevent to directly connect the slots between them through the layers. The ground blocks of the pyramids surface do not need any sand to be placed with.



**The first passage** to the Seth's chamber is in the rock base under the pyramid (fig. 32). Here were the chamber and the passage used as the construction tool and as an auxiliary unit already made in the times of my namesake the great priest Imhotep. The chamber is to be used as a room for the crew and the whole passage as a ramp. The crew has to take care of the ramp glide surface lubrication, to brake and to release the counterweight in the needed positions,. This passage is positioned eastwards of the pyramid cross-section. So are adapted to this position also all other parts of the structure. Probably Imhotep intended this position to mislead the eventual robbers, which would seek the entrance according to the divine rules in the middle of the pyramid side.

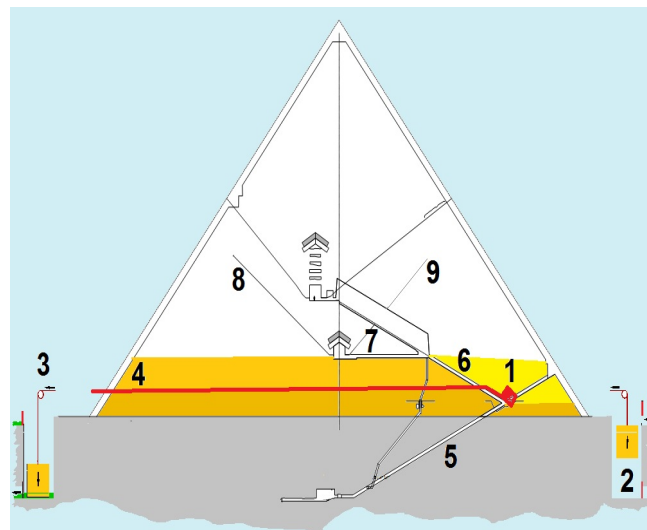
Fig. 32



The figure 32 shows the counterweight **1** on the ramp of the passage **2**. The counterweight was pulled up to the start position in steps by the elevator **3**. By pulling up at each step the rope length ought to be shortened and immobilized, reconnecting the ropes as described previously. The knots on the rope enabled to brake the counterweight on the desired spot between the passage and the elevator. By sliding down it pulled the burden **4** – a stone block – continuously to the pyramid. To pull the burden outside a single free moving rope was conveniently used.

Rem.: In the following figures this units will be no more shown. The burdens and the counterweights will be depicted as the rectangles and the ropes as the thick lines, not to be scaled.

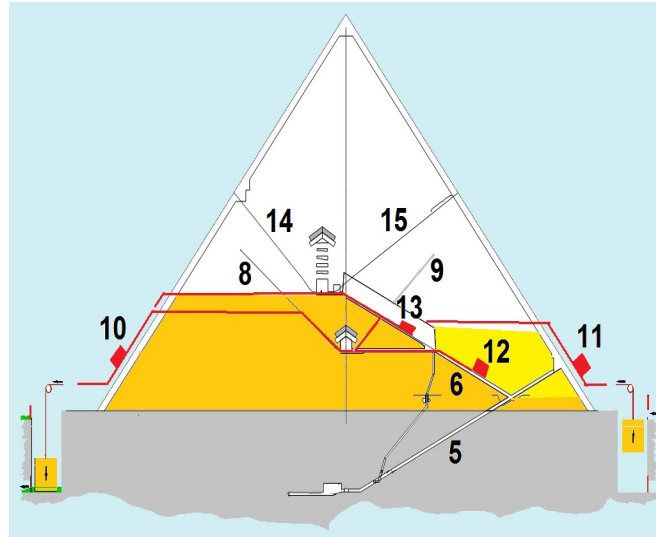
Fig. 33



The figure 33 shows the **B** stage of the construction, partially filled (to the rope). The blocks, pulled to the position **1** by the elevator and the descending passage ramp counterweight, are distributed in the layer by the elevator **3** and rope **4**, which are to be led with the poles over the previously finished lower layer. The layer construction should proceed from south to north. The descending passage **5** will be elongated to the start of the ascending ramp **6**. This ramp ought to be built broad enough to be used for the further block delivery. Therefore it should also be not covered at this stage

to enable transport of the big blocks. The layers are filled to the height **7**, where the floor for the horizontal passage will be laid. Over it and over the ramp **6** the big blocks for the chamber construction will be supplied. The chamber structure is composed of the blocks with the wedge like ground sides to led the vertical pressure sideways in the pyramid body ( rem.: the depictions of this and of the royal chamber are missing).

Fig. 34



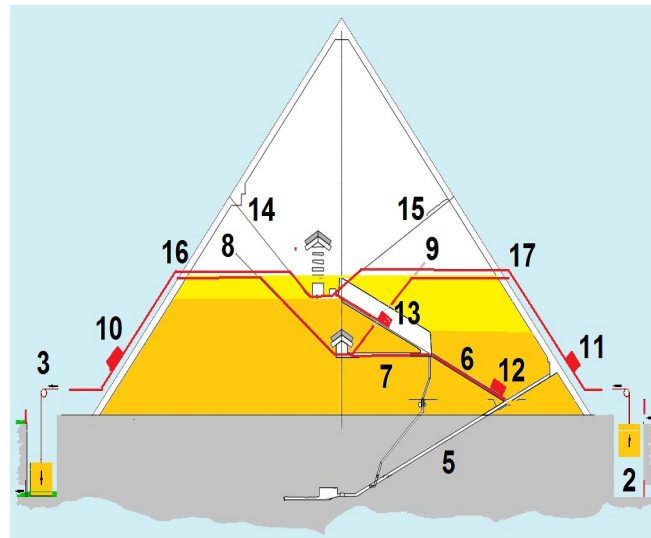
The pulling ropes will be on the north side led over the ramp **6**, and then after the continuation of the layer construction over the passage **7** to the treasury chamber.

The figure 34 shows the **C** stage of construction: the linking of the ropes will demand a convenient place to enable the exact and controlled working length. Therefore were the shafts **8** and **9**, with the openings in the chamber also foreseen to enable ropes to be led over the whole extension of the layer. The ropes should be disengaged and linked again in the chamber and led over the cylinders or poles to the openings of the shafts. The elevators **2** and **3** will be alternatively active to move the burdens **10** and **11**, sometimes the burden **12** being linked over to get to be **13** – the blocks to build the great ramp. It is not necessary to mention especially, that the tilted ground blocks should be placed the first, and then layer on sides completed with the common blocks, taking care the pressure from the side on the ramp to be avoided.

By filling up the layers covering the treasury chamber the space above the passages ( ~ at **12**) should remain open to enable free block transport. It should not be filled in until the completion of the great ramp glide surface, but at first only to the start of the walls of the great passage. Then the block layers should be built alternatively with the construction of these walls ( ~ at **13**) to ensure the solid position of the ramp blocks. The shafts **8** and **9** will be elongated in each layer in the divine directions. These are also the most convenient directions to lead the ropes, which are then reset for each layer. They will be usable also for the construction of the royal chamber, many layers up. The burden **13** will be later replaced by the counterweight for easier and more speedy delivery of blocks. It should be operated with both elevators. A crew should to take care of its controlled ascent and descent. The whole set should enable to hive the blocks also over the outer, already built, side part of the pyramid as a ramp, protected by the wooden tracks ( ~ **16** and ~ **17**). This will serve to build the royal chamber.

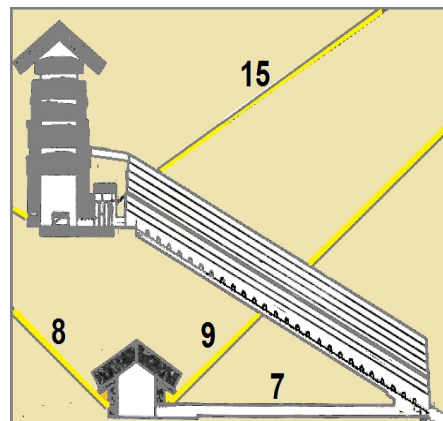
The fig. 35 shows the planned stage **D** build up of the layers over the great passage and the royal chamber. The rope traction trough the shafts **8** and **9** will naturally get to be less effective, therefore the shafts **14** and **15** will replace them. They lead out of the royal chamber in the approximately same directions as the previous shafts. In the stage **E** the passages should be completed.

Fig. 35



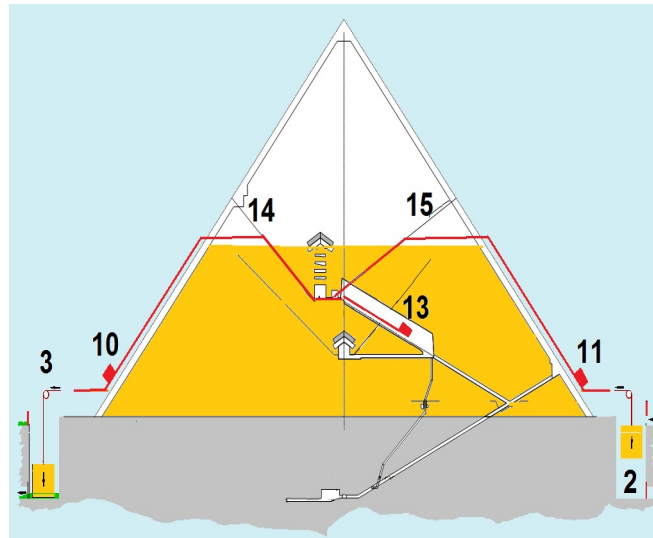
Stage **F**: The construction of the layers above the royal chamber and above the great passage has to be accomplished alternatively by parts of the both. The layers above the great passage should be built with the ground blocks shifted perpendicular as already previously described.

Fig. 36



Rem.: The figure 36 shows both chambers and the great ramp and passage according to the current knowledge. Shown are also the horizontal passage 7 and both lower shafts 8 and 9 and the upper shaft 15. It is evident that the intermediate roofs do not unburden the royal chamber but set the real roof high enough to be less burdened by the upper layers. The sealing blocks of the treasury chamber are not evident, but they of the royal chamber are shown between the great gallery and the chamber. On the great ramp are well discernible the braking notches and niches.

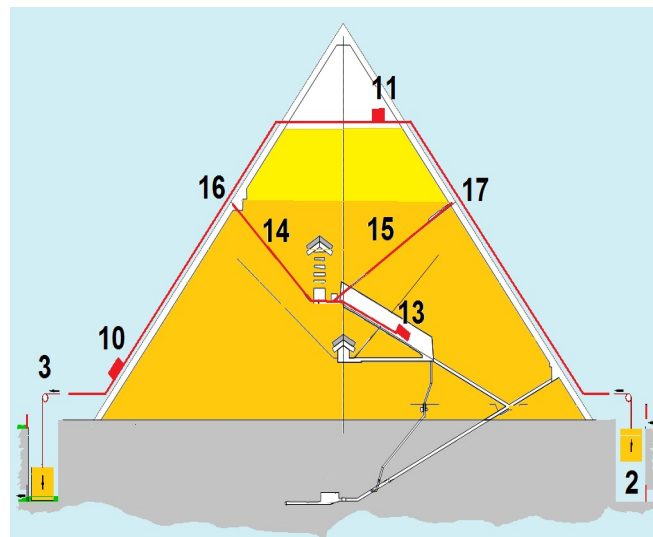
Fig. 37



In the following stage will be also built alternatively block layers and roof blocks of the royal chamber (fig. 37). The burdens **10** and **11** will be pulled up over the ramps on the outer side with the counterweight **13**, operated by both elevators. The ropes will be led trough the shafts **14** and **15**, and the burden then distributed by the pulling ropes over the layer. The shafts will be operational even when they reach their maximal height on the outer side of pyramid. The amount of blocks to complete the pyramid will be already significantly reduced, so the rope pulled trough the shafts by the counterweight, may be linked over to be replaced by the direct pull on the outer side **16** and **17** (fig. 38).

After the entombment the ropes through the shafts **14** and **15** will release the sealing blocks of the royal chamber and the great passage. The shafts will then be closed and hidden under the outer layer of the decorative cover blocks.

Fig. 38



Rem.: Here proceeds Imhotep the younger with his very personal notes, an interesting addendum to the historical and technological content, illustrating his personality and the deteriorating state of his psyche.

## **My destiny, my horror**

A lot of time passed since I went to sleep in bed, now I am just sitting in the temple, not in my archive, but in front of the main altar and I am waiting, each night to pass. The whole night I am waiting on Ka of my Beauty. Nobody enters the hall, nobody dares to disturb me, it is a heavy stillness here, around me.

She does not find peace, all these years, she visits me in the temple more and more frequently. Each time she lovingly reproaches me with the treason, sorrowful and with a sad comprehension forgives me, wholeheartedly awaiting to meet me once on the other side. She comes with the shining jewel on her forehead, her long hair is falling free on her shoulders, clad only by decorative girdle, with a slow and light step, miraculously beautiful and shining, ever young. She kneels beside me putting the palm on my burning forehead as a loving mother does, and she talks to me in her language. I understand all, even if I never understood her language and later I do not remember any more the said. I always do want to say her, how I regret all, how much I miss her, but I do not dare to say how much I love her and I can not talk, I can not move and I can not breathe.

Before she somehow vanishes, she raises the hand and we find ourselves in front of the Great Pyramid. Passing by is a queue – men, women, children – led by my parents. They all do not take a notice of me. Actually I do not see them clearly, I am just aware of them being there somewhere. From time to time emerges a face, for a moment, glances with reproach and I understand them to be Kas of all I let to be killed and of all deceased on the building site. They pass, somewhat near and somewhat far, from somewhere to somewhere, the voice of my Beauty is getting to be more and more sad, melancholic. She is besides me, but I can not look at her, I can not see her! At last all vanishes in darkness ... in the great emptiness, in the terrible desperate loneliness, in a deep, infinitely painful, sorrow and despair.

In a feverish confusion and horror I wake up, my heart beats slowly and heavily, but my thoughts clear immediately, I get slowly fully calm and cold ... and I am waiting my heart to start to beat stronger and faster.

So I am longing for her devoutly each night ... each time takes place the same dream, but somewhat vague different ... and then emerges the morning...year after year...

Long ago I learned her to be for me the most important being, the closest human, the dearest woman, always being as lonely as me and being a whole world for me...I am missing her more than anything else. Let Ptah forgive me, I would give up for her the Great Pyramid, if it wouldn't be his holy will. I swore, her sacrifice will not be in vain and I almost cursed Ptah!

Also Ka of the mighty Khufu appeared, but very seldom, just peacefully scrutinizing me, for a short time, then he turned away and left.

It is as I would live in two worlds, both desperate – the one with my Beauty for a moment in the night and the other in the daylight, surveying construction, teaching, guiding, talking to my disciples, cooperating priests and workers. They are all getting to be afraid of me more and more. At first I could not discern their fear from their respect for me, and I did not relay on them very much. But I jealously took care for them to get the deserved and good share of provisions for them and their families, to be treated well and just. They appreciated my attitude and fairness, they relayed on me, they trusted me...

They started to fear me after the following event – I had some unimportant dispute, actually disagreement with a leader of a group of workers. He was a big and strong fellow, who behaved too self importantly, was very loud and actually disrespectful to his workers. After a talk with him I left, but I could still hear him saying he lets him not to be teased by such an apparition as me. Naturally I did not take it seriously, actually was I amused to be named an apparition – till then nobody called me so – even, I liked it and I smiled. Shortly afterwards the guy somewhat slipped, fell so unluckily that he broke his head and died. The people had still a fresh memory of our dispute, my smile to the

offense and they took his death for the punishment and my revenge. Till then I never noticed them to consider me for a vengeful or evil person. But from then on it was a fear in their eyes at my presence ... but they accomplished all the demanded without an objection.

Somewhat emerged and spread the indefinite rumors of caravans and people disappearing after they had something to do with me. After the death of the pharaoh Djedefre the fear in their eyes replaced a horror, if they can are they avoiding me always, avoiding to look me in the eyes. Also my closest coworkers were feeling in my presence from then on very uneasy.

They did not know, that I have been already punished for my wrong deeds. The sentence was spoken by divine justice, by infallible Ma'at. The obligation to fulfill the holy task and to do it, can not be a redemption, as it has been my destination. This task was added also to the extent of the punishment. The decision was made precisely by wise Thoth – my joy to build was turned to a desperate horror, freezing my heart, for each stone block placed, repeatedly getting to be perpetual, with a terrible wish to accomplish the task as soon as possible, but with a desperate horror to end it...

The great pyramid is just to be finished – it took 67 years since I started to cooperate with the great priest Hesi-Teute and 57 years under my auspices and lead – and I am ready to meet the inexorable Anpu. To satisfy Ma'at in advance, to overtake the final punishment, I do not want to wait on the ultimate divine decision, I do not want the gods to give me the eventual clemency – so I ordered to embalm me, just to be able to explain and to defend my actions as Ka to my Beauty, to Khufu and to all dead. I should be buried somewhere in the desert, without the goods, without ushabtis, without canopic jars, without the name and sign, let be eternal oblivion my last punishment as I will be always and only glorified as nonexistent and nameless by the Great Pyramid.

## **Anonymous**

This report I will hide deeply among other papyri to be possibly found by future generations. The great priest Imhotep the younger has in his ultimate sense for duty rebelled, rebelled to pharaohs, rebelled to gods – he sacrificed all the necessary, regardless, at last himself, he has even his own punishment defined and ordered in a way to be impossible to change it, not even by gods.

Has he put himself over the gods?

## **Afterword**

This is all what was possible to make out of the very damaged papyri. However I can not assure that it all happened as described, I had a lot to guess and to add, even if the technological content made the task grossly easy. Especially are in the instructions to construct the stages missing the precise descriptions of the activity planning and harmonizing, the organization of crews, their tasks and leadership. Concerning the extension and diversity of the necessary work, it is clear, that a base of all activity was a very effective and precise plan, which was rigorously followed. Naturally it has to be said that the whole scripts were just an overview of instructions to build and not the description of the course of the construction itself, not even of that what was already finished when Imhotep the younger has had written these papyri.

All other data I found in the public open sources published numerous times with the same or similar content, especially on internet and various television emissions, many times imitated and digested, without the recognizable primary author.

But don't forget – the secrets are more popular than boring facts.

Common sources:

[www.cheops-pyramide.ch](http://www.cheops-pyramide.ch)

Wikipedia: Jeff Dahl, Great Pyramid Diagram.svg

[www.gizapyramid.com/gary-osborn1.htm](http://www.gizapyramid.com/gary-osborn1.htm)

[www.greatbuildings.com](http://www.greatbuildings.com)

[cdn.britannica.com](http://cdn.britannica.com)

Title figure: Ma'at, Ptah, Thoth, Pyramid, Side, my Beauty

Translated from Pogum Revije SRP 2020-1, Branko J. Hribovshek, IMHOTEP MLAJSKI: KAKO SEM

ZGRADIL VELIKO PIRAMIDO, [https://www.revijasrp.si/knrevsrp/pogum2020-1/Imhotep\\_mlajshi\\_tisk.pdf](https://www.revijasrp.si/knrevsrp/pogum2020-1/Imhotep_mlajshi_tisk.pdf)