

# The true meaning of dreams

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*Summary.* Dream researchers have failed to solve the dream's riddle. The main reason is that almost all have adopted the content-approach, initiated by the two prominent pioneers, Sigmund Freud and Carl Jung. In this study dreams will be viewed from an entirely different vantage point: Dreams are seen as a component of a more intricate mechanism, run by the brainstem and in collaboration with the peripheral nervous system's two parts, namely the parasympathetic and sympathetic nervous systems; the vision; pontes and a few muscles. This complex mechanism takes over the task of safeguarding the living organisms (mostly viviparous mammals and birds) during the sleep---a physiologically dictated slumber that all living organisms must undergo, to regenerate and rejuvenate. At sleep, the body functions are lowered to the minimum permissible level of their respective operations, and sustained at such a dangerous level, without allowing the body from slipping into the impermissible and undesirable territories; thence obtaining the best regeneration and rejuvenation results for the perpetually operating body organs, like central brain and the heart, prior to the start of a new cycle of normal duties. In this study, the role of each component of this complex defence-mechanism will be thoroughly explained; and how together they safeguard the organism from two main risks within, that surface out mostly during the deep- sleep level.

*Keywords:* The sleep-defense mechanism; peripheral autonomous nervous system; parasympathetic nervous system; sympathetic nervous system; brainstem; central brain; and pontes

## 1. Introduction

Dreams happen to take place when an organism is in the state of sleep. Therefore to study dreams, we have to know what sleep is; how the body is lowered to the deep-sleep level?; what takes place during this highly unpredictable level?; is sleep a physiological inevitable phenomenon responsible for life prolongation; and without it, life will extinct? Such questions and many more will be explained. Moreover, the concept of how the brainstem takes the body down during the sleeping- process to such a low level of functioning and yet, not letting the organism slip through the risky life/death interface into eternity is explained with reference to the appropriate parts and their respective responsibilities. The Rapid Eye Movement (REM) will be placed into its proper perception, and clear all the vagueness the term endured for the last over sixty years span. Moreover, reference to the concept of \*Fight or Flight\* will be made and explained in a more comprehensive and relevant approach to the rationale than the way it has been seen ever since it was perceived by the prominent American psychologist, Walter Bradford Canon, in 1915.

## 2. The Importance of Sleep

To define the function of dreaming, it is essentially relevant to consider the very important value of sleep first; where dreaming happens to take place. Sleep is a vital component of the living organisms' phenomena, necessary to the lon-

gevity and survival of the organs within these living organisms, like is water or food. Without sleep, the organs, especially the perpetually running ones, like heart, brain, and lungs would become excessively fatigued, disoriented and finally fail to continue with their laborious tasks. During the sleep, specifically deep- sleep, these continuously operating organs take a break from such excessively tiring duties to rest, rejuvenate, restore their energy, and renew any damage incurred to the cells during their working periods. Without these intermittent breaks from such a hard task, the organs would not have survived for such long operational spans of time: They would become exhausted, fatigued, and as a result become susceptible to damage, enervation, and eventual failure--Such inevitable fate is avoided by the intermittent periods of slumber, imposed upon the living organisms by both the innate physiological homeostasis, and the living organisms instinct for survival and life prolongation.

## 3. What happens during Sleep

During the sleep processes, the body gradually begins to loosen up, enter a state of increasing unconsciousness, and ultimately lose contact with its environment. Many changes occur during the body's journey to complete unconsciousness. These changes are well categorized and documented into the four stages of sleep, namely stages (I, II, III & IV--stage IV being the deep-sleep). During the first three stages, the body moves usually without any noticeable difficulties to the deep-sleep, where both the blood and air (oxygen) flow-rates are now at their bare minimum levels; and as a result, could cause blood-starvation to brain and the nervous system, or oxygen-deprivation to lungs and hence to other organs--two situations that must be avoided, on all costs, for the organisms to survive. It is therefore merely the deep-sleep stage that needs attention. In 1953, Eugene Aserinsky, a physiologist and sleep researcher, and his student, Nathaniel Kleitman, discovered the Rapid Eye Move-

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ment (REM). Since its discovery, the (REM) is perceived as stage(IV) sleep itself---a misconception that deprived the dreams from finding a settling definition: Stage(IV) is a level of sleep like the other three levels; and what only makes it different from the other three levels, is that it is the deepest of the four. The Rapid Eye Movement (REM) occurrence at this level, and not in the other levels, is for a good reason that will be explained soon. When the body intends to go to sleep, the parasympathetic nervous system, a part of the peripheral autonomous nervous system, carries out the task of lowering the body through the four stages of sleep, from the shallower level stage(I) to the deepest level stage (IV). During the first three stages, the organs are still functioning at a safe, permissible level of their respective operations, and there is no fear of blood-starvation to the central brain, or air-deprivation to the lungs and thence to eyes and other organs . In case of any abnormality during this period, when still the defense mechanism is inactive, the organism's survival will entirely depend on some spasmodic muscular twitches or coughs initiated by the autonomic nervous system under supervision of brainstem. At the stage (IV), the organs operations will slow down to a bare minimum, yet a permissible level of operation for the period of the body's recuperation and rebuilding the damaged cells, before starting a new cycle. At such a low level of operation, where the blood/oxygen flows are barely reaching their respective destinations, because of the organs relaxed performance, any irregularity or abnormality , even a trivial one, triggered by any emotional and/or physical stimuli, may have some dire consequences on the survival of the body when at such a low level - stage(IV). During this level of sleep, such irregularities are abundant and unavoidable, and their risk would have been of drastic proportionality had it not been for the second part of the autonomous nervous system, the sympathetic nervous system, which upon receiving an urgent message from the brainstem, snatches the body out of the deep sleep to an upper and shallower level,(Level I,II, or III), or even to a waking-level. Besides the two parts of the peripheral nervous system which participate actively in the sleeping processes, the vision system under the supervision of the brainstem and in coordination with some pontes and the permanent memory, begin the complex task of safeguarding the sleeping body against the two main enemies(blood or oxygen deprivation) that surface when the body is operating at such a low rate. The task of these organs that work together to avoid any catastrophic occurrence, when the body is under the physiological maintenance period, is best summed up in a defense-mechanism, the function of which is explained hereunder.

#### 4. The Defense Mechanism Work

While the parasympathetic part of the involuntary nervous system is carrying out the task of taking the body to the deepest level of sleep, the brainstem with the help of the vision system (eyes, retina, and the optic nerve) begins the process of what is called Dreaming: Events, incidents, or images so far stored in the permanent memory are withdrawn from the memory, in a reverse manner to the way they originally were stored...now as impulses sent to the optic nerve, which in turn, changes these to images; that pass via the closed eyes, during the sleep(where the eyelids are drawn over the eyes); and with the eyes rapid movement (REM), the images are further passed back through retina; the optic nerve back to the cortex part of the central

brain, where these replica of genuine events parade before the central brain that is still in slumber. All such events drawn from the permanent memory and made to parade before the central brain, while in slumber, are perceived by the latter as real and genuine events; and the response of the slumbering brain to these events will be identical to that of the brain in its conscious-state when confronted with similar events . If such events, passing by the sleeping brain, are of low-charged nature: like seeing a forgotten friend; or, visited by a relative, etc..., the sleeping brain will continue in its sleep undisturbed, enjoying these low-charged dreams. Such low-charged dreams might be forgotten if the subject continues sleeping without any other interruptions. If these dreams were seen near the waking time, they could be fully remembered. On the other hand, while the subject is in stage (IV) sleep, and an encounter abruptly takes place with any of the two main life-streams--- blood flow to the central brain and the nervous system (the latter which takes its energy directly from the blood flow directly), or the oxygen flow to the lungs; the so far low-charged and comforting dreams, will instantly shift gears into a more charged nature, like suddenly been followed by an assailant with a dagger in hand; and catching up .... Such frightening charged dreams seen by the central brain as real threat to survival, will instigate the latter with instruction to the sympathetic involuntary nervous system to immediately pull the body from deep sleep to a shallower level, or even to a waking level: The level the body is taken to, depends on the severity of the interference with any one of the two life-streams: Minor interferences will create mild charged dreams, that would lift the body to stages (I, II, III), and not necessarily the waking stage; whereas more severe interferences will create nightmarish dreams, that will instantly pull the body to a waking position. The latter dreams are fully remembered. To pull the body from the stage (IV) to a shallower level, the sympathetic nervous system implements the following instant changes: The blood pressure to the muscles is increased simultaneously with the heart rate. To further boost the blood flow to the heart and the muscles, the blood flow to other unnecessary organs is reduced temporary. In addition, the blood-sugar level and fats will also be increased, to generate more instant energy for the muscles to have their tension now increased to provide extra speed and strength and as a result, enable them to pull the body on the spur of the moment from the relaxed slumber state to a normal functioning level. It is important to notice that the intensity of the charged dreams is proportional with the severity of the interferences with the two life-streams, while the body is functioning at such a low operational level. This means that any physical or emotional problem that has a direct effect on the heart rate, or the air flow to lungs, will surface at the stage (IV) of sleep; and will be reflected through the nature of the dreams seen. Therefore any highly charged dreams of nightmarish nature will come as the result of irregularity in the heart beat (for any physical or emotional reasons); or, deprivation of air to the lungs. Hence the nature of dreams could be a good gauge to read the physical and emotional performance of a body: for instance, highly charged dreams, of especially nightmarish nature, are signs of irregularities with either the heart- beats or air-flow to lungs---which could be caused by a physical or emotional problem. It is such problems that instigate the nightmarish dreams; and not the other way round. Dreams seen by a healthy body will have a low-charged nature, and would be of random not disturbing events. The low-charged

dreams run normally during stage (IV) of the sleep, and will stay course if no interferences occur during this stage of sleep. As the sleeper is not disturbed by this type of dreams, in most cases they will be forgotten upon waking, simply because they might have been played way before the sleeper's waking time. Such dreams will have a trivial value for any studies; as they, in most cases, are randomly picked from the permanent memory storage---though in some cases they will follow a specific (probably sexual) trend to relieve a suppressed function---This is discussed in the coming pages.

## 5. Rapid Eye Movement (REM) Misconception

The Rapid Eye Movement (REM) was discovered by Eugene Aserinsky and his student Nathaniel Kleitman in 1953, and this discovery for some time moved the attention of researchers on dreams from previous other concepts to that of sleep -in-laboratory. However, it was found that even the sleep-lab research was not bearing any fruits in relation to the function of dreams. This is true because, then, and even to this day, the REM is mistakenly seen as the stage (IV) level of sleep itself: In all research works associated with dreams, ever after the discovery of the Rapid Eye Movement (REM), the cognitive and other benefits that are actually and merely the result of the stage (IV)sleep, are mistakenly attributed to the (REM)?. Such a confused role of (REM) threw more vagueness into the entire dreams study, and as a result, further distanced the researchers from closing in the gap to a real meaning for dreaming. The real function of dreams, as mentioned in the above lines, is to run replicas of convincing, genuinely looking events .or images, before the cortex of the central brain to prompt the latter into a response that will save the body from any internal interference with the two streams of life. Therefore, under the control of the brainstem, in coordination with the peripheral nervous system, the vision system, some pontes and muscles, a complex defensive mechanism is created to safeguard the body while in the physiological sleep processes.

## 6. Dreams and Age

Newly born infants, with still not completely developed organs and air-passages, experience more problems during their deep sleep, stage (IV), than older children whose organs are more developed and with wider air passages. In infants, these problems surface at stage (IV) sleep, as there is more interference with the two blood/air flow rates which bring about more of the highly charged dreams that move the sleeper out of the risk into shallower levels of sleep, or even to a waking level. (It is of interest to imagine the nature of the charged-dreams of an infant of a few days age!). On the other hand, adolescents with robust healthy bodies and with more regular heart and lungs functions have less stage (IV) highly charged dreams. Most of their dreams seen during the stage (IV) sleep are forgotten upon waking; as these dreams are not highly charged dreams and do not intervene with the stage (IV) sleep. If one has a problem of physical or emotional nature that would interfere with the flow of the two streams, the stage (IV) sleep will be frequented with more of the charged dreams, like is the case with infants. Older people, like infants, are more prone to problems with their organs, and therefore are more susceptible to charged dreams when in stage (IV) sleep. Most of the unpleasant dreams seen are remembered, as these dreams awake the

sleeper instantly. On the other hand, an older person with a reasonably healthy body will have less of REM charged dreams sleep than one who is less healthy. The nature of dreams seen at any age will depend on the geographical and environmental nature of the dreamer's location: For instance, a person of the vast plains of Tanzania's Serengeti will have dreams different from an akin in the busy streets of say New York, or London. This natural and highly rational biological phenomenon was mistakenly perceived by Carl Jung as an important element in defining dreams and their function.

## 7. Dreams and Trauma

A body in trauma will hardly entertain free long periods of stage (IV) sleep; as such periods are interfered with and interrupted by highly charged dreams; mostly of nightmarish nature. Sleepers under trauma conditions, will entertain mostly sleep of stages (I---III), depending on the severity of the problem. The body will still benefit a little from such sleep, though not to the full extend one gets from stage (IV) sleep. In such circumstances, it is preferable to use natural soothing methods to induce sleep than sedating the body with medication (take a physician advice here). Sedation of the body with medications or drugs will also sedate the defense mechanism and render it ineffective when needed. Sleepers with robust and healthy bodies will not have any encounter when the defense mechanism is sedated; while sleepers who have emotional or physical problems might be confronted to a degree proportional with the severity of their emotional or physical problem. In high traumatic situations, the defense mechanism might capitalize on the relevant traumatic events: For example, if a person was in a serious car accident, the defense mechanism might depend for its highly charged dreams on these events, which could have the best immediate impact on lifting a sleeper from deep-sleep to the shallower levels, or even to the awaken level when deemed necessary.

## 8. Sedation and Dreams

Any medication with reasonable doses of sedatives; excessive alcohol; or drugs of any kind, that induce sleep, may have dire consequences on the sleeper when in stage (IV) sleep. Such sedatives ,to a different extend, numb the central brain and the peripheral nervous system as well; and as a result, deprive them from rising to their respective tasks when the situation demands. When used in excessive amounts, these sedatives would completely block the defense mechanism and leave the body at the mercy of its status: any noticeable irregularity in the heart's beats or air passage to the lungs will not be detected by now the sedated defense mechanism, thence, will not respond to any blood starvation, and/or air deprivation that have a devastating toll on the sleeper's survival. In the case of a drug overdose, the defense mechanism becomes completely disabled and ineffective; and when the sleeper passes the stage (IV), deep sleep, beyond the threshold of such a dangerous territory-- the brink of life/death boundaries (which in normal circumstances the sympathetic nervous system will instantly be activated, and in turn, pull the sleeper out of deep sleep), where there are no such barriers now to stop the sleeper from slipping into the eternal-sleep or death, the consequences are definitely undesirable.

## 9. Reproductive Organs and Dreams

Almost every change in the organs of human beings, among other mammals, is controlled by the visceral reflexes. Most of these reflexes are manageable in one way or the other. For example, when a person is under pressure of a full bladder reflex, the person rushes to a urinal and empties the bladder's content to the person's great relief. Likewise, the defecation reflex is relieved in a similar manner. Whereas in the case of reproductive reflex, the situation is different, as to relieve the system is more restrictive and socially more conservative than other reflexes. Deprivation of sexual practices, specifically among young and robust bodies, creates more pressure on the reproductive organs, and as a result, instigates the body homeostasis mechanism to bring about the equilibrium necessary to the system. As the reproductive system is part of the larger network covered by the defense mechanism, and to relieve the system from the deprivation pressure, at the deep sleep, stage(IV), a dream charged with a highly sexual-content material passes from permanent memory via the REM, retina, and the optic nerve to the cortex part of the central brain, which in turn triggers the visceral reflex system to stimulate ejaculation or orgasm--thus relieving the reproductive organ from the burden of the sexual deprivation. Unfortunately, it was this part of the whole broader picture of the function of dreams that Sigmund Freud based his entire concept of dreams on. He did not perceive that the sexually oriented dream is only a mean for relieving the pressure of the reproductive organ, when the latter is under high pressure of deprivation; and beyond the boundaries of the homeostasis equilibrium. Freudians for quite a long time built their research work on, or about such premises, and all the time kept their distance from the broader physiological scope of the dreams function.

## 10. Fight or Flight Concept

This concept was perceived by the prominent American psychologist, Walter Bradford Cannon, in 1915, as a response to an anticipated harmful event or threat to an organism's survival that comes from outside stimuli. This concept was never related to a more appropriate fear which comes from an internal, more challenging danger, when the body goes into deep sleep. The challenge of lowering the operations of the body to a bare- minimum level; and sustaining operations at the brink of such impermissible conditions, is quite a big responsibility, worth consideration and attention. The task of the parasympathetic nervous system, which is responsible to relieve the perpetually running organs, like heart and central brain, from the highly demanding duties, is performed by releasing of acetylcholine into the blood stream to inhibit the organs to a very low operational level. Here the parasympathetic nervous system is allowing the body organs to flee, almost completely, from their tasks by the secretion of acetylcholine (analogous with the concept of Flight). On the other hand, when the sleeper is in deep sleep at the brink of life/death, any malfunction at this level will be addressed by the sympathetic nervous system, by instantly initiating the adrenal glands to secrete epinephrine and nor-epinephrine to respond to the stress situation by creating energy and alertness to snatch the sleeper from the deep sleep into shallower or waking levels---a fight to survive the sleeper from slipping into eternal unconsciousness (a more rational Fight than preparing to confront a wild bear; especially in the case of a newly born infant of

three days, which could undergo similar operations without confronting a bear, or a fetus that has not seen light yet! ) .

## 11. Dreams and Cognitive Processes

It is the healthy deep sleep, stage (IV), which contributes to the cognitive improvement, and not the (REM) as claimed by some previous research works: The central brain and all the other body organs obtain the best results of rejuvenation, revitalization, cell-reparation and cognitive improvement from the deep sleep, when the body organs come to an almost standstill operation---where the body cells have the opportunity to recuperate, assess the damages, rebuild the repairable cells, move away the totally damaged ones, and prepare the body organs for a new cycle of life. On the other hand, the REM does not contribute whatsoever to the cognitive improvement, as advised by some contemporary research works: REM is part of a bigger system that surfaces at the very deep sleep to protect the sleeper when at such a critical interface-operation. The sole task of the REM is just to play a chain of events before the sleeping central brain, as replicas of real events. When these events are of a highly charged nature, like frightening, or, nightmarish in nature---their function is to prompt the central brain to initiate an action to change the body's status quo.

## 12. Conclusion

In this essay, it is perceived that dreams function within a more complex network, ran by the brainstem in coordination with the two parts of the peripheral nervous system, the parasympathetic and the sympathetic nervous systems; the vision system; pontes; muscles; and the long term memory. The main task of this complex network is to safeguard the body during the very important period of deep sleep. It is the innate biological requirement of the living organisms that necessities the sleep as a mean to longevity, well-being and survival of these organisms; and without such a vital measure, their organs will become excessively fatigued, cell-damaged, and ultimately fail to continue functioning. This instinct for survival of the living organisms is inborn, and its initial function has been to safeguard the organisms from the two most vicious enemies within, which surface when the biological processes of sleep take place. One of the two parts of the peripheral nervous system, the parasympathetic, is responsible to take the body down through the levels to the lowest, the deep-sleep, and leave the body there during the period of rejuvenation; while the second part, the sympathetic, will stay guarding the sleeper, from any of the two foresaid enemies. Upon any interference, it will immediately snatch the sleeper from this deep level to higher and shallower levels or waking level, thus avoiding any deadly confrontation. Such confrontations are numerous and insurmountable for the sleeper to cope with; and without the defense mechanism, explained in this essay, the organisms would have long ago been extinct. Imagine how many would have been choked, while in deep sleep, by their mucus! And how many more would have been deceased by oxygen deprivation during a cold winter night by pulling a heavy blanket over their heads and cutting the sources of oxygen for hours! Let alone, how many more would not have survived the most dangerous and highly risky operation of reducing the heart-rate to such a low level of its function and yet not losing it in this highly intricate and risky operation.

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