

Hypnosis: The Modern Scientific Version of a Timeless Healing Technique

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ABSTRACT

The aim of this article is to envisage possible commonalities between shamanic rituals, incubation, meditation, lucid dreaming, and hypnosis – a well validated therapeutic tool, though misunderstood in the past and still underused. The topic is endowed with huge epistemological implications, calling for a transdisciplinary and transcultural approach, in order to properly understand the essential common aspects of these mind-body techniques and their potential for healing. Actually, the Western rationalist thought has led to mental imagery being misunderstood and prejudicially rejected as a worthless mind activity, while only in recent years neurosciences have started to appraise its cognitive and metacognitive value. The main common aspects of the above-mentioned techniques are eye closure and mental imagery. The former allows to shift the focus of attention from the outer to the inner words, a prerequisite to open the doors of mental imagery and plastic monoideism. The resulting absorption and introspective activity in turn allow to get a metacognitive control over mind and body, including neurovegetative system and pain. Therefore, eye closure and mental imagery can be considered as the Ariadne thread, able to guide us in the knowledge of the apparent labyrinth of healing techniques that have accompanied the care of the sick in all cultures since time immemorial.

Keywords: Epistemology, Hypnosis, Incubation, Lucid Dreaming, Meditation, Shamanism.

INTRODUCTION

I'm enough of an artist to draw freely on my imagination.

Imagination is more important than knowledge.

Knowledge is limited. Imagination encircles the world.”¹

Albert Einstein

The origin of hypnosis – commonly attributed to Franz Anton Mesmer in late 18th century – may be stretched back to ancient Greek and Egyptian medicine and even earlier to prehistoric shamanism, both Eastern and Western philosophies and medicines originate from [1]. The topic includes a variety of techniques – especially incubation, meditation, lucid dreaming and shamanic rituals. As a whole, they call for a transdisciplinary and transcultural approach in order to understand possible commonalities of different techniques, albeit defined and formalized in different and ostensibly incompatible ways in different cultures and times. These techniques have been used all over the world since time immemorial to improve knowledge, metacognition, spirituality and environmental adaptation, as well as to take care of the sick. The therapeutic value of shamanic rituals and traditional healing techniques has been analyzed by transcultural psychiatry, but has been neglected by the positivist inclination of 20th century psychiatry – mainly conceiving psychiatric disorders as the result of individual biological disorders, where the patient is conceived as a passive, helpless carrier of it [2,3].

This article is aimed to frame hypnosis in a broader context as the last, scientific version of a timeless, fundamental way of healing probably originating in the prehistory and then spread all over the world. Despite incubation, lucid dreaming and meditation are not the same as modern hypnosis, they may share unexpected aspects worth to be stressed in order to envisage the common mental processes involved in these techniques.

ORIGIN OF PHILOSOPHY AND MEDICINE

Shamans of all ages (the term shaman, from the Manchu-Tungus word *šaman*, means man of knowledge) have probed the reality as a whole – including the visible and the invisible, ordinary and non-ordinary experiences – in order to comprehend the relationship between the inner and the outer world, the meaning of life and death, as well as cure diseased people. The term shaman is broad and, according to Eliade, it is advisable to limit its meaning to those “specialists of the sacred” who know how to employ the spiritual power and ecstasy for the benefit of community [4]. Besides the administration of herbal medicines (including psychotropic agents) and other remedies, their healing procedures and rites included the induction of trance in order to exploit the potentialities of the soul of both the shaman (e.g., shamanic journeys) and the patient (e.g., shamanic flights) in the process of healing.

Several data suggest that prehistoric pan-Asiatic shamanism may be considered as the source of both Eastern and Western philosophies and medicines, as well as native American traditions. In fact, the first Taoists lived in a region strongly tinged with shamanism [5,6]. In ancient Greece, a connection route with shamanism was Pontic Olbia – a settlement of Miletus dating back to the 7th century BC in the coast of the Black Sea close to the Dnepr river’s mouth – where a strong shamanic tradition was present. It included the worship of Apollo Oulios, as well as Orphic and Dionysian mysteries, as suggested by graffiti hinting to life-death-life (i.e., reincarnation, a view also shared by Pitagoras, Plato and Empedocles) [7]. Apollo Oulios (a name related to his role of healer) was also mentioned in Kos as well, the homeland of

¹ Interview with G.S. Vierek quoted by Isaacson [1, p. 385]

Hippocrates [8]. From there it spread to the Ionian cities, where most pre-Socratic philosophers lived [9–11]. Furthermore, a huge exchange of information between ancient Greece and the East occurred before the birth of pre-Socratic philosophy, favored by trades between Greece and India through Egypt, Persian Empire, and Phoenicia. Interestingly, Parmenides, the great philosopher of Being, was also a great physician, founder of the Eleatic Medical School. He had the title of *Ouliadês* (initiated to Apollo worship), *iatros* (physician), *iatromantis* (healer) and *phôlarchos* (i.e., lord of borrows, a term indicating his expertise in incubation by referring to the borrows of snakes sacred to Apollo). In other words, he was a great sage with shamanic gifts and this might be the reason why Plato named him “venerable and awesome” in the *Theaetetus* (183e) [1,13–16]. According to Baldini, the concept of *iatromantis* also included the capacity to travel with the soul while the body appeared to lie as dead and come into contact with gods, in order to explore the secrets of the cosmos and perform healings and wonders for the community [17].

The whole of these data strongly suggest that Greek culture and philosophy cannot be properly understood unless oracles, incubation, and initiation rites to Mysteries are taken in due account. For instance, the initiation to Eleusinian Mysteries included both *katábasis* (descent to the underworld) and *anábasis* (ascent to the upper world) where the initiate experienced visions and *epoptéia* (viz., enlightenment), a path paralleling shamanic journeys [11,18].

As far as American native populations are concerned, there is an increasing evidence of their origin from Siberian population migrated to Americas through the Behring Straits during the late glacial period (30,000-15,000 BC). This migration allowed humans to pass from Siberia to the Pacific coast and Plains east of the Canadian Rockies. The first populations spread from there to North, Central and South America, a fact supported by the genetic compatibility between Native Americans and populations from Altai and Amur regions in south Siberia [19,20].

Figure 1 schematically shows the origin and development of human culture from pan-Asiatic pre-historic shamanism – including Eastern and Western philosophies and medicines, as well as Native American cultures – up to the birth of the first European universities with their medical schools. Traditional Chinese medicine belongs to Taoism and its origin is lost in the mists of time. Likewise, *āyurveda* medicine [the term *āyurveda*, from the Sanskrit *āyus* (life) and *veda* (knowledge), means knowledge of life] belongs to Veda tradition and dates back to about 5,000 years BC. It shows several links with traditional Chinese medicine, probably favored by exchange of information through the Silk Road and the spread of Buddhism to China, while ayurvedic texts have also been translated into Chinese and Greek in 4th century BC [21,22].

Incubation was constantly practiced in ancient Egyptian and Greek medicines for about 3,000 years – from about 2,700 BC to the fifth century AC. However, with the advent of Christendom paganism was canceled out – including Asclepius’ medicine and incubation – and Christian physicians and monks started to take care of the sick [1]. Indeed, in the early stage incubation was practiced in the Cosmedion Cosmas and Damian at Constantinople, in the shrine of the Egyptian saints Cirus and John at Menouthis (close to Canopus), and in the sanctuaries of St. Thecla at Seleucia and Aege as a syncretistic remnant of Asclepius’ medicine [14,23]. According to tradition, the sick fell asleep in the church close to the altar or near the relics of the saints; then the saints appeared and took care of the incubant by applying remedies, suggesting the

appropriate therapy, or even performing surgery, the signs of which could be observed by the patient on awakening. Later on, the technique of incubation and even its very name were irremediably lost in the Dark Ages.

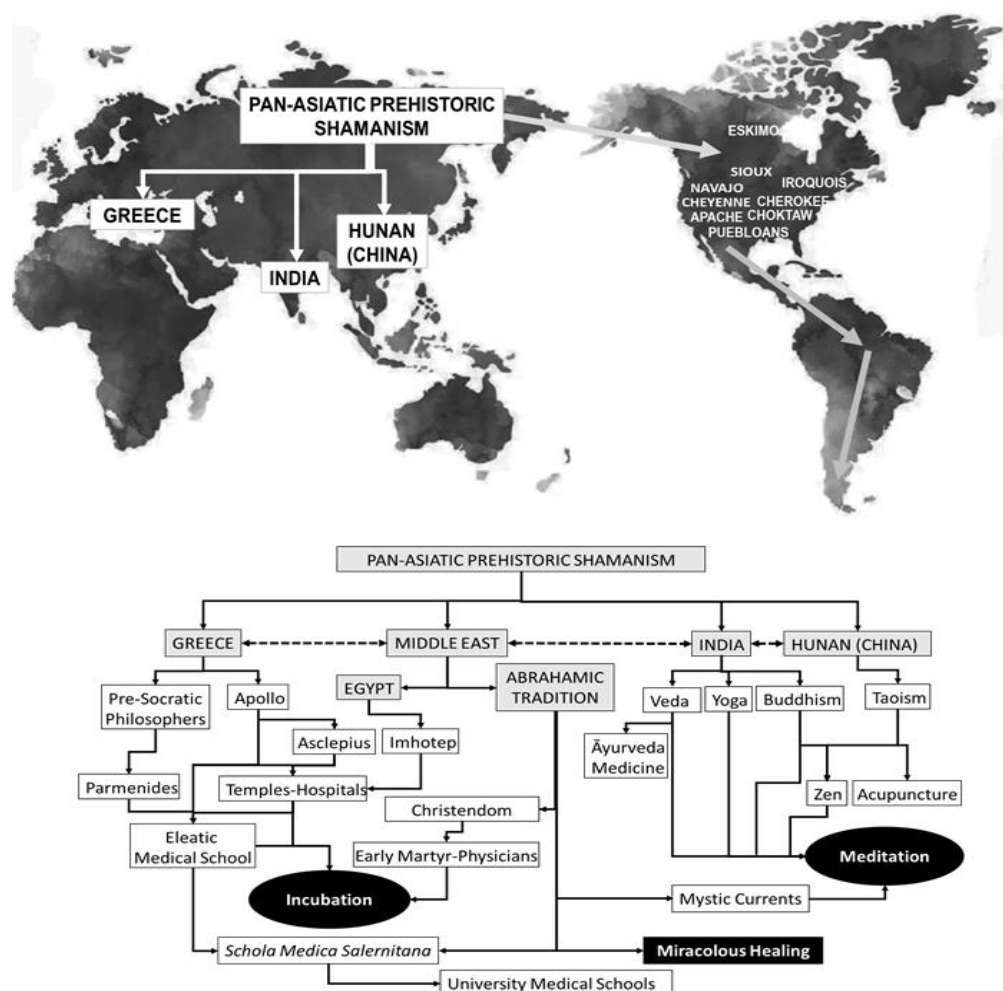


Fig. 1: Origin of Eastern and Western philosophies from pan-Asiatic prehistoric shamanism and the birth of medicines from them, including the use of incubation and meditation (modified from Facco & Tagliagambe [14]).

Following the abandonment of Elea and the demise of the Eleatic medical school in 6th century AC, the *Schola Medica Salernitana* was born in Campania Region around 9th-10th century. It resulted from a transcultural exchange of ideas belonging to Hebrew, Egyptian, Arabian, Latin, Greek and Lombard medicine (arguably including the Eleatic medicine), a fact narrated as a tale in the *Chronica Helini*, a text of late Middle Ages. In the early Middle Ages it became the most important European school of medicine, but underwent a slow decline after the foundation of the Universities of Bologna and Padua in 1220 and 1222, respectively (the first two universities in the world), followed by Naples in 1224. Finally, it was closed by Joachim Murat in 1811 (the topic has been analyzed in detail elsewhere [14]).

Eastern philosophies have always merged theoretical and practical philosophy in an inseparable whole aimed to self-knowledge, wisdom and the knowledge of inner/outer world

relationship, where meditation is an essential practice allowing to get rid of *Māyā*, the mask of illusion of ordinary consciousness – a goal involving the development of metacognition, Self, self-mastery and resilience [24,25]. Therefore, they may be regarded as philosophy and psychotherapy at the same time, a fact in line with the recent introduction of Buddhism and Taoism in the West for an existential-philosophical approach to psychotherapy [26,27]. Medicine belonged to philosophy in both the East and West. Nevertheless, Western philosophy developed as an essentially theoretical discipline though including masterpieces of practical philosophy like Kant's *Critique of Practical Reason* [28], a fact probably resulting from the loss of the knowledge of mysteries and incubation. In fact, the *Critique of Practical Reason* deals with moral principles and proper behavior, and defines enlightenment from a conceptual, rational standpoint, but does not explain how one can pursue them; accordingly, Kant states :

"Consistency is the highest obligation of a philosopher, and yet the most rarely found" (I, 1).

INCUBATION

Ancient medicine was inseparably connected to religion. The temples of Imhotep in Egypt and Asclepius in Greece were temple-hospitals where both soul and body were cured with a holistic approach. The worship of Imhotep – architect of the Pharaoh Djoser in 27th century BC, priest of Ra and outstanding physician – included the use of incubation [29,30]. Egyptian naturalistic medicine was also highly developed and specialized. For instance, the Surgical Papyrus (2500-3000 BC) already described 48 outstanding cases of neurological syndromes following head and spinal cord injuries– including tetraplegia, aphasia, hemiplegia – and the corresponding brain lesions; it also described the cerebrospinal fluid, discovered in the West only in 18th century [31–33]. The Surgical Papyrus clearly shows that the medical science and its sacred aspects were fully compatible in ancient times. Actually, their opposition is a strong bias introduced by comparatively recent historical-political circumstances – i.e., the temporal power of the Church claiming the exclusive competence on the soul and its conflict with the nascent sciences in 17th century [34,35].

Incubation was an essential practice also in Greek medicine. As with Egyptian medicine, the caregivers of Greek Asclepeions – including Hippocrates himself – were priests-physicians inseparably merging the naturalistic medicine with its sacred component. The enlightened Hippocrates' rational approach (*loghismós*) was based on the concept of *δύναμις* (*dýnamis*, power) – i.e., the dynamic interrelationship of the mind-body-environment as an inseparable whole – an outstanding intuition of the modern theory of complex systems, the *modus operandi* of which cannot be properly explained by an inflexible reductionist-determinist perspective [36,37]. The temples-hospitals were sets of buildings including the *stoa* (the hostel for patients' admission), a theater and a gymnasium, to be considered as inseparable parts of a whole, devoted to take care of the patient's soul-body. Actually, Greek tragedies performed in the theater allowed patients to face the darkness of human existence and its profound psychosocial problems, favoring catharsis and, thus, help relieving pains [38].

In Asclepius' temples – also called "sleep temples" – the patient was admitted to the *Abaton* (*impenetrable*, i.e., the secluded part forbidden to people), where he/she was incubated and dreamed the god Asclepius providing instructions for healing. A wealth of data is available on incubation [14,39–43], but the details on the procedure of induction and deepening are lacking.

In early period incubation included simple, directive suggestions of recovery; then, it was implemented over time with therapeutic suggestions – e.g., advises about proper behavior, dietary regimen and physical activity, according to the development of medical knowledge. In many cases the god Asclepius personally treated the patient as well, especially when surgery was performed. In *Oneirocritica* (V, 61), Artemidorus reported on a patient with an abdominal abscess who, brought to the temple, dreamed Asclepius operating him (Edelstein & Edelstein, 1998, p. 235):

“A certain man dreamed that, struck in the belly by Asclepius with a sword, he died; this man, by means of an incision, healed the abscess which had developed in his belly”.

The incubation was usually depicted with the patient laying in the *klinai* (bed), the priest-physician inducing incubation behind him/her and the god Asclepius curing the ailment. Indeed, the structure of these pictures can be considered as four-dimensional, merging the three-dimensional physical reality of the temple and the imagined realm of the patient being cured by Asclepius in a whole (for further details, see [1]).

The above-mentioned data strongly suggest that incubation was used in Greek medicine with medical and surgical indications similar to those of modern hypnosis. actually, both of them can be conceived as mind-body techniques based on doctor-patient relationship and patient's plastic imagination enhanced by a guided procedure. Indeed, illness was considered as an imbalance of the mind-body unit in ancient times, where mind played a crucial role in both disease and recovery, as clearly stated by Democritus:

“It is fitting for men that they should make a logos more about the soul than about the body. For the perfection of the soul puts right the faults of the body. But strength of body without reasoning improves the soul not one whit” (Fragment DK 68 B187).

Likewise, Plato in *Charmides* (156b-157b), speaking about treating a headache, holds the need for a holistic, psychosomatic approach in patient's care, including “incantation” (that one might consider as sort of hypnotic communication):

“I will speak more frankly to you about the incantation, what sort it happens to be. Just now I was perplexed about how I might show you its power... He [a physician of the Thracian god Zalmoxis; Authors' note]] said that the soul is treated, blessed one, with certain incantations, and that these incantations are beautiful speeches; that from such speeches sound-mindedness comes to be in souls, and once it has come to be and is present, then it is easy to provide health both for the head and for the rest of the body... This is the error common among human beings, that some attempt to be doctors of these things separately, sound-mindedness and health”.

Accordingly, the Hippocratic School provided a huge amount of rational knowledge, but it remained inseparably united to its sacred part in a psychosomatic approach, where healing was achieved combining herbal remedies, surgery, and incubation – defined in the past as an imagined experience with the body still, like a hibernating animal.

The practice of incubation persisted for about fifteen centuries in Greece, from the pre-Homeric period to the 4-5th century AC. As mentioned above, incubation was also practiced at the beginning of Christianity. On the other hand, the great theocratic design of the *Magna Ecclesia* (Great Church) started a hagiographic propaganda aimed to bury paganism to oblivion, including Asclepius' medicine. At the same time the first Christian physicians-martyrs were sanctified and the first Christian hospitals were built [14]. As a result, incubation was buried to the oblivion forever, but some remnants of it survived in the Middle Ages. In fact, in 9-10th century AC several miraculous healings were reported spending the night in Christian shrines close to the tombs of saints. Interestingly, miraculous recoveries were reported in a condition described as *non dormienti, sed clare vigilant* (*not sleeping, but clearly aware*) [14,44–46], a locution hinting to a so-called altered state of consciousness (ASC) and suggesting that the essential prerequisite for healing was a sort of intermediate condition between ordinary consciousness and sleep.

All this given, one can legitimately argue that today's sanctuaries like Lourdes are the remnants of a thousand-year old tradition starting in the prehistory and technically used for some three millennia by skilled physicians-priests in Egyptian and Greek temples. Following its deletion, incubation was reduced to a matter of patient's hope only, deprived of the technical support by physician-priests; in this context, the art of healing and its procedure were irremediably lost and reduced to a matter of patient's faith and God omnipotence only. At any rate, the belief in miraculous healing has persisted until today and is clearly witnessed in many churches and holy places. If this is the case, one can argue that the idea of miraculous healing reflects an insuppressible need, and probably a capacity of human mind unceasingly persisting since time immemorial. Therefore, it should not be considered as a plain result of illusion or superstition, for it may reflect the expression of a clinically relevant psychosomatic potential, though neglected by the materialist-reductionist metaphysics. On epistemological standpoint, miraculous healing can be regarded as the result of real but ostensibly implausible, still unknown mechanisms of recovery, rather than supernatural forces.

Reed attempted to reconstruct the ritual of dream incubation and healing rituals in a dream laboratory, including two main symbols (i.e., the sacred place and the reverent benefactor as projections of the incubant's potentiality) and four steps: a) the selection of the dreamer; b) the preparation of the incubant; c) the incubation ceremony; d) the incubant's testimony. Interestingly, the adopted technique for the induction of incubation is hypnotic-like (table 1), though inserted in a more complex rituality aimed to elicit dreams and allow for help from a divine benefactor, as done for millennia [47]. Of course, this reconstruction is adjusted to the present time and one cannot claim that it faithfully mimics the procedures used by ancient priest-physicians.

Table 1: A partial report of hypnotic-like instructions given to induce incubation, as reconstructed by Reed [47].

Hold your arm up slightly from the ground ... experience the effort required to resist the pull of gravity ... gradually yield to gravity, allowing your arm to sink slowly back to earth ... experience the pleasure of letting go, of giving in to gravity, of letting the earth support you ... you have done all you can to work on your problem, and you are now entitled to relax ... you relax as you allow yourself to experience your arms and legs as heavy ... experience

the pleasure of the sensation of heaviness as you let go of your problem and let the earth support you ... as you focus on the experience of warmth in your arms and legs you feel at peace ... focus gently, gently on your breathing, following it in and out ... as you exhale, let the breath go, and release yourself from the control of your breathing ... give in to expiration with a peaceful sign of relief, and then allow your next breath to come to you on its own ... trust in your breath, and as you inhale, think, “it breathes me”; ... let go of your breath and trust in inspiration

Incubation in the Americas

Incubation, lucid dreaming, trance and ecstatic techniques have been practiced by shamans of American tribes for healing and rites of passage; their alleged extraordinary spiritual power allowed for divination and communication with the transcendent world, ability to influence the outer world and provide for other needs such as weather control, fruitful hunt and fishing.

As mentioned above, shamanism spread from North America up to the Tierra del Fuego since the prehistory; in the North, over 500 tribes exist today (some of the most widely known have been reported in figure 1). In its spread to many tribes, shamanism maintained the same principles, while the rituality – including religious aspects, use of herbal medicine and psychotropic plants – developed in a variety of forms.

Unlike Western scientific medicine, shamans are more about healing the person, rather than curing a disease and conceive ailments as the result of the interaction of soul and body with the community and environment. Therefore, the healer interprets the patient’s condition according to that system and enacts the shared symbols and myths, in order to improve mind-body integration, self-development and social relationships [43, pp. 183-230]. The rituals are aimed to elicit visions able to yield an experiential (say virtual) reality including symbols, myths and metaphors in order to help individuals restructure their problem and self-transform. This suggests an unexpected link with Jung and Erickson’s teaching, as well as the capacity of hypnosis to engender a mind-body *trance-formation* [49].

The metaphoric language may catalyze meanings and elicit personal changes by engaging the power involved in “thinking of one thing in terms of another” in the interaction among sensory, affective, and cognitive elements [50]. The imaginative constructions merge narrative and bodily experience as well as individual and social factors in a whole, exceeding the questionable dichotomy between subjective and objective knowledge, and allowing for improved cognitive and emotional flexibility, metacognition and resilience [3].

There is a close connection between concepts and narration on the one hand, and bodily functions on the other – including the sensory-motor system and emotions with related psychosomatic, neurovegetative and endocrine components [51,52]. This close connection is in line with the relationship and reciprocal interplay between anoetic, noetic and autonoetic levels in consciousness, memory, emotions and pain [53–55]. Therefore, one can legitimately argue that communication through symbols, images and metaphors may improve conscious and unconscious processing, cognition and metacognition, allowing to exceed the limits of existing convictions, beliefs as well as traumatic memories and dissociative disorders (defined as *soul loss* in the shamanic context). In this regard, one might consider shamans as Jungian

psychotherapists adopting *ante litteram* his concept of symbol as “living body”, as defined in *Archetypes and the Collective Unconscious*:

“The symbols of the self arise in the depths of the body and they express its materiality every bit as much as the structure of the perceiving consciousness. The symbol is thus a living body, corpus et anima; hence the “child” is such an apt formula for the symbol” [51, p. 291].

Their skillful use of trance, lucid dreams and similar imaginative activities – be they induced by rituality, fasting, isolation, meditative or hypnotic-like instructions, and/or the use of psychotropic drugs – allow to entrain subjects’ active participation and experience with their psychosomatic involvement, improving the mind-body and consciousness-unconscious connection on the way of healing, self-development and individuation.

According to Winkelman (2010), shamanic practices symbolically induce therapeutic transformations by using the spirit world to promote the interaction and integration among dissociated complexes and to integrate them within collective social patterns and individual psychodynamics [48]. Interestingly, this approach is in line with both the concept of dissociative identity disorder in the DSM-5 – also including possession – and the Erickson’s view of multiple personalities as potential resources to be managed as patient’s collaborators [57]. In this regard, it is worth emphasizing that: a) spirituality and religion reflect outstanding faculties of human mind, essential for health and wellbeing but misunderstood by materialist metaphysics [58]; b) shamanic rituals may help healing *soul loss* and possession resorting to spirit world as well as other symbolic techniques; c) hypnosis can help integrate the alien entities and overcome dissociation using similar tools, an issue well analyzed by Richeport [59].

SLEEP, DREAM AND LUCID DREAMING

Lucid dreaming is defined as the capacity to be aware of dreaming while dreaming, be able to intentionally perform different tasks, and recall one’s waking life (for a detailed analysis, see [60]). At a first glance it looks like a sort of oxymoron – viz. being conscious while sleeping. Nevertheless, it is a relevant faculty of mind, the ostensible inconsistency of which depends on the inclination to ontologize the adopted definitions and inflexibly rely on them, splitting the observed phenomena accordingly.

Sleep and dream have a crucial role for both physical and mental health; actually, the deprivation of REM sleep is associated with an increased risk of a variety of disorders, including anxiety, depression, memory impairment, inflammation, Parkinson’s disease and dementia [61]. Non-REM (NREM) sleep is important for declarative and procedural memory while emotional memory seems to depend on both REM and NREM sleep [62].

The whole of sleep, dream, lucid dreaming and unconscious thought provides relevant information on some still little-known abilities of human mind-brain; it may also help envisaging common aspects among incubation, hypnosis, meditation, oracles, shamanic procedures, as well as outstanding intuitions in art and science. The main features of these seemingly different phenomena can be summarized as follows:

1. Dreaming allows for creative problem solving using the unconscious thought, i.e., by thinking through different mind-brain processing with respect to the conscious one; it can also be elicited by incubating problems [63].
2. Sleep allows for memory reprocessing, consolidation and insight, leading to improved emotional integration and explicit knowledge being achieved [64]. Lucid dreams may occur during both REM and NREM sleeping; the latter is less vivid but more thought-like than the former.
3. The NREM sleep is associated with low cortical arousal, a fact not to be considered as a plain equivalent of lack of consciousness. Indeed, its EEG cyclic alternating pattern occurring in frontal and prefrontal areas helps enhance the capacity to make remote associations needed for divergent thought, creativity and innovation, while REM sleep may enhance the associative and convergent reasoning [65].
4. Highly creative individuals show a relatively low cortical arousal and an enhanced alpha activity during creative tasks, a fact compatible with lower stress as well as the decreased creative performances of anxious subjects [65,66].
5. Eye-closure improves both divergent and convergent creativity by enhancing the inward shift of attention and memory retrieval [67].
6. Unconscious thinking is closely related to intuition, creativity and wisdom [68–70];
7. The results of creative thinking emerge to consciousness following a latency during which they are processed at the unconscious level, both during sleep and wakefulness [71]. This in turn allows to mature decisions over time when facing complex problems and crises; here, decisions slowly and insensibly emerge into consciousness over time, rather than following a conscious act of rational analysis.

The outstanding results of the above-mentioned processes are also in line with a common property of dreams, oracles and hypnosis – i.e., subject's intentionality and motivation, as well as the capacity to tolerate incongruences and contemplate the complementarity of opposites in order to properly understand and manage them. As far as incubation is concerned, it was different from normal individual oneiric activity, for it required a proper motivation and a gradual ritual approach of the sick, including purification, offerings, a proper diet, fasting and sexual abstinence before incubation [14,72]. The complementarity of opposites is an epistemological problem of paramount importance, the rationalist Western thought has not been able to aptly face, but has been well analyzed for over two millennia, from pre-Socratic philosophers and eastern philosophies, to Jung' *Mysterium Coniunctionis*, up to the paradigm of quantum physics [73,74].

These data allow to better envisage the relationship between consciousness, unconscious, sleep and dream. According to Perlovsky (2013), consciousness can be metaphorically viewed as an archipelago of islands surfacing a deep ocean of unconscious; being the latter unperceived, one is naïvely inclined to believe that consciousness is all. This naïve belief dominating the Western thought until 20th century, can be figuratively likened to the Highway 1 to Key West, covering 100 tiny islands, 42 bridges and one long open road, where the islands are consciousness, the ocean the unconscious, and the highway jumping among the islands as the ordinary consciousness ignoring to be jumping. In other words, consciousness is nothing but a superficial layer, the supernatant of a much deeper and broader unconscious mind, extending far beyond the narrow Freudian view of the unconscious in terms of libido and entailing an outstanding potential for cognition, metacognition, and wisdom. It also allows to envisage the

possible links between some so-called ASCs – including hypnosis, meditation, incubation, oracles, near-death experiences, and mystic experiences – and their relevance for knowledge, self-development and individuation, as well as healing [76].

Actually, the human history is marked by outstanding examples of revealing dreams in art, philosophy, religion and science, from the Bible – e.g., the Jacob's dream of the Staircase to Heaven, and Daniel's capacity to interpret dreams [77] – to modern science [78]. Here, it is only worth mentioning Descartes, who reported that the fundamentals of a new "wonderful science" were revealed to him during three dreams in 1619, according to which he wrote the *Discourse on the Method* [73, p. xii]. Another intriguing example is Otto Loewi, who was awarded the Noble Prize in 1936 for demonstrating the chemical conduction from the nerves to the heart. As reported by Popper and Eccles [80],

"In his [first] dream saw the way to accomplish this experiment. He awakened the next morning realizing he had had a dream, and it was important, and could remember no details. The next night, to be sure, he put a paper and pencil by his bed, and, as he anticipated, the dream came again to him, he wakened up, remembered the dream, and wrote up with pencil and paper what the dream was about. Next morning, he remembered he had written it and anxiously grabbed the paper and looked at it, but alas couldn't interpret it at all. So the final solution was of course not to trust paper and pencil. On the third night he fully awakened himself and made a full plan of the experiment. The dream experiment was immediately carried out in his laboratory. It was successful and for this discovery Loewi was awarded the Nobel Prize in 1936, sharing it with Sir Henry Dale who many years later told me the full account of this sequence of the three dreams. Later in his life Loewi greatly simplified the story, eliminating the first two nights. The final erroneous legend was reported knowingly by Dale in his biography of Loewi in the Obituary notices of the Royal Society!"

TO SLEEP OR NOT TO SLEEP, THAT IS THE QUESTION

Hypnosis, meditation, lucid dreaming and incubation look like a heterogeneous group of totally different techniques at a first glance, each of them involving different states of consciousness, procedures and outcomes. Furthermore, hypnosis has been misunderstood and a priori rejected for about two centuries [81,82], while incubation has been buried to oblivion for religious reasons in 6th century; later on, it has been dismissed as a plain matter of illusory beliefs and religious superstitions of primitive peoples by the positivist view. The rationalist-positivist paradigm a priori rejected terms such as magic and religion, and established that the rational medicine of Hippocrates had taken over from the previous medicine of Asclepius' temples. However, it is a questionable interpretation, as well discussed by Wickkiser [82, p. 4]:

"As Helen King observes, casting the medical revolution of fifth century Greece as a move from religion to science—and, I would add, viewing religion and science as inherently opposed—ultimately tells us more about ourselves and about our own conceptual categories than about the fifth century. And yet, the conceptual framework of rational medicine versus irrational Asklepios cult continues to govern many studies of Asklepios ... Similarly, G.E.R. Lloyd, one of the most prolific and

engaging writers on the relationship between science and the divine in Ancient Greece, maintains that making a sharp divide between 'rational science' and 'irrational magic' is impossible, given overlap between the methods and explanations of both types of practitioners".

Rather than irreconcilable, the religious and scientific components were complementary and influenced each other, as suggested by the presence of surgical instruments and drugs in both Epidaureus and Kos Asklepeius' temples [14,84,85]. Likewise, meditation has been mainly practiced by mystic currents of the Abrahamic tradition in the West, while formal denominations have mainly ignored it and have often viewed mystics with suspicion or have even prosecuted them. As a result, hypnosis and meditation, two valuable introspective activities, have been included in ASCs. Their proper comprehension entails huge epistemological issues, a few key points of which can be summarized as follows (the problem has been analyzed in detail elsewhere [76,86]):

1. According to Popper, the inductive process of knowledge provides no more than a kind of conjecture based on adopted definitions [87]. In fact, definitions are necessarily partial descriptions of phenomena, hardly able (if possible) to show the essence of observed entities, as claimed by Aristotle. Thus, one can legitimately argue that the adopted definitions of consciousness and unconscious, sleep and dream, as well as the concepts of state and altered state are weaker than commonly believed.
2. Nouns are conventional codes indicating phenomena, but may inadvertently be substantialized leading to phenomena being constrained within the limits of the adopted definitions, a fact well painted by the ancient Latin saying *nomen omen* (name is destiny).
3. The concept of state is an abstract, though pragmatically useful concept only indicating the steadiness of the variables of interest during observation; nevertheless, it skips all the rest of the observed phenomenon, that is anyway much richer than the measured variables (albeit relevant).
4. Consciousness and subjective phenomena are the result of a dynamic, unceasing mind processing rather than states. The inclusion of sleep, dream, hypnosis and meditation in the ASCs classification [88] seems a questionable, naïve idea missing the dynamic relationship between wakefulness (including different mind activities and levels of arousal), sleep and dream, unceasingly shifting between each other in the circadian rhythm: thus, they are components of an inseparable whole, entailing an unceasing mind-brain processing and exchange of information between consciousness and the unconscious. All of them are equally necessary for knowledge, problem solving, creativity, self-transformation, environmental adaptation and mental health, making any split between them arbitrary or a descriptive facility at best: a potentially misleading one yet, when they are perceived as different, autonomous entities.
5. As discussed in detail elsewhere, the very term ASC is questionable, for two reasons: a) the concept of state may be misleading, for it pertains to the observer's perception rather than to the observed phenomena; b) the term altered, hints to a less-than-normal or even dysfunctional condition, while the ostensible oddity mainly depends on the deviation from the accepted *Weltbild* (picture of the world), rather than on phenomena in themselves and mind-brain functioning. Therefore, the term Non-Ordinary Mental Expressions (NOMEs) has been introduced to encompass all non-

pathological ASCs in order to emphasize the epistemological nature of their ostensible oddity [76].

The terms sleep and dream have been used from time immemorial to describe a variety of phenomena sharing similar behaviors – i.e., standing still with eyes closed – but eye-closure is not tantamount to sleep. Hypnosis itself has been wrongly considered as a sleep-like condition for over one century. Likewise, incubation has been defined in terms of sleep and dream in the antiquity (as mentioned above, Asclepius' temples were called sleep temples), but, like hypnosis, it was a guided procedure including a process of induction and a strong imaginative task, the patient was aware of and recalled it. Interestingly, the condition for healing, achieved spending the night in Christian shrines, was defined in the Middle Ages as *non dormienti, sed clare vigilant* – i.e., a conscious condition, albeit phenomenally different from the ordinary one. If this is the case, one should refrain from simply projecting the current neurophysiological meaning of the terms sleep and dream into NOMEs, in order to avoid possible misunderstandings.

Hypnosis has close historical, procedural and neuropsychological links with Eastern meditation [89–95]. Meditation in turn includes a variety of different techniques, ranging from those involving an open monitoring with open eyes, like the Buddhist *Vipassanā* meditation, to those hinting to a sort of apparent sleep – e.g., Yoga *Nidrā* (sleep meditation) aimed to reach a full neutrality and a no-mind condition. Furthermore, meditation can also be guided, like hypnosis. An interesting example is the *Nanso No Ho* (*soft-oilment meditation*) – a practice introduced by the Zen master Hakuin Zenji (1689-1768) as a healing and transformation practice (*naikan*) – that closely resembles hypnosis (table 2) [96]. Finally, it has been reported that Transcendental meditation and Tibetan Dream Yoga enhance the ability to achieve and maintain awareness during sleep [97,98].

Table 2: Nanso No Ho meditation for transformation and recovery (from: <https://www.koansconversations.com/2020/03/nanso-no-ho-practice.html>).

Imagine that a lump of soft butter, pure in color and fragrance and the size and shape of a duck egg, is suddenly placed on the top of your head. As it begins to slowly melt, it imparts an exquisite sensation, moistening and saturating your head within and without. It continues to ooze down, moistening your shoulders, elbows, and chest; permeating lungs, diaphragm, liver, stomach, and bowels; moving down the spine through the hips, pelvis, and buttocks. At that point, all the congestions that have accumulated within the five organs and six viscera, all the aches and pains in the abdomen and other affected parts, will follow the heart as it sinks downward into the lower body. As it does, you will distinctly hear a sound like that of water trickling from a higher to a lower place. It will move lower down through the lower body, suffusing the legs with beneficial warmth, until it reaches the soles of the feet, where it stops... As his vital energy flows downward, it gradually fills the lower region of the body, suffusing it with penetrating warmth, making him feel as if he were sitting up to his navel in a hot bath filled with a decoction of rare and fragrant medicinal herbs that have been gathered and infused by a skilled physician. Inasmuch as all things are created by the mind, when you engage in this contemplation, the nose will actually smell the marvelous scent of pure, soft butter; your body will feel the exquisite sensation of its melting touch. Your body and mind will be in perfect peace and harmony. You will feel better and enjoy greater health than you did as a youth of twenty or thirty. At this time, all the undesirable accumulations in your vital organs and viscera will melt away. Stomach and bowels will function perfectly. Before you know it, your skin will glow with health.

If you continue to practice the contemplation with diligence, there is no illness that cannot be cured, no virtue that cannot be acquired, no level of sage hood that cannot be reached, no religious practice that cannot be mastered. Whether such results appear swiftly or slowly depends only upon how scrupulously you apply yourself.

As a whole, these data show the huge overlapping between apparently different techniques belonging to different cultures and times, where the nouns sleep and dream have been used to describe their phenomenal aspects – i.e., eye closure and imaginative activity, respectively. The former allows to improve the introspective activity and absorption by blocking out the noise engendered by visual inputs, a prerequisite to open the doors of imagination and plastic monoideism. As far as lucid dreaming is concerned, it seems to be closer to the condition of sleep and dream. However, when one refrains from inflexibly separating wakefulness, sleep and dream as ontologically different conditions, their whole can be viewed as a continuum of mind activities shifting from one to another with possible intermediate steps, one of which may be lucid dreaming. As a result, hypnosis, meditation, incubation and lucid dreaming may be arguably considered as siblings of the same family – i.e., the products of a dynamic mind able to do all of them and all their possible combinations as non-incompatible activities, enacted by the inward shift of attention and valuable use of imagination in order to get relevant cognitive and metacognitive abilities.

In conclusion, imagination, unduly disparaged by the century-old Western rationalism, is a human faculty of paramount importance (well painted by the Einstein's sentence at the beginning of this article) and its proper comprehension is essential to understand the above-mentioned NOMEs and their cognitive potential. Here, imagination may be viewed as the Ariadne thread able to guide us through the apparent labyrinth of NOMEs in their continuum with ordinary consciousness, to be faced without cultural and semantic filters unduly splitting the activities of the one and the same mind-brain unit able to do all of them.

RELEVANCE FOR CLINICAL PRACTICE

As mentioned above, the Galilean sciences stem from the rationalist revolution of 17th century with an original sin. Actually, they were born from a political compromise with the Church, claiming the exclusive competence on the soul, the universe and the First Cause – a fact costing Galileo the abjuration and Giordano Bruno his life. Therefore, science was forced to limit the study to the physical world – and medicine to the Cartesian *earthen body machine* – without valid epistemological reasons (for a detailed analysis, see [86,99]). The resulting mechanist-reductionist paradigm of scientific medicine has considered consciousness and mind as an emergent product of brain complexity and adopted a unidirectional bottom-up hierarchy from brain to mind, a priori excluding the possibility of a top-down hierarchy from mind to brain. As a result, the mind-brain-body-world interrelationship has been misunderstood until recent years, as if the role of consciousness and mind would be irrelevant in both health and disease, while medical science has mainly conceived psychiatric disorders as individual biological abnormalities to be treated with drugs. On the other hand, the top-down hierarchy has been demonstrated by a wealth of data on the neuropsychology of hypnosis and meditation, one for all the outstanding phenomenon of hypnotic analgesia [100–102].

According to Canguillhem, living beings and the environment are not “normal” if taken separately, but both normality (anyway a conventional, statistical concept) and disorders stem

from their relationship [94, pp. 203-232]. If this is the case, a proper understanding of both health and disease should consider the mind-body-environment relationship, while the distinction between normality and clinically relevant disorders is at least partly conventional, arbitrary or uncertain [104]. Of course, the value of pharmacological approach to psychiatric disorders is not in discussion. None the less, at least some of them – like anxiety, panic attacks, phobias, depression and post-traumatic stress disorder – stem from life experiences and their meaning for the subject – i.e., they depend on his/her personality, background, sociocultural context and available information. As such, they call for restructuring the problem according to patients' resources for change. Drugs may anyway help smoothing symptoms and improving the process of recovery, but do not change cognition in themselves.

The history of hypnosis has been marked by outstanding effects paralleled by its prejudicial refusal. The post-Enlightenment rationalism prevented to understand its ostensible oddity [81,82]. It also led to imagination being considered valueless and even disparaged until 20th century, while its relevance has become clearer only in recent years [105]. For instance, mental imagery has a crucial role in perception (including blind people), memory, emotions, art, music, pain perception and action; it may improve rehabilitation of brain injuries and help learning new motor skills and athletic performance [106–109]. Imagery with its cognitive and metacognitive power (a fact well painted by the Einstein's sentence at the beginning of this article) is also an essential feature of hypnosis and the other healing techniques discussed above.

Hypnosis – a well validated but still underutilized therapeutic tool (for a comprehensive analysis of its definition, mechanisms and therapeutical indications, see [110]) – can be regarded as a sort of mind lab, allowing one to process information by virtual experiences and perform tasks involving both mind and body through its neurovegetative modulation [111–113]. These features make hypnosis a unique technique, due to its psychosomatic potential, able to improve several psychological, psychosomatic and functional disorders, acute and chronic pain, as well as allow for painless surgery [114].

In conclusion, the above-discussed data suggest that eye closure and mental imagery are the Ariadne thread able to guide us through the apparent labyrinth of healing techniques that have accompanied the care of the sick in all cultures since time immemorial. All of them adopted a non-dualist approach, while the Cartesian split of soul and body and the rationalist stance of science – based on Galileo's mathematical-geometrical apriorism [considered as “the key to unlock the secrets of the world” [106, p. 75] – have led to patients being reified and reduced to a set of mathematical equivalent parameters, in order to treat them by mechanical interventions on the body. As such, the mechanist-reductionist paradigm, though valuable, is not suitable to understand the world of subjectivity, as well as a wide range of functional and psychosomatic disorders, including the so-called Unexplained Medical Symptoms [116,117]. For the same reason, it has been inclined to overestimate the role of drugs and underestimate the role of the caregiver and non-pharmacological therapies in both psychiatric disorders and chronic pain [118–120]. In this regard, it is worth mentioning that the placebo and nocebo responses may account for a significant component of drug effects in a variety of disorders, including pain, intellectual disability, depression, anxiety, dementia, and attention-deficit hyperactivity disorder [121], a fact showing the therapeutic relevance of subjective factors.

If the above discussion is correct, the time is ripe to exceed the narrow limits of Cartesianism and rediscover the role of subjectivity in both pathophysiology and management; here, hypnosis and related mind-body techniques (e.g., meditation) may give back the patient his/her role of active participant in the process of recovery by a skillful use of introspection and imagery with their therapeutical potential. They belong to a worldwide, eternally present way of healing – an expression of ancient wisdom rather than superstition. In the West, they bring us directly back to Hippocrates, the great father of medicine. IN fact, he was an Asclepiad and, as such, an expert of incubation holding the centrality of the person in both pathophysiology and management of ailments, as well defined by his aphorism:

“It is more important to know what sort of person has a disease than to know what sort of disease a person has”.

This concept has been neglected by the mechanist-reductionist approach of modern medicine, leading to his teaching being inadvertently betrayed.

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