

The pre-scientific concept of a “soul”:

A neurophenomenological hypothesis about its origin¹

In this contribution I will argue that our traditional, folk-phenomenological concept of a “soul” may have its origins in accurate and truthful first-person reports about the experiential content of a specific neurophenomenological state-class. This class of phenomenal states is called the “Out-of-body experience” (OBE hereafter), and I will offer a detailed description in section 3 of this paper. The relevant type of conscious experience seems to possess a culturally invariant cluster of functional and phenomenal core properties: it is a specific kind of conscious experience, which can in principle be undergone by every human being. I propose that it probably is one of the most central semantic roots of our everyday, folk-phenomenological idea of what a soul actually is.

Interestingly, from a historical perspective, present day philosophical and scientific discussions of *mind* have developed from a proto-concept of “mind” that bears great similarity to the folk-phenomenological notion of a “soul” just mentioned. This proto-concept of mind is a mythical, traditionalistic, animistic and quasi-sensory theory about what it means to have a mind. Just like the folk-phenomenological notion of a “soul” it can be found in many different cultures. It has a semantic core, which corresponds to the

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functional and phenomenological profile of the naïve notion of a “soul”. Therefore, it is plausible to assume that, in their historical origin, both concepts are deeply interrelated. The common causal factor in their emergence and development – this is my second proposal - may consist in a yet to be determined set of brain properties, namely those underlying the cluster of *phenomenal* properties later leading to the relevant kind of first-person reports. If one connects the first, and systematic, proposal I make in this paper with this second, historical observation, then one naturally arrives at the conclusion that there may be a *common neurofunctional substrate* which led human beings at different times, and in widely varying cultural contexts, to postulate the existence of a soul and to first start developing a theory of mind.

1. The proto-concept of “mind”

What is the “proto-concept of mind”? In many cultures we simultaneously find pre-scientific theories about a “breath of life” (e.g., the Hebrew *ruach*, the Arabic *ruh*, the Latin *spiritus*, the Greek *pneuma* or the Indian *prana* vz. the five *koshas*, etc.; for historical details and further references see Verbeke 1974, Schrott 1974). This typically is a spatially extended entity, keeping the body alive and leaving it during phases of unconsciousness and after death. It has a material aspect, though more subtle than that of the physical body. We are confronted with an almost ubiquitous idea of what mind actually is, which in all its many variations still is a *sensory-concrete* idea of the mental as something that integrates parts, mostly of physical organisms, but sometimes, in a wider sense, also of societies and groups of human beings. In occidental philosophy of mind this proto-

concept of mind has developed through innumerable stages, starting from the pneumatology of Anaximenes in the 6th century B.C., through Diogenes of Apollonia and the Aristotelian distinction between breathed air and psychic pneuma (which may perhaps count as the first attempt at a naturalist theory of mind in Western philosophy). This development then continued through alchemist theories of controlling nature by controlling mind and the Neoplatonists, for whom the pneuma was an aureola covering the soul and protecting it from contact and contamination by material objects, on towards Christian philosophy, which finally *denaturalized* and *personalized* the concept of mind (for details and further references see Oeing-Hanoff, Verbeke, Schrott , Nobis, Marquard, and Rothe 1974). In this way the Western history of the concept of mind can be read as a history of a continuous differentiation of a traditionalistic, mythical, sensory proto-theory of mind, which gradually led to mind being a more and more abstract principle. Finally, culminating in Hegel, it is devoid of *all* spatial and temporal properties.

2. The folk-phenomenological concept of a “soul”

What is folk-phenomenology? Just like *folk-psychology* generally it is a naïve, prescientific way of speaking about the contents of our own minds – *folk-phenomenology* is a way of referring specifically to the contents of conscious experience, as experienced from the first-person perspective. It generates no or little theoretical progress (Churchland 1981), and is characterized by an almost all-pervading naïve realism. However, in everyday life, folk-phenomenology works remarkably well. At least it *seems* to. All of us are experienced folk-phenomenologists, because all of us are used to self-ascribe certain

phenomenal properties when reporting the content of our phenomenal states to our fellow human beings. In non-scientific contexts, we all know what we mean by “soul”: Our soul is the innermost and essential part of ourselves, because it is the prime candidate for the “true self”; it is the phenomenal locus of identity; it bears a deep relation to the emotional layers of our self-model, to the emotional core of our personality; and for many of us it is something of which we secretly hope that it may survive physical death, because it is not identical to our body. Folk-phenomenology follows Cartesian intuitions, and the deeper reason for this fact may be that its ontology is mirrored in the representational architecture of the human self-model (Metzinger 2003, section 6.4.1).

At this point it is interesting to note how all conscious models of reality and the self in it can also be read as ontologies and as epistemological metaphors. As phenomenal ontologies they are non-propositional theories – internal, neurobiologically realized models – about what actually *exists* from the brain’s point of view. As epistemological metaphors they are theories about how the organism actually comes to *know* about the existence of this reality. Under a naïve-realistic interpretation they can then become *theoretical* ontologies – folk-phenomenology turns into folk-metaphysics, as it were. I propose that this is precisely what happened in the historical transition from truthful, first-person phenomenological reports about OBEs to the proto-concept of mind. Let us therefore take a closer look at this highly interesting class of phenomenal states.

3. Out-of-body experiences: What first-person reports about “soul experiences” refer to

Could there be an integrated kind of bodily self-consciousness, be it of a mobile body fully available for volitional control or of a paralyzed body, which in its entirety is a phenomenal confabulation - a *hallucinated* and *bodily* self at the same time? Is it conceivable that something like a “globalized phantom-limb experience”, the experience of a *phantom body* could emerge in a human subject? The answer is Yes. There is a well-known class of phenomenal states in which the experiencing person undergoes the untranscendable and highly realistic conscious experience of leaving his or her physical body, usually in the form of an etheric double, and moving outside of it. In other words, there is a class (or at least a strong cluster) of intimately related phenomenal models of reality, the classical defining characteristics of which are a *visual representation* of one’s own body from a perceptually impossible, externalized third-person perspective (e.g., as lying on a bed or the road below oneself) plus a *second representation* of one’s own body, typically (but not in all cases) as freely hovering above or floating in space. This second body-model is the locus of the phenomenal self: It not only forms the “true” focus of one’s identity as consciously experienced, but also functions as an integrated representation of all kinesthetic qualia and all non-visual forms of proprioception. Such experiences are called out-of-body-experiences (OBEs).

OBEs frequently occur spontaneously while falling asleep, or following severe accidents and during surgical operations. At present it is not clear whether the concept of an OBE possesses one clearly delineated set of necessary and sufficient conditions. For

instance, the concept of an OBE may in the future turn out to be a cluster concept constituted by a whole range of diverging (possibly overlapping) subsets of phenomenological constraints, each forming a set of sufficient, but not necessary conditions. On the other hand the OBE clearly is something like a phenomenological *prototype*. There is a core to the phenomenon, as can be seen from the simple fact that many readers will have already heard about in one way or another.

On the level of conscious self-representation a prototypical feature of this class of deviant phenomenal self-models (PSMs; for the concept of a PSM, see Metzinger 2003) seems to be the coexistence of (a) a more or less veridical representation of the bodily self, from an external visual perspective, which does *not* function as the center of the global model of reality, and (b) a second self-model, which largely integrates proprioceptive perceptions - although, interestingly, weight sensations only to a lesser degree -, and which possesses special properties of shape and form that may or may not be veridical. Both models of the experiencing system are located within the same spatial frame of reference (that is why they are *Out-of-body-experiences*). This frame of reference is an *egocentric* frame of reference. The first interesting point seems to be that this second self-model always forms the subject-component of what I have elsewhere called the "phenomenal model of the intentionality-relation" (PMIR; see Metzinger 2003, section 6.5). The PMIR itself – the first-person perspective as consciously experienced, the ongoing relationship between subject and object as phenomenally represented - is almost invariably portrayed as of a perceptual, i.e., visual, nature. Phenomenologically, you simply *see* yourself. If, for instance, after a severe accident, you find yourself floating

above the scene viewing your injured body lying on the road beside your car, there is a perceived self (the "object-component", which, technically speaking, is only a *system-model*, but not a *subject-model*), invariably formed by a more or less accurate visual representation of your body from an exteriorized perspective, and a *perceiving* self (the "subject-component", the phenomenal self-model or PSM, i.e., the current *self* or *subject-model*), as hovering above the scene, both of which are integrated into one overall global model of reality, which is centered on the second self-model. The second self-model can either be one of a full blown agent, i.e., endowed with the characteristic form of phenomenal content generating the subjective experience of agency (see Metzinger 2003, section 6.4.5), or only what Harvey Irwin (1985, p. 310) has aptly called a "passive, generalized somaesthetic image of a static floating self". However, before entering into a brief representationalist analysis of OBEs, let us first take a quick detour and look at some more frequent, real-world phenomenological cases. Have you ever had the following experience?

The bus to the train station had already been late. And now you have even queued up in a line at the wrong ticket counter! Nevertheless you manage to reach your train *just* in time, finding an empty compartment and, completely exhausted, drop into the seat. In a slightly unfocussed and detached state of mind you are now observing the passengers sitting in the train on the other side of the platform. Suddenly you feel how your *own* train starts to move, very slowly at first, but accompanied by a continuous acceleration, which you can feel in your own body. Two or three seconds later, with the same degree of suddenness, your bodily sensation disappears and you

become aware that it actually is the *other* train, which has now started to slowly leave the train station (see also Metzinger 1993, p. 185f).

What you have just experienced is a very rudimentary form of an out-of-body-experience, a hallucinated bodily self. The center of your global model of reality was briefly filled by a kinesthetic and proprioceptive hallucination, a non-veridical model of the weight and acceleration of your body, erroneously activated by your brain. The dominating visual model of your environment, largely formed by the input offered through the "picture frame" of the train window, was underdetermined. In the special input configuration driving your visual system it allowed for two consistent interpretations: either it is the *other* train or it is the train, in which *you* are presently sitting, which has just started to move. The visual model of reality allowed for two equally consistent interpretations. At the same time there was a state of general physical and emotional arousal, accompanied by an unconscious state of expectancy about what is very likely going to happen next, and very soon. The information-processing system, which you *are*, has selected one of the two possible interpretations in accordance with constraints imposed by a preexisting internal context and, as it is a system which always tries to maximize overall coherence, "decided" to simultaneously activate a suitable self-model, one that can be integrated into the new phenomenal model of the world without causing any major problems. Unfortunately, the chosen model of the world was wrong. Therefore, the activation of the accompanying kinesthetic-proprioceptive self-model led the system into a very brief hallucinatory episode. As transparent models of reality and the self are always fully interpreted and intranscendable for the system currently operating *under* them, a hallucinated bodily self

ensued. Its content was the content of a phenomenal self-simulation, activated by an erroneous automatism leading the system astray, while not being recognized as such. A possibility was depicted as a reality. As the dominant visual model of reality is being updated, this briefly "deviating" form of self-modeling leading to the subjective experience of a real body being slowly accelerated is immediately terminated - and with a mild degree of irritation or amusement we recognize that we have just fooled *ourselves*.

This may count as the minimal case of a phenomenal self-simulation fulfilling no proper function *for* the system - in this case leading to a partially empty, illusionary experience of the body as a whole and in motion. It does not satisfy the adaptivity-constraint (it has no function *for* the system as a whole; see Metzinger 2003, section 3.2.11), and its most striking neurophenomenological feature is the internal emulation of kinesthetic "motion" qualia, of a form of sensory content we normally take to be as strictly stimulus-correlated. The solution to this problem is to acknowledge that visual kinesthetic information, generally being richer than mechanical kinesthetic information, can overrule the second type in cases of conflict, because vision "... is not only an exteroceptive sense, as is classically assumed, it is also an autonomous kinesthetic sense." (Lishman and Lee 1973, p. 294). What is still missing in this introductory case study is a stable, exteriorized visual perspective onto the physical body. Let us now proceed to look at two classical phenomenological descriptions of OBEs, as spontaneously occurring in an ordinary non-pathological context:

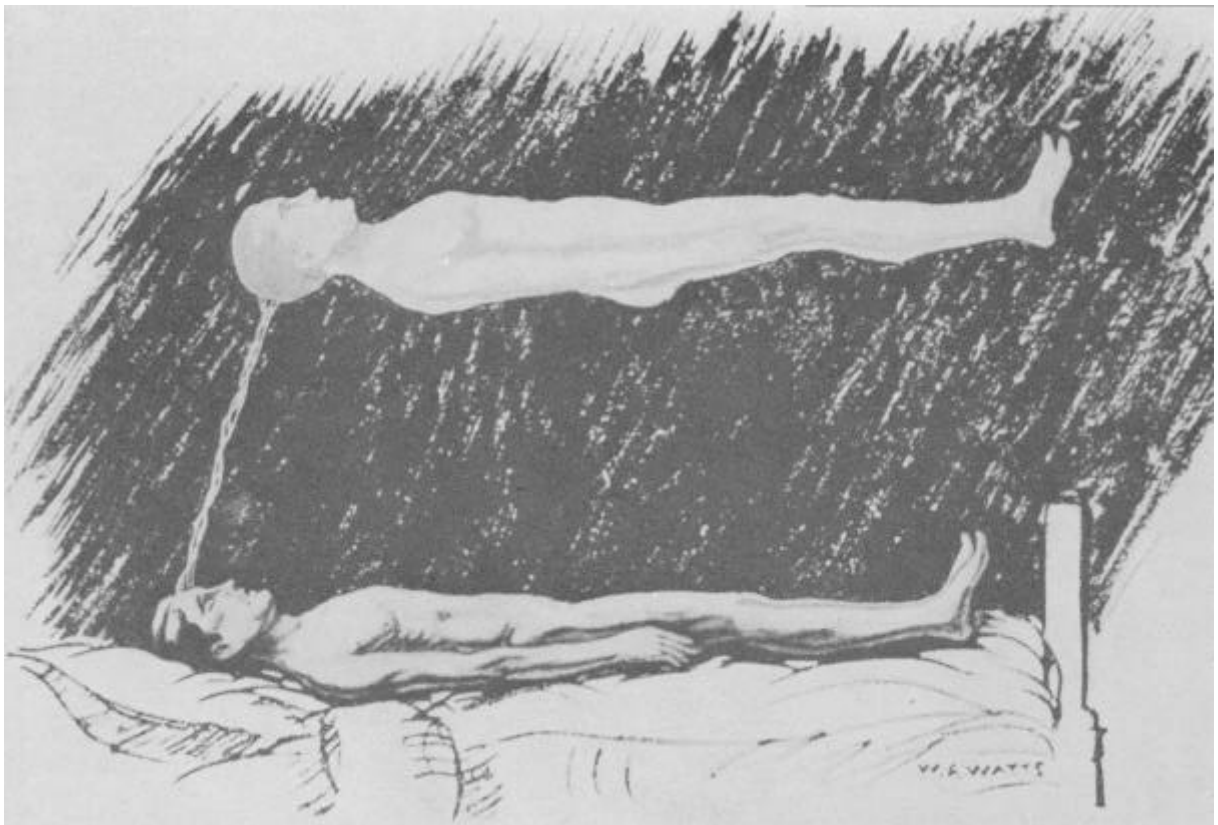
I awoke at night – it must have been at about 3 a.m. – and realized that I was completely unable to move. I was absolutely certain I was not dreaming, as I was

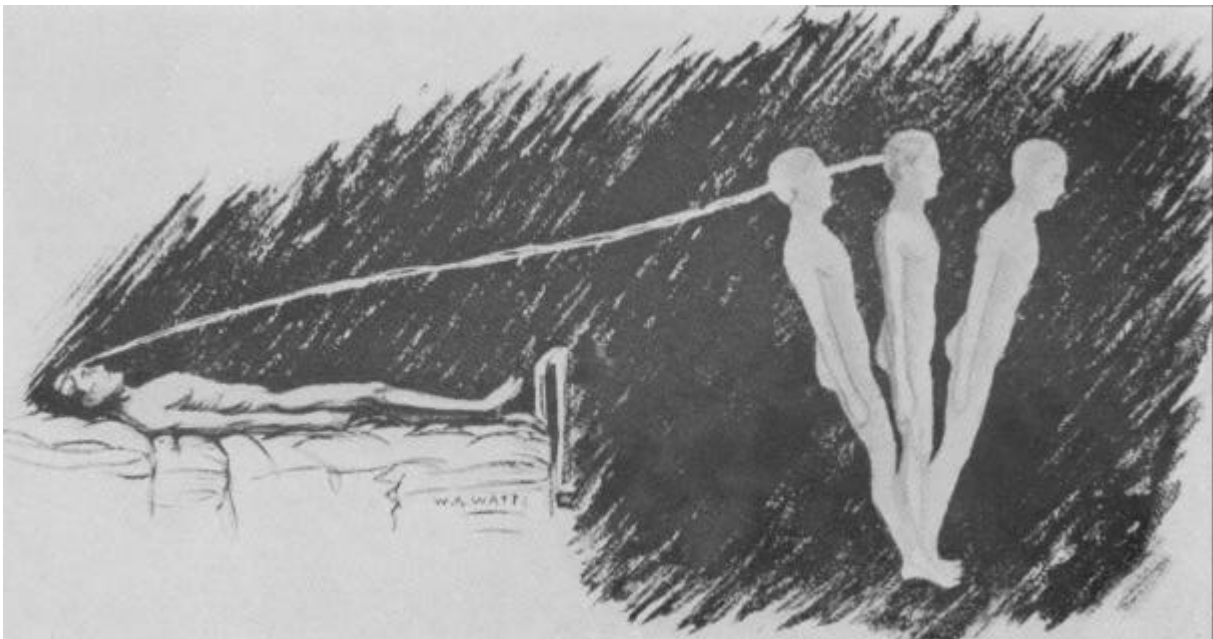
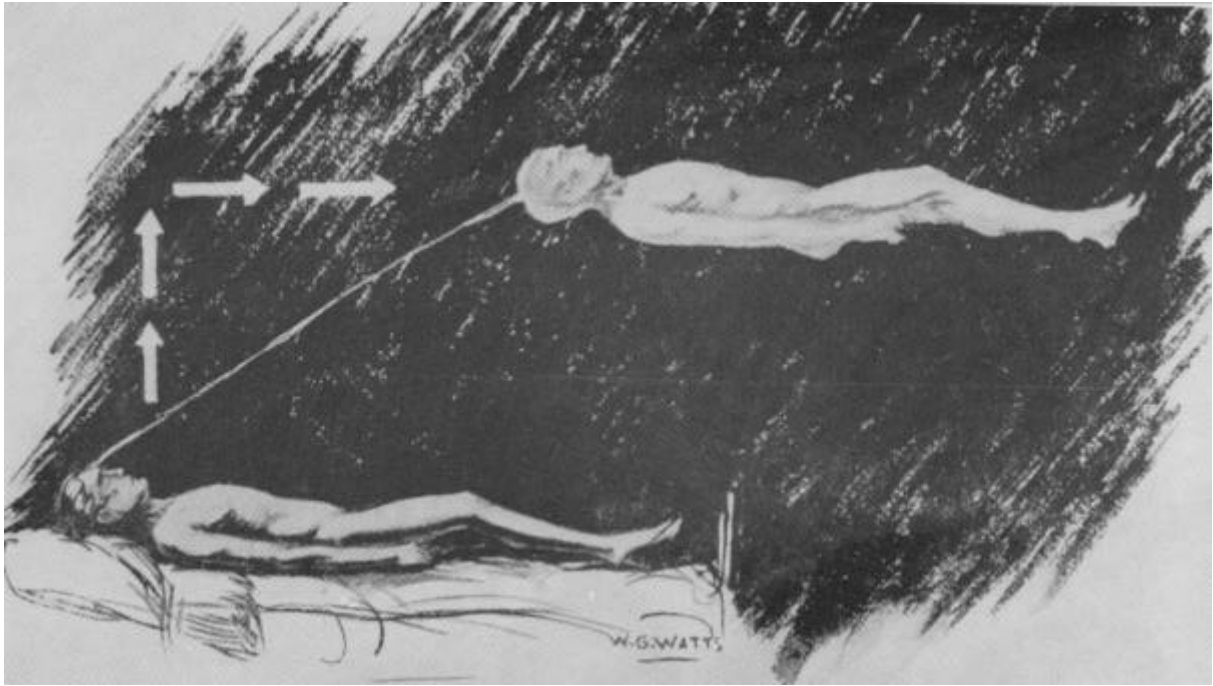
enjoying full consciousness. Filled with fear about my current condition I only had one goal, namely being able to move my body again. I concentrated all my will-power and tried to roll over to one side: Something rolled, but not my body – something that was me, my whole consciousness including all of its sensations. I rolled unto the floor beside the bed. While this happened, I did not feel bodiless, but as if my body consisted of a substance constituted of a mixture between the gaseous and the liquid state. To the present day I have never forgot the combination of amazement and great surprise, which gripped me while I felt myself falling unto the floor, but the expected hard bounce never took place. Actually, had the movement unfolded in my normal body, my head would have had to collide with the edge of my bedside table. Lying on the floor, I was seized by terrible fear and panic. I knew that I possessed a body, and I only had one great desire – to be able to control it again. With a sudden jolt I regained control, without knowing how I managed to get back to it. (Waelti 1983, p.18; English translation TM)

The average prevalence of OBEs ranges from 10 % in the general population to 25% in students, with extremely high incidences in certain subpopulations like, to take just one example, 42% in schizophrenics (Blackmore 1986; for an overview and further references see Alvarado 1986, 2000, p. 18p; Irwin 1985, p. 174p). However, it would be false to assume that OBEs typically occur in people suffering from severe psychiatric disorders or neurological deficits. Quite the contrary, most OBE-reports come from ordinary people in everyday life situations. Let us therefore stay with non-pathological situations, and look at another paradigmatic example, again reported by Swiss biochemist Ernst Waelti:

In a dazed state I went to bed at 11 p.m. and tried to go to sleep. I was restless and turned over frequently, causing my wife to grumble briefly. Now I forced myself to lie in bed motionless. For a while I dozed before feeling the need to pull up my hands, which were lying on the blanket, in order to bring them into a more comfortable position. In the same instant I realized that I was absolutely unable to move and that my body was lying there in some kind of paralysis. Simultaneously I could pull my hands out of my physical hands, as if the latter were just a stiff pair of gloves. The process of detachment started at the fingertips, in a way that could be clearly felt, almost with a perceptible sound, a kind of crackling. It was precisely the movement, which I actually intended to carry out with my physical hands. With this movement, I detached from my body and floated out of it on the side of the head. I gained an upright position, as if I was now almost weightless. Nevertheless I had a body consisting of real limbs. You have certainly seen how elegantly a jellyfish moves through the water. I could now move around with the same ease.

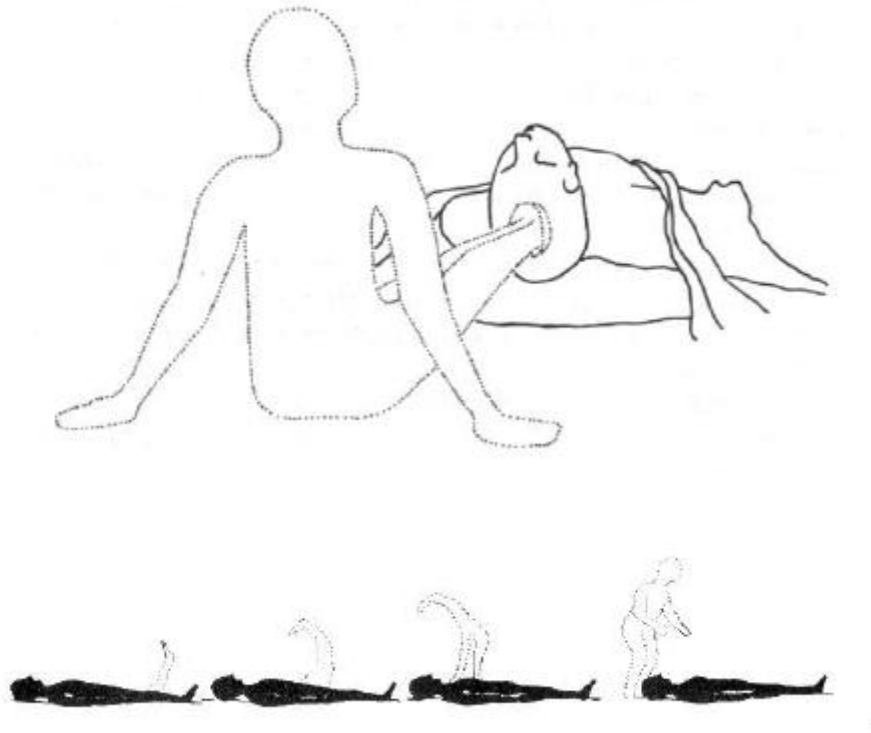
I lay down horizontally in the air and floated across the bed, like a swimmer, who has pushed himself from the edge of a swimming-pool. A delightful feeling of liberation arose within me. But soon I was seized by the ancient fear common to all living creatures, the fear of losing my physical body. It sufficed to drive me back into my body. (Waelti 1983, p. 25; English translation TM)





Figures 1 - 4.

Legend: “*Phenomenal kinematics of the PSM during OBE-onset: the classical Muldoon-scheme.* From: Muldoon, Sylvan and Carrington, Hereward. *The Projection of the Astral Body* (London: Rider & Co., 1929)”



Figures 5 - 6.

Legend: “Kinematics of the phenomenal body-image during OBE onset: Two alternative, but equally characteristic motion patterns, as described by Swiss biochemist Ernst Waelti (1983).”

Sleep paralysis is not a necessary precondition for OBEs. They frequently occur during extreme sports, for instance in high-altitude climbers or marathon runners.

A Scottish woman wrote that, when she was 32 years old, she had an OBE while training for a marathon. “After running approximately 12-13 miles ... I started to feel as if I wasn’t looking through my eyes but from somewhere else. ... I felt as if something was leaving my body, and although I was still running along looking at the scenery, I was looking at myself running as well. My ‘soul’ or whatever, was

floating somewhere above my body high enough up to see the tops of the trees and the small hills. (Alvarado 2000, p. 184)

The classical OBE contains two self-models, one visually represented from an external perspective and one forming the center of the phenomenal world from which the first-person perspective originates. Recently it has been shown that phenomenal states closely resembling the OBE can be induced by stimulating the right angular gyrus with electrodes, leading to the empirical hypothesis that a disintegration of somatosensory and vestibular information may be an important factor in generating the OBE (Blanke, Ortigue, Landis, and Seeck 2002). What makes the conceptual analysis of OBEs difficult is the fact that many *related* phenomena do exist, e.g., autoscopic hallucinations and heautoscopy during epileptic seizures in which only the first criterion is fulfilled (for a neurological categorization see Brugger, Regard, and Landis 1997, for an analysis focusing on the relevance of different degrees of body-centredness in spatial perspective taking, see Brugger 2002). Devinsky, Feldmann, Burrowes and Bromfield (1998, p. 1080) have differentiated between autoscopy in the form of a complex hallucinatory perception of one's own body as being external with "the subject's consciousness (...) usually perceived within his body" and a second type, the classical OBE, including the feeling of leaving ones body and viewing it from another vantage-point. The incidence of autoscopic seizures is possibly higher than previously recognized, Devinsky and colleagues found a 6.3 percent incidence in their patient population (Devinsky, Feldmann, Burrowes and Bromfield 1998, p. 1085). Here is one of their case studies, demonstrating how OBEs can also develop from etiologies like epileptic seizures.

CASE 7. – A 29-year-old woman has had absence seizures since the age of 12 years. The seizures occur five times a week without warning. They consist of a blank stare and brief interruption of ongoing behavior, sometimes with blinking. She had an autoscopic experience at age 19 years during the only generalized tonic-clonic seizure she has ever had. While working in a department store she suddenly fell, and she said,

the next thing I knew I was floating just below the ceiling. I could see myself lying there. I wasn't scared; it was too interesting. I saw myself jerking and overheard my boss telling someone to "punch the timecard out" and that she was going with me to the hospital. Next thing, I was in space and could see Earth. I felt a hand on my left shoulder, and when I went to turn around, I couldn't. Then I looked down and I had no legs; I just saw stars. I stayed there for a while until some inner voice told me to go back to the body. I didn't want to go because it was gorgeous up there, it was warm - not like heat, but security. Next thing, I woke up in the emergency room.

No abnormalities were found on the neurological examination. Skull CT scan was normal. The EEG demonstrated generalized bursts of 3/s spike-and-wave discharges (Devinsky, Feldmann, Burrowes and Bromfield 1989, p. 1082).

Seizures involving no motor symptoms or loss of consciousness and not being recognized by the patient may actually be more frequent than commonly thought (for a case study of a patient who first experienced OBEs for a number of years and only later suffered from generalized seizures, see Vuilleumier, Despland, Assal, and Regli 1997, p. 116). One important feature of OBEs is that the phenomenal representation of the perceiving, acting

self is confabulatory, while the representation of the remaining physical body from an external perspective is generally accurate. For instance, OBEs during seizures frequently clearly depict convulsive movements and automatisms very accurately, from a viewpoint above the body.² For many people who have actually lived through these phenomenal states this is an argument against the possibility of their hallucinatory nature. However, it has to be noted that in the second self-model forming the object-component of the consciously modeled subject-object-relationship veridical and confabulatory content is frequently *integrated* into a single whole. To remain with the last set of case-studies just referred to, one patient noted that his body perceived from an external perspective was dressed in the same clothes he was wearing, but curiously always had combed hair even when he knew his hair was uncombed before the onset of the episode (CASE 4; p. 1081). Another telling phenomenological difference is that some patients will visually experience their body seen from above as not transparent and actually casting a shadow (e.g., CASE 4), as in other cases the double will be transparent, but slightly smaller than life-size (CASE 9; p. 1082), while for other patients the body seen appears solid, but does *not* cast a shadow

² As Devinsky, Feldmann, Burrowes, and Bromfield (1989, p. 1086) write: *Patient 39 was "up there looking at myself convulsing, and my mother and the maid were screaming... I felt so sorry for them and my body." Patient 40 watched her convulsive seizure, "like being in a balcony," and observed the nurses placing a tongue depressor on her tongue and putting up the sides of the bed. Patient 33, who witnessed her complex partial seizure, clearly saw herself looking "anxious, pale, and rubbing my hands, running aimlessly from one place to another."*

(CASE 2, p. 1081). It may be relevant to note that even in spontaneous OBEs, clearly occurring in non-pathological contexts, the non-veridical or self-contradictory nature of particular forms experiential content may very well be cognitively available, not only after, but *during* the experience. Remember our very first case-study, the report by Swiss biochemist Ernst Waelti: “Actually, had the movement unfolded in my normal body, my head would have had to collide with the edge of my bedside table.” (Waelti 1983, p.18; English translation TM) Phenomenal kinesthetics and the underlying spatial frame of reference seem to be slightly dissociated in this case. This very fact itself in turn is available for cognitive processing, and for the formation of autobiographical memory.

As Alvarado (1997, p. 16) remarks, little systematic work has been conducted about the phenomenology of the experience (see also Alvarado 1986b; 2000, p. 186p). The content of OBEs certainly is globally available for attention and cognitive access. *Volitional* availability, however, is a highly variable component of the experience (for an overview of the phenomenology see Irwin 1985, p. 76pp; for an analysis of different case-studies cf. Blackmore 1982a, p. 56pp; for further references see Alvarado 2000). Many OBEs are dominated by a sense of passively floating. The two self-models that are active during an OBE are embedded into a coherent global state, into a single multi-modal scene forming an integrated model of reality. They are also activated within a window of presence, i.e., the experience has no phenomenological characteristics of recollection or future planning – an OBE is something that is happening *now*. In fact, a considerable subset of OBEs is accompanied by the subjective experience of "hyperpresence" or "hyperrealism," particularly in those cases where a blending into or additional episodes of religious ecstasy

are reported. The phenomenal reality as modeled in the OBE certainly is a convolved and a dynamic reality (see Metzinger 2003, sections 3.2.4 and 3.2.5). OBEs are also first-person states: They clearly unfold under a single and unified first-person perspective generated by a PMIR. What makes them unique is that the object-component of the PMIR is formed by a self-model, which is not a *subject*-model. You see your own body, and you recognize it as your own, but presently it is not the body *as subject*, the body as the locus of knowledge and of lived, conscious experience. Of course, numerous exceptions exist in the colorful reports and the folklore about this kind of bodily self-consciousness, but the conceptually most interesting feature of the OBE probably is that it is accompanied by situations in which the subject- as well as the object-component of a phenomenal model of the current subject-object-relationship is taken by a model of the self: *you see your own* body lying on the bed below you. Interestingly, this does not lead to a multi- or decentered overall state of consciousness. Only one of the currently active self-models functions as the "locus of identification". Typically, it is only the etheric double hovering above, which is represented as the attentional subject, as the currently thinking self, and as the agent deliberately moving through space (see the marathon-runner example for an exception). In general it also seems safe to say that prototypical OBEs are fully transparent states: the model of reality generated during the experience is not experienced as a model, although in experienced subjects and practitioners this fact may well be *cognitively* available during the episode. It is precisely the transparency of OBEs, which has led generations of experiencers and theoreticians in many cultures and for many centuries in the past to naive realistic interpretations of this deviant form of phenomenal self-

modeling. However, it must be noted, many OBE subjects also report a "dreamlike quality, as if being awake in a dream". Of general dream variables like the prevalence of flying dreams, vividness, dream recall etc. the occurrence of lucid dreams is the most consistent predictor of OBEs (Alvarado 2000, p. 194p; see also section 7.2.5 in Metzinger 2003). Susan Blackmore (1986) found that subjects reporting deliberate, as compared with spontaneous, OBEs have a better ability to control and terminate dream content and more frequent flying dreams. An important hypothesis, which has to be empirically followed up, therefore, is that OBEs are just an additionally constrained subset of lucid dreams (see also Blackmore 1982b).

In short, one may predict that a more systematic approach to the phenomenology of OBEs will yield different degrees of global transparency and opacity accompanying the experience, and will have to investigate the interrelatedness of this feature with other variables. OBEs can certainly be functionally characterized as offline-activated states, because they typically occur when the body is asleep, paralyzed after an accident or during the effect of an anesthetic agent. In these situations, globally available somatosensory input will be minimal. The PSM loses an important source of content, driving and functionally anchoring it in internal stimulus sources under normal circumstances. Harvey Irwin (1985, p. 308pp) has presented a theory of the OBE in which the notion of being "out of touch with somatic processes" plays a decisive role, either in terms of functional loss of input or in terms of attentional unavailability through habituation. An interesting question, finally, is if OBEs satisfy the adaptivity-constraint: Can there be a *teleofunctionalist* analysis of OBEs? What function could this type of

experience have *for* the organism as a whole? Here is a speculative proposal by Devinsky, Feldmann, Burrowes, and Bromfield:

There are several possible benefits that dissociative phenomena, such as autoscopy, may confer. For example, when a prey is likely to be caught by its predator, feigning death may be of survival value. Also, accounts from survivors of near-death experiences in combat or mountaineering suggest that the mental clarity associated with dissociation may allow subjects to perform remarkable rescue maneuvers that might not otherwise be possible. Therefore, dissociation may be a neural mechanism that allows one to remain calm in the midst of near-death trauma. (Devinsky, Feldmann, Burrowes and Bromfield 1998, p. 1088)

It is not at all inconceivable that there are physically or emotionally stressful situations, in which an information processing system is forced to introduce a "representational division of labor" by distributing different representational functions into two or more distinct self-models (as in what was in the past called "multiple personality disorder", see Metzinger 2003, section 7.2.4). The OBE may be an instance of transient functional modularization, of a purposeful separation of levels of representational content in the PSM. For instance, if cut off from somatosensory input, or if flooded with stressful signals and information threatening the overall integrity of the self-model as such, it may be advantageous to integrate the ongoing conscious representation of higher cognitive functions like attention, conceptual thought and volitional selection processes into a *separate* model of the self. This may allow for a high degree of integrated processing, i.e., for "mental clarity," by functionally encapsulating and thereby *modularizing* different functions like

proprioception or attention and cognition in order to preserve at least some of these functions in a life-threatening situation. Almost all necessary system-related information is still globally available, and higher-order processes like attention and cognition can still operate on it as it is presented in an integrated manner, but its distribution across specific subregions in phenomenal space as a whole has now dramatically changed. Only one of the two self-models is truly "situated" in the overall scene, integrated into an internally simulated behavioral space, only one of them is immediately embodied and virtually self-present. As it is fully transparent, it is a full-blown phenomenal self instantiating the phenomenal property of selfhood *for* the system. Typically, both self-models integrated within a single OBE are constituted by spatial as well as non-spatial mental content. Interestingly, the bodily self-model forming the object-component in this type of first-person experience never changes much in its spatial properties: the physical body viewed from an external perspective is very rarely distorted or changed in shape and size. However, the subject-component of the intentionality-relation modeled in these states may greatly vary (note how just the opposite principle holds for ordinary waking states). Some OBErs see or feel themselves in a weightless replica of their original body, some of them experience themselves as being in no body at all or in another kind of indeterminate form, such as a ball of light or an energy pattern (Alvarado 1997, p. 18; Green 1968) or even as "pure consciousness" (Alvarado 2000, p. 186).

This may point to the fact that spatial content is not strictly necessary in realizing the function fulfilled by the second self-model for the system as a whole. In other words, those higher functions as attention, cognition and agency, which are integrated by the

"dissociated" self, now are only *weakly embodied* functions. In order to be carried out they do not need the integration into a spatially characterized, explicit body image. Attentional and cognitive agency can *functionally* be decoupled from the process of autonomic self-regulation and the spatial self-representation necessary for generating motor behaviour. Conceptually, this is an important insight about the human mind. As it is plausible to assume that also non-cognitive creatures like animals could undergo the type of fully disembodied OBE described above, we may conclude that attentional agency actually is one of the essential core properties underlying the conscious experience of selfhood: Spatial self-representation and cognitive self-reference are not necessary for selfhood.

However, the prototypical OBE clearly takes place in an egocentric frame of reference possessing a spatial, bodily self-model as its origin. In this context, it may also be interesting to note that certain technological setups in virtual reality experiments – so called “second person VR” and “telepresence systems” (Heeter 1992, p. 264) – seem to precisely achieve the same effect, by creating the conscious experience of viewing one’s own body as embedded into and interacting with a virtual world or the experience that there is a “real you” not currently inhabiting your body. What such technical systems offer is an additional functional module (a graphic image or a robot body) through which subjects can control their own behavior. Participants in VR experiments of this type frequently describe their phenomenology simply as *being* an out-of-body experience, even if they have never had a natural OBE before (op.cit.). If empirical evidence could be generated which shows that the spatiality of the attentional and cognitive self-model hovering above the self-as-object-component in the OBE-model of reality is not a strictly

necessary condition, this would support the functional modularization hypothesis here proposed.

It is surprising to see how theorists researching virtual environments today not only employ phenomenological notions like “presence” or “situatedness”, but have already coined a terminological notion for what, under the self-model theory of subjectivity, would be the spatial partition of the PSM modeling motor properties of the organism: the “virtual body” (VB; Barfield, Zeltzer, Sheridan, and Slater 1995, p. 505). A VB is a part of an extended virtual environment, a dynamic and high-dimensional tool that can be used to control a robot at a distance, employing the virtual body as an interface. However, these authors also point out how the issue of “identification” is crucial in the context of teleoperator systems controlling distant robots, and how users of a virtual environment may actually reject their VB - just as some neuropsychological patients do (ibid., p. 506). Most illustrative, however, is the notion of a “slave robot”: To achieve telepresence, an operator has to rely on a high correlation between his own movements as sensed “directly” and the actions of the slave robot; and he ideally has to achieve an identification between his own body and that of the slave robot. A VB, just like a PSM, is an advanced interface to functionally appropriate and control a body. In the VB-case, the body may be thousands of miles away, and the interface used will (hopefully) only be episodically transparent. In the PSM-case, Mother Nature has solved all major interface problems millions of years ago, including a VB and extensive internal user modeling: Target system and simulating system are identical; and conscious subjectivity is the case in which a single organism has learned to enslave itself. Interestingly, this does not turn the system

into a slave robot, but into an increasingly autonomous agent. Autonomy is conscious self-control, and an OBE is a situation in which self-control has been divided into different functional modules.

From a systematic, philosophical point of view, any thorough analysis of deviant phenomenal models of the self is of highest relevance. However, the general quantity and quality of available scientific research is particularly low for OBEs, but also for neurophenomenological state-classes or related interest, like dissociative identity disorder (DID) or lucid dreams. It is hard to find empirical work that lives up to the methodological or conceptual standards of current cognitive neuroscience or analytical philosophy of mind.³ Notable exceptions in this direction are Harvey Irwin, John Palmer and Susan

³From this point of view, the most important publications certainly are Blackmore 1982a, Irwin 1985, and Palmer, J. 1978. An excellent recent review is Alvarado 2000. A short overview concerning the literature and trends in research from the 19th century to 1987 can be found in Alvarado 1989, a review of modern developments from 1960 to 1984 concerning research on spontaneous out-of-body-experiences is Alvarado 1986. A review of three historical phases of psychological research since the 19th century can be found in Alvarado 1992. A more systematic overview concerning the phenomenology of OBEs can be found in Irwin 1985, p. 76pp, further discussion and a review of attempts towards the development of empirical taxonomies and typologies of the OBE in Alvarado 1997. Blackmore 1982a, p. 56pp, offers an analysis of different case-studies; reports about OBEs in non-Western cultures and of different previous scientific studies can be found in

Blackmore. Irwin proposes a model involving a shift in attentional processing during episodes of weakened somatosensory input and a kinesthetic completion of the somaesthetic body image mediated by a visual model of the environment, constructed from memory sources (Irwin 1985, p. 306pp). As somaesthetic input is lost, other presentational subformats – like vision and kinesthesia – become more dominant and take its role in stabilizing the PSM. As Alvarado (2000, p. 203) points out, Irwin’s model has received support from studies relating absorption and visuospatial abilities to the OBE and positively correlating synaesthesialike items from a specific absorption scale to OBE frequency. John Palmer analyses OBEs as compensatory processes after events threatening the integrity of the overall self-model by causing fundamental changes in the body schema (see Palmer 1978). For Palmer, OBEs are just one of many routes the system can take to rescue its threatened phenomenal identity, to preserve the overall coherence of the self-model. As Alvarado (2000, p. 202) puts it, in Palmer’s view the “OBE, then, is an attempt to prevent the jeopardy to one’s identity from reaching awareness and precipitating a crisis.” Susan Blackmore, to whom I am grateful for many exceptionally stimulating discussions, explicitly employs the concept of a “model of reality”. Explicitly operating under the information-processing approach and analyzing the representational needs and resources of persons undergoing OBEs, she arrives at a theory describing OBEs as episodic models

Blackmore 1982a, p. 71pp and 82pp. Wolfradt and Watzke 1999 present an interesting recent study concerning the relationship between depersonalization, schizotypal personality traits, and OBEs.

of reality, constructed by brains cut off from sensory input during stressful situations and having to fall back to internal sources of information. For instance, she drew attention to the fact that visual cognitive maps reconstructed from memory, interestingly, are organized from a birds-eye perspective in the majority of subjects and predicted that these persons would be more prone to having OBEs (see, for example, Blackmore 1982a, p. 164pp; 1987). She also points out an important phenomenological feature of intended bodily *motion* in the OBE-state: frequently, the way in which OBErs move around in the currently active model of reality is not smooth, as in walking or flying, but occurs in discrete jumps from one salient point in the cognitive map to the next salient point. What Blackmore's observation draws attention to is that, whatever else OBEs are, they certainly are internally simulated behavioral spaces. This phenomenological observation may point to the fact that frequently these behavioral spaces, typically simulated by a brain under great stress, are *spatially underdetermined* - i.e., they are coarse-grained internal simulations of landmarks and salient spots in certain perceptual scenes, which were seen in and acted upon at an earlier stage in life. The general idea in Blackmore's theory is that OBEs are transparent phenomenal simulations of a world, which are highly realistic because they include a partially veridical representation of a phenomenal body and are organized from an external "third-person" visual perspective (Blackmore 1984, 1987).

All these approaches are in good keeping with the self-model theory of subjectivity. It is interesting to note that all three of them are explicitly presented as *psychological* theories, not making the assumption of any non-physical carrier substance for conscious experience being in existence or actually leaving the body during an OBE. They are

parsimonious by being simulational, and not representational, theories of the OBE; because they do not assume that there is an actual *representatum* in the environment of the physical body, corresponding to the PSM as an exteriorized second entity. However, taking a more careful look at abstract, non-spatial aspects of the phenomenal self in these states, one discovers how the subject-component of the PMIR in the OBE-state is not completely empty. An attentional and a cognitive subject engaging in selective processing are modeled, and actually *in existence*: OBEs generally have good control over their attentional and their thought processes as such – even if almost all the *content* of these processes may be hallucinatory.

From a philosophical perspective, OBEs are interesting for a number of reasons. First, from the purely systematic perspective of a representational theory of mind, they present us with a unique phenomenal configuration: OBEs are global, phenomenal models of reality, in which two self-models, but only one first-person perspective exist. That is, we have a more or less stable, centered model of reality that contains a PMIR. The interesting point is that during some episodes the subject- as well as the object-component of the transparent model of the intentionality-relation is constituted by a representational structure actually purporting to depict the experiencing person *herself*. What OBEs show is that self-models are not necessarily *subject*-models: You can represent something as your *own* body, without representing it as an agent to which you are identical – and you can do so under a *perceptual* model of the subject-object-relation. OBEs are like a “perceptualized” variant of reflexive self-consciousness. OBEs also constitute a strong argument for the thesis that, while an accompanying bodily self-model may be fully “confabulated” by

subpersonal mechanisms fighting for global coherence, the phenomenal locus of the self is always where the locus of cognitive and attentional *agency* is. Interestingly, this is not true for *bodily* agency (recall the Marathon-example). It is easy to conceive of systems that are not cognitive, but only attentional agents (for instance, animals) but which have OBEs. Therefore, the experience of attentional agency may be the core of phenomenal selfhood and perspectivalness and the origin of all consciously experienced intentionality.

More generally, the phenomenological concept of an OBE seems to be a cluster concept, and the phenomenal state-class picked out by this concept is characterized by a high degree of variability in phenomenal content. However, there seem to be a number of further and essential features. In whatever way the etheric "double" or *Doppelgänger* leaving the physical body is phenomenally modeled, it is always the cognitive and attentional subject - the self-model modeling the system as a cognitive and attentional agent (see Metzinger 2003, sections 6.4.3 and 6.4.4) - which forms the phenomenal "locus of identity," which invariably is represented as the subject-component of the represented subject-object-relationship, thereby generating the structural feature of the overall model of reality which I have described as its perspectivalness. There are higher-order types of self-consciousness with the arrow of the PMIR pointing downwards from a second-order self-representation to a first-order self-representation – as in phenomenologically *inward*-directed attention and self-related cognition. OBEs are unique in being simulations of *perceptual* PMIRs, frequently pointing "downwards" in a much more literal sense, establishing a system-system-relationship modelled within a spatial frame of reference. It is as if in situations where the self-model cannot be anchored in internal somatosensory

input anymore (see Metzinger 2003, section 5.4) higher cognitive functions like attentional processing or categorical thought simply take over in *centering* the global model of reality. In this way some persons undergoing an OBE truly are disembodied, thinking selves in a neurophenomenologically reduced version of the original Cartesian sense. However, the information that is not subjectively available to them, of course, is that all this is just a *model* of reality generated by their central nervous system.

This leads to a number of issues, which are of a more general philosophical interest. For anyone, who has actually undergone that type of experience, it will be almost impossible not to become an ontological dualist afterwards (for instance, 73% of respondents to an early study by Karlis Osis claimed having a new attitude about life after death after experiencing an OBE, 67% reported a reduction in their fear of death, and 66% in a study done by Gabbard and Twemlow claimed to have actually adopted a belief in life after death; see these and further references in Alvarado 2000, p. 188; for a recent empirical study of near-death experiences in cardiac arrest survivors, see Parnia, Waller, Yeates, and Fenwick 2001). In all their realism, their cognitive clarity and general coherence these phenomenal experiences will almost inevitably lead the experiencer to later concluding that conscious experience can, as a matter of fact, take place *independently* of the brain and of the body: What was phenomenally possible in such a clear and vivid manner simply must be metaphysically possible. Although many OBE reports are certainly colored by the interpretational schemes offered by the metaphysical ideologies available to the respective person in its respective time and culture, such experiences have to be taken seriously. Although their conceptual and ontological interpretations will in most cases be seriously

misguided, the truthfulness of centuries of reports about "ecstatic" states, soul-travel and "second bodies" as such can hardly be doubted.

4. Conclusions

What has to be seen is that first-person reports about this specific type of phenomenal state are available in abundance not only from all times, but also from many different cultures. There is a culturally invariant core to the phenomenon. The experience of a soul-like entity, an etheric or astral body leaving the physical body during sleep, after accidents and in death is what I would like to call a "phenomenological archetype" of mankind. Following this line of thought I will close by drawing three independent, but complementary conclusions.

First, the phenomenological archetype which, today, we call an "out-of-body experience" actually is a *neurophenomenological* archetype: the functional core of this kind of phenomenal state is formed by a *culturally invariant neuropsychological potential* common to all human beings. Call this the CINP-hypothesis for OBEs. Under certain conditions, the brains of *all* human beings, through specific properties of their functional and representational architecture, which have yet to be empirically investigated, allow for this set of phenomenal models of reality. Probably this set of models of reality is a discrete set, forming an individual, clearly circumscribed goal for empirical research. A distinct, minimally sufficient neural correlate for the OBE-state in humans is likely to exist, and, in principle, a functionalist analysis of the phenomenon can be developed from a more fine-grained representationalist analysis. Maybe, in some distant future, even machines can

engage in soul-travel.

I believe that the notions of a PSM and of a PMIR (see Metzinger 2003) could serve as an excellent starting point in operationalizing the OBE. However, this assumption may be false, and it will also be important to find out how high the degree of cultural invariance in OBEs actually is. Maybe the OBE is *not* a distinct theoretical entity, but – for example - just a subcluster of prelucid dreams, or a tendency towards depersonalization and certain schizotypal personality traits (Wolfradt and Watzke 1999). In any case, the second point which makes OBEs an interesting target for philosophical analysis is that they likely also form a *neuroanthropological constant*, a potential to, given the necessary neurofunctional configuration, undergo a certain type of experience shared by all human beings. Animals could have OBEs too: It is obvious that non-linguistic creatures not embedded into a cultural environment could undergo these experiences as well. However, it is only in humans that OBEs could be *strong* first-person phenomena (in the sense of Baker 1998, as discussed in Metzinger 2003, section 6.4.4; see also Metzinger, in press), namely by being in addition self-ascribed on a *conceptual* level. On our planet, so far, only human beings had OBEs *and* the capacity to think and communicate about them, because only they had the necessary brain structures. We were the first beings capable of conceptually self-ascribing these experiences to ourselves, culturally embedding them through folk-phenomenological discourse and the formation of a proto-concept of mind. The potential to undergo “strong” OBEs, then, is a neuroanthropological constant. Therefore, let us call this second interim conclusion the NAC-hypothesis for OBEs.

The third important aspect, which makes OBEs interesting from a history-of-ideas

perspective - and which also highlights the relevance that rigorous, empirical research programs would possess from a purely meta-theoretical perspective - has to do with the earliest origins of *theoretical* self-awareness. My last proposal is that the class of phenomenal states, which today we call OBEs and which points to a commonality in the neurofunctional architecture underlying the process of human, conscious self-modeling, actually is the historical root of what I have called the "proto-concept of mind". It was this proto-concept of mind, which eventually developed into Cartesian dualism and idealistic theories of consciousness. Put shortly, it is the particular kind of phenomenal content described in the previous section, which first led human beings to believe in a *soul*. Call this simply the "soul-hypothesis": After the evolution of brains had reached a stage at which OBEs in terms of strong, conceptually mediated forms of phenomenal self-modeling became possible, it was only natural to - on a *theoretical* level - assume that something like a soul actually does exist. Given the epistemic resources of early mankind, it was a highly rational belief to assume the possibility of disembodied existence. And it was the PSM of *Homo sapiens*, which made this step possible.

As I briefly pointed out in section 1, the history of the concept of mind was one of increasing differentiation and abstractness. At the *beginning* we have a theory of something concrete, an etheric and spatially extended double, a breath of life. At the *end* we find something entirely unworldly, an abstract, ideal principle. It is interesting to note how the best theories of mind available today *again* turn it into a concrete process, fully endowed with temporal and spatial properties. However, in the light of present-day cognitive neuroscience it is even more intriguing to see how, at the beginning of human

theorizing about mind and consciousness we find a very similar basic motive across very different cultural contexts: the idea of a “subtle body”, which is independent of the physical body and the true carrier of higher mental functions like attention and cognition (Mead 1919). Historically, the dualist tradition in philosophy of mind is *rooted* in these early proto-theories. These theories, I would like to propose, may in turn be motivated by naïve-realistic interpretations of early first-person reports about OBEs. At the beginning of this paper I noted how many of the deviant models of reality and self characterizing altered states of consciousness and pathological neurophenomenological configurations may have a hidden heuristic potential, because they can also be read as metaphysical or epistemological metaphors. In a way, they are the brain’s own philosophy. As phenomenal ontologies they are non-propositional theories – internal, neurobiologically realized models – about what actually *exists* from the brain’s point of view. Taken as an ontological metaphor, the phenomenology of OBEs inevitably leads to dualism, and to the concrete idea of an invisible, weightless, but spatially extended *second body*. This, then, may actually be the folk-phenomenological ancestor of the soul, and of the philosophical proto-concept of mind: It is the OBE-PSM. Centuries of phenomenological reports describing it as a *subtle* body pointed in the right direction, because we can now begin to see how it actually is a purely *informational* structure modeling bodily self-experience in the absence of somatosensory input. Therefore, in order to not only have an empirically grounded theory of conscious experience, but to also understand the neurofunctional and neurophenomenological underpinnings of the persisting intuition that such a theory leaves out something highly important, it will be of highest relevance to achieve a fuller

understanding of this type of phenomenal experience. What I have briefly sketched as the CINP-, the NAC-, and the soul-hypothesis may be a good starting point to take phenomenology seriously: The traditional concept of an immortal soul, which can exist independently of the physical body, may have a phylogenetically new *neurophenomenological correlate* in the type of deviant phenomenal self-modeling described in this contribution.

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