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Threats in dreams, emotions and the severity of threatening experiences in waking

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Summary. One of the prepositions of the Threat Simulation Theory (TST) suggests that the experience of threatening events in waking life would be associated with the experience of oneiric threats, which is consistent with the Continuity hypothesis. Following on that proposition, dream diaries and daily event diaries of the day preceding the dreams were collected from 40 female and 40 male undergraduate students who rated the intensity of anger and fear experienced during the day and in the course of their dreams. The severity and frequency of threatening events in both conditions was evaluated by two independent judges on a scale developed on the basis of the severity component of Revonsuo's Dream Threat Scale. There were significant correlations between the severity of threatening day events and the severity of threats in dream diaries ($r(80) = .22, p = .048$), and between the frequency of daytime threats and dream threats ($r(80) = .41, p = .001$). There were also significant correlations between pre-sleep anger and anger in dreams ($r(80) = .39, p = .01$), and between fear before bedtime and the severity of dream threats ($r(80) = .33, p = .003$). In addition, different gender-specific relationships emerged, coincident with the consistently observed predominance of negative emotions in women's dreams. These findings provide some support for both the Threat Stimulation Theory and the Continuity hypothesis. Further exploration over a longer time frame is required to better understand the relationship between these emotions experienced in waking and dreams.

Keywords: Dreaming, Threat Simulation Theory, Dream Threats, Waking Threats, Emotions

1. Introduction

As an evolutionary theory of the function of dreams, the Threat Simulation Theory (TST) proposes that dreaming is a built-in virtual reality program that specializes in the simulation of threatening events (Revonsuo, 2000). When a person is confronted in their waking life by an event deemed threatening, they are likely not only to dream about the threat, but to dream about it repeatedly, in a way that would permit rehearsing realistic ways of coping with that threat. This would have been functionally adaptive for ancestral humans as it would have allowed them to rehearse skills necessary for the recognition and avoidance of threats in a completely safe environment that is the virtual reality of the sleeping mind.

Revonsuo and Valli developed the Dream Threat Scale (DTS; Revonsuo & Valli, 2000) to test the hypotheses of the TST by comparing the dreams of traumatized and non-traumatized groups of children and adolescents (Valli, Revonsuo, Palkas, Ismail, Ali, & Punamaki, 2005; Valli, Revonsuo, Palkas, & Punamaki, 2006; Valli, Lenasdotter, MacGregor, & Revonsuo, 2007; Valli, Revonsuo, Strandholm, & Silanmaki, 2008). In one study, Valli et al. (2005) found that children exposed to war-related traumatic events were more likely to report more threats per dream than non-traumatized

children, and, moreover, that the threats represented in the dreams of the former were likely to be more severe than the threats in those of the latter. In a following study conducted in another war torn country, they found that while traumatized children were likely to report more threats per dream than non-traumatized children, the quality of threat simulations between the groups was statistically negligible (Valli et al., 2006).

In a study intended to test the TST with recurrent dreams, Zadra, Desjardins and Marcotte (2006) found, on the one hand, that the majority of dreams incorporated a threat but that less than 2% of them fulfilled all of the theory's predictions, leading to a debate between the two research groups (Valli & Revonsuo, 2006; Zadra & Desjardins, 2006). Lack of agreement as to what constitutes an actual threat appears to be the source of divergent findings. Another group of researchers became involved in the controversy over a consensual definition of threat: Malcolm-Smith and Solms (2004) have insisted that Revonsuo's definition is problematic. They found that only 21% of dreams collected with the Most Recent Dream method (MRD), contained physical threats to the dreamer, although a large number of the participants in their study had experienced a major, even a life threatening attack in the past. They commented that such physical threats corresponded to the most salient type of threat experienced in the human evolutionary context. Still, events that constituted physical threats in the sampled dreams were largely trivial fantasies, such as being chased by spiders or being clawed to death by a kitten. A mere 8.48% of these threats could be categorized as "real" threats. Additionally, there were no realistic attempts at coping with the threats, as stipulated by TST, a fact already observed by Zadra et al. (2006). Criticisms addressed by Zadra, Desjardins and Marcotte (2006), Malcolm-Smith,

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Solms, Turnbull and Tredoux (2008) to the theory are of a conceptual and methodological nature. What constitutes a “real” threat raises serious problems for a satisfactory evaluation of TST.

Following these controversies, Valli and Revonsuo (2008) stated that if dreaming is a virtual reality replication of the perceptual world, it follows that only threats perceived as such by an individual can be represented in that individual’s virtual reality. They therefore proposed to focus on the “activity level” of the threat simulation mechanism for each individual. The “activity level” is defined as the frequency and severity of threatening events in dreams. As far as feasible, that new approach was adopted for the study about to be reported. Its main objective is to determine whether threats, rated as such by the dreamer in waking life, are represented in subsequent dreams and rated accordingly. For this purpose, we used a different system of definitions, proposed by the DTS, in order to identify the threats in the reports. These definitions were deemed appropriate for our conception of what constitutes real threats.

Then, according to the TST, which states that the experience of real threats triggers the activation of the threat simulation system (Valli & Revonsuo, 2009), it would be expected that the severity and frequency of threats in dreams be associated with the severity and frequency of threats experienced during wakefulness. In accordance with the Continuity hypothesis, which refers to the transformation of waking states, experiences and concerns into dreams, this process can be observed specifically between waking experiences of the day preceding the dream and the following dream (Hall & Nordby, 1972; Domhoff, 1996; Strauch & Meier, 1996; Schredl & Hofmann, 2003; King & DeCicco, 2009). In addition, the most severe threat reported in both states was the only one retained for the evaluation of the threat severity in our study, for it represents the most acute experience of encountered threat. Indeed, due to its intensity, this acute experience of threat would be the one having the greatest impact on the development of survival skills.

Despite being an important component of dreams, emotions have not been directly taken into account in the major propositions of the theory nor in the different studies conducted to test it. A second objective of the present study was to further explore the TST by focusing on emotions that would appear as emotional responses to threats. In this regard, some studies suggest that emotions appear to allow humans to rapidly detect threatening stimuli. Indeed, exaggerated fears such as phobias and anxiety, both in children and adults, accelerate the detection of the object of their fear when compared to control participants (Byrne & Eysenck, 1995; Derryberry & Reed, 2002; Flykt & Caldara, 2006; Gilboa-Schechtman, Foa, & Amir, 1999; LoBue & Pérez-Edgar, 2014; Mogg & Bradley, 2002; Öhman & Mineka, 2001; Pishyar, Harris, & Menzies, 2004; Richards, Hadwin, Benson, Wenger, & Donnelly, 2011; Weierich & Treat, 2015). This suggests that certain affects constitute adaptive reactions to threatening situations, permitting individuals to optimally cope with them. Thus, according to the “fight or flight” response (Cannon, 1929), when confronting a dangerous situation, anger is related to the instinct for fighting or attack while fear is linked to the instinct for flight. Moreover, psychosocial studies show that anger and fear are associated with threat detection and they facilitate it (Culley, Madhavan, Heikens, & Brown, 2011; Gordijn, Yzerbyt, Wigboldus, & Dumont, 2006; LoBue, 2014; Matthews & Levin, 2012; Va-

gnoni, Lourenco, & Longo, 2012). As a consequence, one might expect that the emotions (anger and fear) involved with the response to threats would be associated with the same kind of oneiric emotions implicated into the threats detection, a notion consistent with the continuity hypothesis. One could also expect that these emotions would be related to the various aspects constituting oneiric threatening experiences (i.e. severity and frequency of threats). Finally, as it has been consistently observed and replicated most recently with a Canadian sample, women experience more negative emotions in their dreams than men (Dale, Lortie-Lussier, Wong, & De Koninck, in press). Thus, it would be important to take into account potential gender differences in the experience and expression of emotions and threats in waking and dreaming.

In sum, it would be interesting to ask whether the diverse aspects of threatening experiences during wakefulness are related to oneiric simulations of menacing dreams. From there, the first objective of this study was to assess the potential relationship between the threats severity and frequency of waking and dreaming experiences. The second aim was to evaluate the relationship between the emotions of anger and fear engaged in threats detection while awake and the oneiric experience of threatening situations.

Hypothesis

According to the third proposition of the TST, we hypothesized that the experience of threats in the waking state triggers the activation of the threat simulation system (Valli & Revonsuo, 2009). From there, we formulated the following predictions:

1. The most severe threat of the day prior to the dream will be associated with the most severe dream threat.
2. The frequency of daytime threats will be linked with the frequency of dream threats.
3. The presence of threats the day preceding the dream will be correlating with the presence of oneiric threats.
4. The experience of anger reported before bedtime will be correlated with the experience of anger, the severity and frequency of dream threats in the following dream.
5. The experience of fear reported before bedtime will be also associated with the experience of fear, the severity and frequency of dream threats in the subsequent dream.

It is important to mention that the continuity hypothesis also anticipates these results.

2. Method

2.1. Participants

Participants in this study were randomly selected from a larger sample collected for a normative study of Canadian dreams in the sleep and dreams laboratory at the University of Ottawa. There were 40 males and 40 females between the ages of 18 and 24. The first language of these participants was English. Only one dream per participant was selected. The sample was drawn from a database in which the majority of the participants had reported in average two dreams, but some of them had reported only one dream.

2.2. Materials

2.2.1 Dream questionnaire.

Participants completed a dream and day activity diary questionnaire over a ten-day period, or until such time as they had recorded two dreams. More specifically, the participants were asked to write logs of their daily events at night before going to bed, recording the level of the most stressful moment of their day on a five point scale (0 = null, 1 = low, 2 = moderate, 3 = high, 4 = very high), as well as fill in questions as to what emotions they were feeling and of what intensity. This was done through a four point scale (0 = not at all, 1 = a little bit, 2 = moderately, 3 = a lot). The specific emotions used for the present study were anger and fear. Only the daily log of the day prior to the dream randomly selected was used. The same questions were asked pertaining to the subjects' experience of fear and anger in their dreams. As for the reporting of dreams, participants were asked to keep a copy of the dream report sheet next to their beds. Should they remember a dream upon waking, they were asked to write it down immediately to avoid memory distortion.

2.2.2 Dream Threat Scale.

The Dream Threat Scale, initially elaborated by Revonsuo and Valli (2000), was adapted for the evaluation of threats in waking life. Particular attention was paid to the category "Severity of the Threatening Event for the Self" in the dream scale. More specifically, after having debated about what would constitute a real threat, our group determined that the threat severity descriptions, defined by the DTS, would represent a better system of definitions to investigate the TST, allowing to circumscribe with more structure and precision the waking and dreaming experiences of menacing events. Thus, threats were identified by using the descriptions of the different levels of threats' severity established by the DTS (1.: Life-threatening event, 2.: Socially, psychologically or financially severe threat, 3.: Physically severe threat and 4.: Minor threat). In their latest instructions on how to test their theory, Valli and Revonsuo (2008) leave the means of measuring the severity of a threat largely open. For the purposes of the present study, the 4 four-point scale was changed to an interval scale. Below each report (i.e. dream reports and day reports) judges were provided with a line of ex-

actly 10cm in length. The extreme left side of this line was verbally anchored with the word "low" (for "low" severity threat) while the extreme right side of this line was verbally anchored with the word "high" (for "high" severity threat). This instrument provided the judges with a quick and easy way to evaluate the severity of the most threatening event in dream report and daily log. In the case of no threat the judge would simply make a mark on the extreme left of the scale, before the beginning of the line. The distance in millimetres between the extreme left, or beginning, of the 10cm line and the mark made by the judge on the 10cm line became the report's threat severity score.

2.3. Procedure

Dream reports and day reports of the day preceding the dream were separated into two different documents in an effort to curb the potential biasing that could result from seeing each participant's dream and day reports at a single glance. Both piles of two documents were given to two independent judges, to rate the severity of threats in each individual report. Thus, the judges first identified the threats by using the severity definitions provided by the DTS, and then, as a function of these descriptions, they rated the severity by using the interval scale. Furthermore, judges practiced with dream and day reports from the normative sample that had not been selected for the present study in order to establish an acceptable consensus. The judges then evaluated the narratives independently. The inter-judges' reliability was evaluated using Pearson's correlation coefficient: for severity of threats in dream reports $r = .754, p = .001$; for severity of threats in day reports $r = .806, p = .001$.

3. Results

Descriptive statistics characterizing the variables of interest are presented in Table 1. The quantity of reported threats, both from daytime and dreams, was not significantly different between men and women (i.e. Daily logs: $t(78) = 1.79, p > .05$; dream reports: $t(78) = 1.14, p > .05$). However, generally, the dream reports contained significantly more threats than the daily logs: $t(79) = 7.24, p = .001$. The first set of statistical analyses was conducted to evaluate the correlation between the severity of threats in the day reports and in dream diaries. The correlation between the severity of threats in dreams and the severity of threats experienced

Table 1. Descriptive statistics

Reports	Total number of threats in reports	Threatening events/reports		Reports including threats	Words/report	
	N	M	SD	%	M	SD
Daily logs of females	20	1.00	1.20	52.50	62.60	47.18
Dreams of females	102	2.55	2.45	80.00	180.55	136.18
Daily logs of males	24	0.60	1.08	32.50	43.03	32.70
Dreams of males	77	1.93	1.95	75.00	143.30	106.90
Total for daily logs	64	0.80	1.15	42.50	52.81	41.52
Total for dream reports	179	2.24	2.22	77.50	161.93	123.06

Table 2. Mean severity of threatening experiences and gender

Severity	Females		Males		t(78)	p	Confidence interval at 95%		
	M	SD	M	SD			Inferior	Superior	Cohen's d
Dream threats	2.83	1.23	2.65	1.49	0.59	.56	-0.43	0.79	0.13
Daytime threats	1.31	1.14	1.09	1.09	0.87	.39	-0.28	0.71	0.20

the day prior to dreaming was statistically significant at $r(80) = .22$, $p = .048$. This relationship was not significant for men: $r(40) = .07$, $p > .05$, whereas it was significant for women: $r(40) = .39$, $p = .013$.

Moreover, as shown in Table 2, there were no significant differences between men and women regarding the threats severity from both daily logs and dream reports. Through a post hoc analysis, it appeared that the severity of the most threatening experience during wakefulness was correlated with the frequency of dream threats the subsequent night: $r(80) = .46$, $p = .001$. Furthermore, both men and women showed this significant correlation between the most severe daytime threat and the quantity of oneiric threats, which was respectively $r(40) = .40$, $p = .01$ for men, and $r(40) = .50$, $p = .001$ for women. The correlation between the word count of dream reports and the threat severity score of dreams was also statistically significant at $r(80) = .30$, $p = .006$. However, it is likely that the severity score is not affected by the length of either the day reports or the dream reports because only the severity of the single most threatening event from both reports was coded and used for the comparison.

The second set of statistical analyses was performed on the frequency of threats in day and dream reports. The correlation between the frequency of threats in both reports was significant: $r(80) = .412$, $p = .001$. This relationship was also significant for men: $r(40) = .39$, $p = .012$, and women: $r(40) = .40$, $p = .01$. In addition, the frequency of threats in women's daily logs significantly correlated with the severity of the most threatening oneiric element: $r(40) = .34$, $p = .033$. As well, the correlation between dream reports word count and the frequency of threatening events in dreams was significant: $r(80) = .30$, $p = .008$. The third set of statistical analyses was conducted to evaluate the correlation between the presence/absence of threats the day preceding the dream with the presence/absence of oneiric threats. It turned out that the relationship was significant for our total sample: $r(80) = .34$, $p = .002$, and for women: $r(40) = .40$, $p = .01$.

Table 3. Mean emotional intensity and gender

Emotional intensity	Females		Males		t(78)	p	Confidence interval at 95%		
	M	SD	M	SD			Inferior	Superior	Cohen's d
Fear before bedtime	1.04	0.45	0.96	0.42	0.81	.42	-0.11	0.27	0.18
Fear during dreaming	0.38	0.45	0.19	0.38	1.95	.053	-0.03	0.37	0.46
Anger before bedtime	0.88	0.41	1.03	0.48	-1.30	.20	-0.33	0.07	-0.34
Anger during dreaming	0.23	0.42	0.20	0.43	0.32	.75	-0.16	0.22	0.07

Finally, in order to control the familywise error rate, we used the Holm-Bonferroni correction to test our fourth and fifth predictions. The corrector was used only with the main predictions. Thus, the correlation between the intensity of anger experienced before bedtime and the intensity of anger experienced in dreams was statistically significant at $r(80) = .29$, $p = .01$. Conversely, the intensity of anger experienced before bedtime was not correlated with both the most threatening dream experience (i.e. $r(80) = .12$, $p > .05$) and the frequency of dream threats (i.e. $r(80) = .09$, $p > .05$). No significant relationships were found for men. However, the intensity of anger before bedtime was significantly correlated with the frequency of dream threats for women: $r(40) = .31$, $p = .05$. Then, it appeared that the correlation between the intensity of fear before bedtime was not significantly associated with the intensity of oneiric fear: $r(80) = -.007$, $p > .05$, and with the frequency of dream threats: $r(80) = .24$, $p = .033$ (not significant due to the Holm-Bonferroni adjustment). However, the intensity of daytime fear was significantly correlated with the severity of the most severe dream threat: $r(80) = .33$, $p = .003$. Once again, no significant relationships were found for men. Conversely, for women, the correlations between the intensity of fear before bedtime and the frequency (i.e. $r(40) = .46$, $p = .003$) as well as the severity (i.e. $r(40) = .59$, $p = .001$) of dream threats were significant.

Finally, the grouping variables for the independent samples t-test were anger before bedtime (those who reported anger and those who did not) and fear before bedtime (those who reported fearfulness and those who did not). Those who reported anger before going to bed were more likely to report having experienced anger in their dreams: $t(78) = 3.414$, $p = .001$. Those who reported anger before bedtime also reported more fear in their dreams: $t(78) = 2.064$, $p = .044$. Those who reported fear before bedtime were not much more likely to experience either anger ($t(78) = 1.26$, $p > .05$) or fear ($t(78) = .373$, $p > .05$) during their dreams. Table 3 shows different comparisons between

men and women concerning emotional intensity experienced during wakefulness and dreaming.

4. Discussion

The significant correlation between the severity of daily threats and threats in dreams supports a main prediction of the TST (Valli & Revonsuo, 2009). Findings relevant to each hypothesis will be examined in turn, with a focus on differences between genders. The first one specified that the most severe threat reported before bedtime would be associated with the highest level of threat in the dream of the following night. It was supported for participants as a whole although the correlation was high in the case of women but almost null for men. It suggests that the TSS of women would induce oneiric threat simulations whose maximal severity level would be proportionate to the intensity of the most severe threat experience of the day preceding the dream episode, this being consistent with the continuity hypothesis. Interestingly, it was also found for both men and women that the higher the severity of the most severe diurnal threat, the higher was the frequency of threat in the dream content.

Our second prediction was confirmed. The frequency of daytime threats was associated with the frequency of dream threats. Once more, it is interesting to point out that there was a significant association between the frequency of diurnal threats with the intensity of the most threatening dream element for women only. The number of daytime threats reported by women could exacerbate the maximal severity of the following dream threats. Our third prediction was partially confirmed. The correlation between the dichotomous variables of presence/absence of daytime threats with the presence/absence of dream threats was significant for the whole sample, for women, but not for men. In this regard, while a causal relationship was not tested here, these findings suggest that recent threatening experiences can have an impact on the activation of the threat simulation mechanism, consistent with Valli et al's (2006) hypothesis that threats in dreams can be traced to very recently encoded threatening experiences. The recency of the threatening event could therefore be a critical factor for the activation of threat simulations, and this, especially for women. If this is so, it could explain why the Most Recent Dream method (MRD) adopted by Malcom-Smith and Solms (2004) to test the TST was not appropriate to elicit recall of severe threatening events that had occurred in their participants' past, that should have prompted simulation, according to these authors.

An original contribution to the operationalization of the TST consists in the inclusion of emotions to assess the relationship between threats in the waking and dreaming states. There was a significant correlation between the anger level reported upon bedtime and anger experienced in dreams. However, the experience of this emotion while awake was not related to the frequency and severity of oneiric threats. This pattern was, though, different for women as their anger level before bedtime was significantly associated to the frequency of dream threats. Thus, it suggests that the pre-sleep experience of anger could contribute to the activation of the TSS, engendering the subsequent simulation of threatening dreams. Psychosocial studies show that the role of anger is associated with the perception of environmental threats

(Gordijn, Yzerbyt, Wigboldus, & Dumont, 2006; Matthews & Levin, 2012) and, more specifically, to adaptive mechanisms, allowing people to take action in hazardous situations. Such as proposed by Cannon (1914), anger would be associated with the desire to attack or combat the threatening element (Cheung-Blunden & Blunden, 2008). Thus, if anger is an emotional response implicated in threats perception, then the positive correlations observed here were anticipated by the third proposition of the TST, which states that the experience of real threats engenders the activation of the threat simulation system (Valli & Revonsuo, 2009).

On the other hand, relative to the fifth prediction, the intensity of daytime fear was correlated only with the intensity of the most threatening element of the dream. However, in the women's group, the intensity of pre-sleep fear was significantly associated with the oneiric threats' frequency and severity, suggesting a role of fear in the activation of the TSS. Indeed, fear is, as well as anger, involved in the facilitation of environmental threats detection (LoBue, 2014; Weierich & Treat, 2015). In comparison to anger, fear would permit to detect more accurately diverse surrounding dangers (Culley, Madhavan, Heikens, & Brown, 2011). Thus, if fear is an emotional response involved in threats detection, such as proposed by Canon (1914), then the relationships observed here were predicted by the TST (Valli & Revonsuo, 2009). It should be added that all these relationships were also anticipated by the continuity hypothesis (Schredl, 2003).

In addition, the individuals who reported anger before going to bed were more likely to report having experienced anger and fear in their dreams than those who did not report anger or fear before bedtime. As mentioned above, anger is an emotion ensuing from the perception of a threat. Consequently, according to the TST and the continuity hypothesis, the fact that participants who experienced anger before bed reported more anger in their dreams was anticipated (Schredl, 2003; Valli & Revonsuo, 2009). However, the result that these participants also reported more fear was not expected. An explanation for this result could be that anger before bed was an indirect clue of the experience of a threatening situation, which then induced the activation of the threat simulation system as predicted by the TST (Valli & Revonsuo, 2009).

Finally, the gender differences observed here remain to be explained. Evidence arising from neuroimaging studies could provide an explanation. Indeed, from a neurological point of view, it appears that, depending on gender, stimuli processing engages different brain regions during the execution of diverse tasks (Domes et al., 2010; Mak, Hu, Zhang, Xiao, & Lee, 2009; McRae, Ochsner, Mauss, Gabrieli, & Gross, 2008). More precisely, the brain centers involved in emotional processing are more activated in women during the realization of different cognitive tasks, whereas men tend to use brain areas more involved in cognition per se and cognitive control (Gohier et al., In press; Koch et al., 2007). Besides, this tendency is even more pronounced in negative contexts. From there, we could speculate that the greater involvement of women' emotional brain regions in the processing of stimuli, such as threatening events, might be extended to the TSS functioning, which would explain why only the emotions of women were associated with the simulation of oneiric threats the subsequent night. In other words, in the case of women, the threat simulation system would be triggered by fear and anger, whereas other cogni-

tive cues could activate the TSS of men, such as the perception of several threats in a specific time window.

Finally, these observations raise a question as to whether threats in dreams are remnants of rehearsals not only of threatening events, but also of intense emotions such as anger and fear. An observation made by Hartmann and Basile (2003) can be cited as supporting evidence. After the traumatic event of 9/11/01 there was a significant increase not of threatening events, but of the intensity of emotions, whatever their nature, in the dreams reported by regular keepers of dream diaries. Another question follows from this finding: is the threat simulation mechanism more effective if an acute emotion such as anger or fear is rehearsed in the dreaming state? The threat simulation theory itself does not explain how such emotions could subside in time and in so doing improve the task-oriented learning aptitude of the dream-self during threat simulation. Hartmann's functional theory of dreaming (1996; 2010) could provide an answer to this question. He proposed that the adaptive function of dreaming is the solving of emotional problems, especially as they pertain to trauma (Hartmann, 1996). His theory could be integrated into Revonsuo's theory. If negative emotions such as fear and anger are not resolved from dream to dream, as is the case with recurrent dreams, then the dream-self could not resort to an effective resource such as the simulation of coping with threatening events. In order to examine this issue, dreamers who had reported threatening events in their waking life and had experienced corresponding negative dream emotions could also be asked to rate their emotional state upon awakening the following morning. The effectiveness of the simulation mechanism to eliminate or reduce the threat could therefore be assessed. In this respect, further studies are needed to examine whether the resolution of emotions involved in response to threats, such as anger and fear, increases the effectiveness of oneiric threat simulations and improves the abilities to cope with threatening events.

There are limitations to this study. It has been made clear that in order to establish the threat activation gradient of a population, certain requirements should be met (Revonsuo & Valli, 2008). For instance, the recommendation that each dreamer reports at least 10 dreams, so that a pattern can be drawn from this sample, was not respected since only one of their dreams was selected. Another limitation is that we have studied the relationships between our variables in a time window of only 24 hours, which would mainly support the day-residue effect. Future studies should extend their investigation to the relationships between waking and dreaming experiences into a longer time window; for instance, future studies should comprise a larger sample of dream reports and daily logs from each participant so that the researchers can cross-reference the dreams with the events that took place two or more days preceding the dream episodes. Furthermore, they should also take into account the dream lag effect by performing multiple comparisons across days and nights to check for this phenomenon (Blagrove et al. 2011; Blagrove, Henley-Einion, Barnett, Edwards, & Seages, 2011). Another limitation is related to the fact that the correlational relationships that we observed were based on inter-individual differences. Factors, such as thin boundaries or neuroticism personality traits, could have mediated the relationships observed in this study (Hartmann, Rosen, & Rand, 1998; Schredl, 2003; Blagrove & Fisher, 2009). Future studies should consider these potential mediators.

There are many avenues open for research to test the TST, although its scope and its foundations in different disciplines ranging from biology to philosophy make the task difficult according to research methods accepted in the field (Domhoff, 2000). Turning back to the underpinnings of the theory may provide a new approach to the operationalization of threat. For instance, the theory stipulates that real threats are represented in dreams, a position challenged by Malcom-Smith and Solms (2004), Zadra, Desjardins, and Marcotte (2006), who noted that threats are frequently represented by trivial fantasies and fabulous dangerous animals, which evoke the characters present in children's dreams until adolescence. We could speculate that these representations belong to the realm of symbolism that our pre-history ancestors already mastered, although we have no written records to document it. But we have a vast quantity of artefacts that attest to their symbolic attempts to prevent or control the occurrence of various threats by resorting to ritual sacrifices of animals or by representing them in paintings. Evidence of such practices to empower them symbolically, and maybe to rehearse coping strategies, can be found in many parts of the world. Remnants of these magical procedures are still current in our technologically advanced societies, even on the part of sophisticated and educated individuals. Assuming that human beings of these periods had the neurophysiological substrate and cognitive aptitude to dream (Foulkes, 1985), it can indeed be speculated that dreaming was one of the means they had at their disposal to attempt to control their environment.

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Dreams of the deceased: Can themes be reliably coded?

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Summary. The main goal of the current study was to determine the reliability of Garfield's (1996) dream themes of the deceased in a larger sample of dream data. A total of 76 dreams were collected and scored by two judges to determine inter-rater reliability. It was found that Garfield's (1996) dream themes as a whole were not reliable. However, based on her previous work and others, eight new dream themes of the deceased were developed. It was found that these themes had acceptable inter-rater reliability. This research is a necessary step forward in dreams in bereavement research.

Keywords: Dream themes, grief, bereavement, dreams of the deceased

1. Introduction

When investigating research that has been done in the area of dreams in bereavement, there is limited research on exploring dreams of the deceased. In samples of the bereaved, around 50-80% report dreaming at least once about the deceased (Klugman, 2006; Silverman & Nickman, 1996; Wright, Kerr, Doroszczuk, Kuszczak, Hang, & Luczkiewicz, 2013). Dreams of the deceased can be a source of comfort, as well as discomfort, through the grief process (Black, 2014; Garfield, 1996, 1997; Ryan, 2006; Wright et al., 2013). Additionally, there have been common dream themes that have been identified when the deceased is present in the dream. There is great range in the number of common dream themes reported in the literature; Garfield (1996) formed 11, whereas Barrett (1991-1992) formed four and Hinton et al. (2013) formed three (with subthemes for each). Furthermore, theme definitions are widely variable as well, despite housing similar dream content (e.g., the deceased communicating a message of comfort). Additionally, it is regularly found that many dreams of the deceased are not mutually exclusive and fit into several themes (Garfield, 1996). Despite this, Hinton et al. (2013) did not report if the dreams that they coded were mutually exclusive or not. These inconsistencies often result in difficulty replicating findings, and hinder the accuracy and generalizability of the literature.

Beyond the differences in common themes reported by researchers, many categories have not been correctly tested for inter-rater reliability. For example, the research by Barrett (1991-1992), Domhoff (2015), and Garfield (1996) do not state any comments on inter-rater reliability. The research by Hinton et al. (2013) gives some details surround-

ing the inter-rater reliability. Hinton et al. (2013) reports an overall agreement rate of 96% (6 dreams not in agreement), but does not report the reliability of each dream theme. This is needed as all discrepancies could have come from one theme, which would make that theme unreliable (for example, the Daily Pot Pot theme only had three dreams). There have been two studies that investigated inter-rater reliability amongst dream themes for some of the dream themes reported above (Belicki et al., 2003; Black, Murkar, & Black, 2014). Belicki et al. (2003) investigated the reliability of the dream themes of Garfield's (1996) and Barrett's (1991-1992) within a widower's 16 year dream diary (106 dreams). They determined that many dream themes could not be reliably scored between at least two judges. In 2014, Black et al. investigated Garfield's (1996) dream themes in a two and a half year dream diary of a woman who lost her father. They found high inter-rater reliability between the two judges for Garfield's (1996) dream themes. Reasons for this may have been due to the fact that there were only three of the 11 dream themes present, the individual's grief was not complicated (which may have made the dreams easier to code), and there were only nine dreams in total (whereas Belicki et al. had 106 dreams to code). Overall, the reliability of Garfield's (1996) dream categories remains inconclusive. The main goal of the current study is to determine the reliability of Garfield's (1996) dream themes in a larger sample of dream data.

2. Method

2.1. Participants

A total of 76 bereaved participants (63 female) completed the study. The sample mean age was 51.09 (SD = 15.00) with four participants not reporting their age. Participants had an ethnicity of 93.4% Caucasian, 2.6% African American, 1.3% South Asian, 1.3% Hispanic, and 1.3% Other. Religious affiliation was 72.4% Christian, 19.7% None, 1.3% Buddhism, 1.3% Hindu, and 5.3% Other. Highest level of education achieved was 11.8% high school, 27.6% College, 27.6% University, 30.3% Post Graduate, and 2.6% Other.

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2.2. Materials

Demographics. The demographics sheet included information about the participants' age, gender, education, and dreaming behaviour and attitudes about dreams of the deceased.

Most memorable dream. This sheet asked for the participant's most memorable dream that had the deceased loved one as a character and to explain why it was memorable.

Dream themes. The 11 dream themes by Garfield (1996) to be analyzed were: 1) Alive-Again, 2) Dying-Again, 3) Saying-Goodbye, 4) Taking-a-Journey, 5) Approval-Disapproval, 6) Telephone-Call, 7) Young-Well-Again, 8) Advice-Comfort-Gift, 9) Passionate-Encounter, 10) Deadly-Invitation, and 11) Daily-Activity (see Table 1). These dream themes were not all mutually exclusive, as one dream may have several dream themes present.

2.3. Procedure

Participants were recruited through poster advertisements at several bereavement organizations. All forms, including the consent form, were filled out electronically through email communication and participants were given an anonymous code for confidentiality purposes. A debriefing form was sent to participants after the entire study was complete. Once the dreams were collected, all the dreams were placed in a word document for judges to score. Only dream scenes where the deceased was present were scored. Two judges (third and fourth author) were given a theme definition sheet that described each of Garfield's (1996) dream themes. It was stated that Garfield's (1996) dreams were not mutually exclusive and both judges scored the dreams independently. Since the dream themes were not mutually exclusive, the inter-rater agreement method was used as it seemed most appropriate. The method was used for each dream overall. All themes needed to be identical in each dream among both judges for agreement to be coded as the same.

3. Results - First Part

When investigating dream attitudes it was found that 67.1% stated that dreams of the deceased helped them believe more in an afterlife, 68.4% stated that some of the dreams of the deceased were visitations, and 70.9% stated dreams of the deceased helped them feel more connected with the deceased. Additionally, it was found that Garfield's (1996) dream themes had a reliability of 48.7% (37 out of 76 dreams had all the same themes scored), which was very low and unacceptable as Multon (2010) states at least 70% is needed. This low level of reliability supports the findings of Belicki et al. (2003). The most likely cause for the poor reliability is that the definitions of the themes are not well-defined enough. This can confuse coders when the themes themselves are closely related to each other (e.g., Advice-Comfort-Gift and Passionate-Encounter).

4. Further Analysis

After close inspection of the dreams it appears that the 11 categories of Garfield's themes were not well-defined enough for the judges. In order to develop clear and concise dream theme definitions, the first author reviewed previous studies conducted by Barrett (1991-1992), Belicki et al. (2003), Domhoff (2015), Garfield (1996), and Hinton et al. (2013) and the dreams collected in this study. The first

Table 1. Garfield's (1996) Dream Themes of the Deceased

Theme	Definitions
Alive Again Dream	The deceased appears alive and the dreamer is surprised to see them alive. The death is commonly explained away as a mistake. During the dream, the survivor may or may not realize that the person is actually dead.
Dying Again Dream	The deceased is once more suffering the symptoms that caused death, either as they were in actuality, greatly exaggerated, or profoundly distorted.
Saying Goodbye Dream	The deceased appears and takes leave of the survivor. This category of dream often includes physical contact, the exchange of loving feelings, and an affectionate goodbye.
Taking-a-Journey Dream	The deceased is taking a trip on a train, bus, airplane, or ship. Travel by car usually falls into the category of daily-activity dreams, unless the trip aspect is emphasized. Occasionally it is the survivor who is setting out on a journey.
Approval-Disapproval Dream	The deceased is depicted as severely criticizing the survivor. In contrasting form, the deceased is appears to strongly approve of the survivor.
Telephone-Call Dream	The deceased telephones the survivor or is already speaking to him or her on the phone. The survivor may also telephone the deceased.
Young-Well-Again Dream	The deceased appears in an image that reflects the way he or she looked or acted when young or healthy. Clothing is often described as flowing, hair shining, and face radiant. Infirmities caused by illness or injury have vanished.
Advice-Comfort-Gift Dream	The survivor receives a message from the deceased, one of comfort, such as, "don't worry, I'm fine" or advice, such as not to sell the house, or a "gift" such as an inheritance, a message about where to find something that has been hidden, and so forth. Rarely, the survivor offers advice, comfort, or gifts to the deceased. This category of dream often has a high emotional charge and is described as exceptionally vivid or "real". These dreams can have the intensity of a visitation.
Passionate-Encounter Dream	The survivor dreams of a romantic or passionate encounter with the deceased, who is usually a former spouse or lover.
Deadly-Invitation Dream	The deceased appears to reach out and draw the survivor toward death.
Daily-Activity Dream	The deceased is seen performing his or her routine activities, such as shopping, fishing, driving a car, or cooking. There is no unusual emotional charge, but a pleasant feeling may prevail. The deceased may simply be present.

and sixth author discussed and formed new definitions. Then the first and third author coded the different dreams independently (with the new definitions) and discussed any issues with the definitions before the definitions were finalized. Eight common dream themes are suggested: 1) Rationalization, 2) Dead, Dying, or Ill, 3) Discomfort, 4) Comfort, 5) Healthy and Happy 6) Help-Crossing-Over, 7) Separation, and 8) Other (see Table 2). The first seven dream themes are not mutually exclusive. The last theme "Other" is mutually exclusive as it is for dreams that have not been coded for any of the seven themes. It was noted on the definition sheet that the deceased is usually physically present in the dream, but they may sometimes use a device to speak to the dreamer. A device may be a telephone, cellphone, computer, or another person (such as a medium).

Rationalization was chosen as a theme because it encompasses Garfield's (1996) Alive-Again and Barrett's (1991-1992) Back-to-Life themes. Both themes have the deceased rationalizing to the dreamer why they are there.

Also, this theme relates to Belicki et al. (2003) theme of Knows Deceased Is Dead. The definition for “Rationalization” is the dreamer may look for and/or receive rationalization from the deceased on how they are alive. The deceased may help the dreamer understand and comment on why they are alive (e.g., the death is explained as a mistake or they have come back), with or without the dreamer asking. Additionally, the dreamer may not receive a rationalization from the deceased when asked (e.g., no answer is given), or the dreamer tells the deceased to go away because they are dead (cannot rationalize their appearance).

Dead, Dying, or Ill was chosen as it expands Garfield’s (1996) Dying-Again definition to include them being either ill or dead the entire dream, in addition to them dying again. It also was expanded to encompass Hinton et al. (2013) theme of Trauma-reliving dreams, Domhoff’s (2015) Illness and Death themes, and Belicki et al. (2003) theme of Re-enactment. Therefore, the definition for “Dead, Dying, or Ill” is the deceased may be dead in the dream, may die in the dream, or may be suffering from physical symptoms in the dream. Sometimes, the deceased is not seen suffering, but the dreamer may have a feeling that the deceased is ill and needs help.

Discomfort was chosen as it separates Garfield’s (1996) Approval-Disapproval theme and expands on it. The definition for “Discomfort” is the deceased performs actions or words of discomfort. Actions of discomfort could include physical attempts to harm or gestures of disapproval. Words of discomfort could include criticism, demands, or disapproval.

Comfort was chosen as it collapses the different categories of Garfield’s (1996)

Saying-Goodbye, Advice-Comfort-Gift, Passionate-Encounter, and separates the Approval from Approval-Disapproval theme. Additionally, this category relates to Barrett’s (1991-1992) Advice, State-of-Death, and Leave-Taking themes, Domhoff’s (2015) Reassurance theme, and Dreams with Sexuality, Belicki et al.’s (2003) Reunion and Reminiscence themes, as well as Hinton et al. (2013) theme of Simple Visitation. The definition for “Comfort” is the deceased performs actions or words of comfort. Actions of comfort could include a wave, hug, or kiss. Words of comfort could include telling them they are OK, they love them, forgive them, give their approval, or are happy.

Healthy and Happy was chosen based on Garfield’s (1996) Young-Well-Again theme and expands on it. The deceased appearing younger was removed because the deceased have been shown to increase in age in dreams (e.g., a deceased child ages as he would have in waking life). The definition for “Healthy and Happy” is the dreamer comments on the well-being of the deceased or implies it through the deceased actions (e.g., smiling or laughing). The dreamer may describe the deceased as being healthy (e.g., infirmities caused by illness or injury having disappeared or can perform actions not able to when ill) and/or happy (e.g., smiling or laughing). It is possible for the deceased to look younger or older than they did when they passed, but this does not imply health. The deceased commenting that they are OK or happy does not justify this category; that would be comfort.

Separation was chosen based on Garfield’s (1996) Taking-A-Journey theme and Belicki et al.’s (2003) Separation, and Moving On theme. Both themes have the common element of separation in that the dreamer and deceased are

Table 2. Garfield’s Revised Themes of Dreams of the Deceased

Theme	Definitions
Rationalization	The dreamer may look for and/or receive rationalization from the deceased on how they are alive. The deceased may help the dreamer understand and comment on why they are alive (e.g., the death is explained as a mistake or they have come back), with or without the dreamer asking. Additionally, the dreamer may not receive a rationalization from the deceased when asked (e.g., no answer is given), or the dreamer tells the deceased to go away because they are dead (cannot rationalize their appearance).
Dead, Dying, or ill	The deceased may be dead in the dream, may die in the dream, or may be suffering from physical symptoms in the dream. Sometimes, the deceased is not seen suffering, but the dreamer may have a feeling that the deceased is ill and needs help.
Discomfort	The deceased performs actions or words of discomfort. Actions of discomfort could include physical attempts to harm or gestures of disapproval. Words of discomfort could include criticism, demands, or disapproval.
Comfort	The deceased performs actions or words of comfort. Actions of comfort could include a wave, hug, or kiss. Words of comfort could include telling them they are OK, they love them, forgive them, give their approval, or are happy.
Healthy and Happy	The dreamer comments on the well-being of the deceased or implies it through the deceased actions (e.g., smiling or laughing). The dreamer may describe the deceased as being healthy (e.g., infirmities caused by illness or injury having disappeared or can perform actions not able to when ill) and/or happy (e.g., smiling or laughing). It is possible for the deceased to look younger or older than they did when they passed, but this does not imply health. The deceased commenting that they are OK or happy does not justify this category; that would be comfort.
Separation	The dreamer and the deceased are separated or get separated in the dream. Separation may be due to an obstacle (e.g., fence) between them, or the deceased themselves not wanting them to be close (e.g., dreamer is not allowed). Additionally, they could also separate from each other by leaving or disappearing (either slowly or suddenly). It may also be that separation was discussed (e.g., I have to go), but the action was not fully carried out yet.
Help-Crossing-Over	The dreamer provides actions (e.g., putting hand on a body to release the soul) or words (e.g., it’s safe to move on) to the deceased to help the soul successfully cross-over (either to or from the afterlife). Additionally, the deceased may ask for assistance in crossing-over (e.g., perform a certain ritual in waking life).
Other	Dreams that do not fit into any category.

Note. The deceased is usually physically present in the dream, but they may sometimes use a device to speak to the dreamer. A device may be a telephone, cellphone, computer, or another person (such as a medium). Scoring for dreams themes should only investigate the dream content and not the dreamers reported emotions while awake.

separate/separating either by choice or by location circumstances. This definition for “Separation” is the dreamer and the deceased are separated or get separated in the dream. Separation may be due to an obstacle (e.g., fence) between them, or the deceased themselves not wanting them to be close (e.g., dreamer is not allowed). Additionally, they could also separate from each other by leaving or disappearing (either slowly or suddenly). It may also be that separation was discussed (e.g., I have to go), but the action was not fully carried out by the end of the dream.

Help-Crossing-Over relates to Garfield’s (1996) Comfort theme as it states in rare circumstances the dreamer can

help the deceased. It also encompasses aspects of Hinton et al.'s (2013) subtheme of Dire Spiritual-State Visitation, which is when the soul is asking the dreamer for assistance to help them cross-over to Earth (to reincarnate). The definition for "Help-Crossing-Over" is the dreamer provides actions (e.g., putting hand on a body to release the soul) or words (e.g., it's safe to move on) to the deceased to help the soul successfully crossover (either to or from the afterlife). Additionally, the deceased may ask for assistance in crossing-over (e.g., perform a certain ritual in waking life).

5. Methods - Second Part

Two judges (first and fifth author) independently coded each dream in order to determine the inter-rater reliability. The same procedure was used as when scoring Garfield's (1996) dream themes. Since the new dream themes were not mutually exclusive, the inter-rater agreement method was used as it again seemed most appropriate. The method was used for each dream overall. All themes needed to be identical for each dream among both judges for agreement to be coded as the same.

6. Results - Second Part

It was found that the new dream themes had a reliability of 90.8% (69 out of the 76 dreams had all themes coded the same), which is considered high inter-rater reliability (Multon, 2010). Investigating the 69 agreements, it was found that 62.3% had only one theme coded, 27.5% had two themes coded, 8.6% had three themes coded, and 1.4% had four themes coded per dream. This gives insights into how many of these dream themes are not mutually exclusive. Of the seven dreams that did not have agreement between the judges, one dream was coded completely differently (no agreements), five dreams had one theme in agreement and one theme that was different (not coded), and one dream had one theme in agreement and two themes that were different (not coded). Differences appeared to be mainly in the themes of Comfort and Healthy and Happy. After reflection in the disagreements between the two judges, it was found that the errors were mainly human error (definition oversight) and not a problem with the theme definitions.

Percentage agreements for each specific theme were 100% for Rationalization, 100% for Dead, Dying, or Ill, 100% for Discomfort, 94.7% for Comfort, 96.1% for Healthy and Happy, 100% for Help-Crossing-Over, 98.7% for Separation, and 98.7% for Other. Belicki et al. (2003) states that since most themes are judged to be absent when coding, it is fairly easy to have high agreement for specific themes. They recommend a more conservative approach when investigating specific themes, where one calculates the percentage agreement on only those dreams where at least one judge coded the category to be present (Belicki et al., 2003). Conservative percentage agreements for each category were 100% (8/8) for Rationalization, 100% (8/8) for Dead, Dying, or Ill, 100% (3/3) for Discomfort, 90.5% (38/42) for Comfort, 88.5% (23/26) for Healthy and Happy, 100% (3/3) for Help-Crossing-Over, 95.5% (21/22) for Separation, and 87.5% (7/8) for Other.

7. Discussion

Dreams in bereavement research has mainly focused on dream themes that incorporate the deceased. The major

issue however, is researchers rarely report testing the inter-rater reliability of themes. Garfield's (1996) dream themes were investigated in past research with mixed findings on reliable coding (Belicki et al., 2003; Black et al., 2014). This research supports the Belicki et al. (2003) conclusion that Garfield's (1996) themes cannot be reliably coded. Furthermore, we developed new and clear dream theme definitions that encompass many aspects common amongst dream themes, which show acceptable inter-rater reliability. Since many of the dream themes do relate to Garfield's (1996) original work, we are titling these new themes Garfield's Revised Dream Themes. Further testing needs to be performed on these themes to determine if these themes are truly reliable, as the dreams themselves were used to help define the categories. A new dataset of dreams of the deceased and additional coders will strengthen the claim that these themes are indeed reliable. Future research should explore this to provide more consistency among researchers when exploring dreams of the deceased. Additionally, having reliable themes will assist researchers to better understand the function of these dreams. For example, it can help researchers better investigate how the themes relate with other measures, such as grief intensity. This will have practical implications for bereavement clinicians in their work with the bereaved.

Another limitation of the study is that the questionnaire asked for the most memorable dream. By asking for the most memorable dream, it can be assumed that the dreams collected did not have every type of dream. Participants would have selected dreams that impacted them in some way, over dreams where the deceased may have just been present in the background of the dream. Future research should investigate dream diaries as a way to capture all types of themes, not just the most memorable. Another limitation is that there were only 76 dreams in this study. As more dreams are gathered new themes may be revealed or the definitions may be expanded upon, in order to incorporate related imagery. Lastly, the entire sample was adults. It has been shown that children also report dreaming of the deceased (Adam & Hyde, 2008; Silverman & Nickman, 1996). Future research should explore if these dream themes can be seen in children's dreams of the deceased and if any new themes become present. Overall, this study adds to the limited research on dreaming of the deceased and hopefully promotes further research in the area. As research increases on this topic, it will give bereavement clinicians more reason to inquire about these types of dreams with their clients. This at the very least will help normalize the experience of dreaming of the deceased in the grieving process for the bereaved.

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Themes in participants' understandings of meaning in their Most Recent Dream: Worries, relationships, and symbolism

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Summary. The ways in which individuals construct meaning in their dreams may be influenced by well-known psychological theories, popular understandings of dream meaning, or religious interpretations of dream meaning, but little research so far has been conducted investigating the kinds of meaning people ascribe to their dreams. The present study aimed to paint a snapshot picture of individuals' understandings of one of their own dreams. Participants (N=106) reported their Most Recent Dream and answered the open-ended question "What do you think this dream is about, or means?". Data were analysed with inductive thematic analysis. Six major themes were created, all of which pertained to how the dream related to participants' own waking lives: 1) Worries and Emotions; 2) Relationships; 3) Work and Studies; 4) Events and Situations; 5) Desiring, Wanting, and Longing; and 6) Symbolism. Further analyses were conducted to investigate whether there were any noticeable differences between participants who saw symbolic relations between their waking life and their dream (N=25), and those who saw only literal relations with waking life (N=46). It was found that symbolic interpreters had more trait thought suppression, more aggression/violence in their dream, more intense emotions in their dream, and more continuity between their dream and their waking-life emotions, than literal interpreters. Difficulties around and suggestions for researching dream symbolism are discussed.

Keywords: dream, symbolism, Continuity Hypothesis, thought suppression, Sigmund Freud

1. Introduction

Academic journals and bookshops are replete with theories about why we dream. Arguably the most famous is Freud's (1900) wish-fulfilment theory of dreams, in which he suggested that dreams are all representations of wishes that we want to see fulfilled. Some of these wishes that we desire, such as those that are sexual or aggressive in nature, are unacceptable to our conscious awareness, so they appear instead in dreams in a disguised (symbolic) format. Besides Freud's early attempt to provide a psychological explanation for dreaming there are countless others in the field of psychology alone: Jung's (1934, 1948a, 1948b) compensation theory, the Cognitive Theory (Hall, 1953), the Neurocognitive Theory (Domhoff, 2010), the Threat Simulation and Social Simulation Theories (Revonsuo, 2000; Revonsuo, Tuominen, & Valli, 2015), the Protoconscious Theory (Hobson, 2009), emotion-regulation / emotional memory assimilation theories (e.g. Cartwright, 2011; Hartmann, 1996a; Malinowski & Horton, 2015), the Continuity Hypothesis (Hall & Nordby, 1972), and so on.

In addition to the many academic explanations for dreaming, so-called "dream dictionaries" that purport to allow dreamers to look up the symbolic meaning of their dreams abound. The concept that it is possible to glean universal

meaning from dream symbols or to divine future events from them has existed at least as long as the written word, and probably much longer, as evidenced in ancient texts such as Artemidorus' *Oneirocritica* (Artemidorus / Harris-McCoy, 2012), and the ancient Egyptian 'Ramesside Dream Book' (Szpakowska, 2003). Similarly many religious texts include dream interpretation passages, often indicating that dreams have the potential to be prophetic, such as in the Bible and the Talmud (Bar, 2001).

That so many dream dictionaries and dream guides exist in bookshops and online today suggests that many people still engage with their dreams and want to understand their meaning. However, aside from the development of the Inventory of Dream Experiences and Attitudes (IDEA) (Beaulieu-Prévost, Simard, & Zadra, 2009), little empirical research exists that has investigated how people understand dream meaning in the modern "Western" world. The research presented here thus investigated participants' understandings of the 'meaning' of their Most Recent Dream. The intention behind this was not to find evidence for one or another theory of dream meaning *per se*, but primarily to uncover participants' understandings of dream function and meaning, and then to consider whether any influence of dream theories may also be detectable within these constructions. Participants were mostly second year undergraduate psychology students, who may not be overly familiar with the more recent academic theories on dreaming, but would be likely to be familiar with some of the more well-known theories, and/or with ancient, religious, and/or popular understandings of dream meaning.

The aim of the study, then, was to investigate participants' understandings of the meaning of their Most Recent Dream, and so to further knowledge about dream-related beliefs and attitudes. In addition the study investigated whether there is any discernible evidence of the influence of aca-

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democratic, popular, religious, or other types of theories of what dreams are, and what they are for, in participants' understandings of dream meaning.

2. Method

2.1. Participants

106 (85 female) participants completed the full online questionnaire and consented to have their data used in the analyses, with an age range of 18-56 ($M=24.03$, $SD=7.72$). 18 participants did not provide their age. The majority of participants ($N=71$) were second-year undergraduate psychology students at the University of Bedfordshire who participated in the questionnaire as part of a class on dreaming and were given the option of refusing their data to be used in the analysis. The remainder were recruited via the website Reddit on the subreddit /dreams/ ($N=27$), and via word of mouth ($N=7$). One participant did not report how they heard about the study.

2.2. Materials

Participants were asked a series of three questionnaires, all hosted in one weblink via the online questionnaire resource Qualtrics.

The first questionnaire asked participants to report their most recent dream. They were instructed as follows (as adapted from the 'Most Recent Dream' form at http://www2.ucsc.edu/dreams/Forms/most_recent_dreams.html):

"Please write down the last dream you remember having, i.e. your most recent dream. This could be as recent as last night or from as far back as childhood, but should be the most recent one you can remember having, no matter how long or short it is. Please describe this dream exactly and as fully as you remember it. Your report should contain, whenever possible: a description of the setting of the dream, whether it was familiar to you or not; a description of the people, their age, sex, and relationship to you; any animals that appeared in the dream. If possible, describe your feelings during the dream and whether it was pleasant or unpleasant. Be sure to tell exactly what happened during the dream to you and the other characters."

Following this, participants were asked to detail what, if anything, they thought the dream was about, or meant, a series of other questions about the dream (how emotional, violent/aggressive, sexual, and friendly it was, and how much overlap there was with various elements of waking life such as emotions), and the White Bear Suppression Inventory (WBSI: Wegner & Zanakos, 1994) and Big Five Inventory (BFI: John & Srivastava, 1999). Results from the relationships between dream content and personality traits are reported in Malinowski (2015). The exact question that participants were asked in respect of dream meaning was "What, if anything, do you think this dream is about, or means?"

2.3. Procedure

Participants either took part during a scheduled class at the University of Bedfordshire, or in their own time via an advertisement placed on the subreddit /dreams/ at www.reddit.com. After reading the first page in which they were informed that they would be asked to recount a recent dream and answer some questions on it as well as some personali-

ty questions, participants could either indicate their consent to participate or close the webpage if they preferred not to participate. Students at the University of Bedfordshire were given the third option of participating in the study for their learning but refusing their data to be used in the analysis. Once consent had been obtained, participants were asked to recount their Most Recent Dream and then answer three sets of questions (one set about the dream, and two sets to measure personality traits, as described in section 2.2). Following completion of the questionnaire participants were debriefed on the nature of the study and thanked for their time. Responses were automatically recorded on Qualtrics and then downloaded for analysis in IBM SPSS software.

The study abided by the British Psychological Society's ethical guidelines, and received ethical approval from the Research Centre for Applied Psychology's Research Ethics Committee at the University of Bedfordshire.

3. Results

3.1. Thematic analysis on dream meaning

The responses participants gave to the question "What, if anything, do you think this dream is about, or means?" were collated and analysed using the Braun and Clarke (2006) method of thematic analysis in order to analyse the kind of things participants believed their dreams were about or meant. Following extensive coding of the data, themes were devised for both internal homogeneity, that is, the coded extracts cohered meaningfully within the theme, and external heterogeneity—there were "clear and identifiable distinctions" (Braun & Clarke, 2006, p. 91) between the themes. Following this, themes were reviewed and refined and quotes were selected that best illustrated the essence of each theme. The analysis was conducted inductively, that is, with the intention of allowing the data to lead the analysis, rather than deductively. Although it was intended to look for evidence of the influence of extant theories of dreaming in participants' responses, this was to be carried out once themes had been inductively identified, rather than to look for evidence of specific theories within each response.

The overwhelming majority of interpretations pertained to how the dream related to the participants' personal waking life. These were organised thematically into six major themes and four minor themes. The major themes accounted for the majority of the interpretations, whereas the minor themes were found less frequently, but illustrated something interesting about participants' interpretations of the dreams. The major themes were: Worries and Emotions; Relationships; Desiring, Wanting, and Longing; Work and Studies; Situations and Events; and Symbolism. (In the present study, the word "symbolism" was adopted as opposed to related words such as "metaphor" or "figurativeness", because of the participants who explicitly used a term to denote nonliteral wake-dream relationships, they unanimously used the word "symbolism".) The minor themes were: Helpful Dreams; The Past and Future; Portraying the Hidden; and Influence from Television. Illustrative examples of each theme can be found in Tables 1 and 2. In addition to these themes, many participants stated that they did not know what the dream was about. Only one participant stated that their dream had no meaning at all.

3.1.1 Major themes

The theme 'Worries and Emotions' detailed when dreamers recognised that the dream was about something that they were experiencing emotionally in waking life, in particular negative emotions, especially things that were concerning or worrying to them. Within this theme there were two subthemes: Pressure, Anxiety, and Stress; and Fear and Paranoia. The first two subthemes accounted for the vast majority of the waking-life emotions participants identified as the source or meaning of the dreams. Thus, in line with Domhoff's (1996, 2003, 2011) account of the Continuity Hypothesis, most dreams in this theme were thought by participants to reflect worries or concerns from waking life. It is also in line with the findings of the Inventory of Dream Experiences and Attitudes (Beaulieu-Prévost, Simard, & Zadra, 2009), which found "Dream Continuity", i.e. overlap with waking life, and "Dream Apprehension", which involved fear of dreams and nightmares, to be two factors associated with dream-related beliefs and attitudes.

The theme 'Relationships' was one of the biggest themes created; participants dreamt of their waking-life girlfriends and boyfriends, mothers and fathers, grandparents, cousins, unborn children, friends, and sports teams. It is not surprising that this was a huge theme, since it has previously been found that dreams are peculiarly interpersonal and social experiences (McNamara, McLaren, Smith, Brown, & Stickgold, 2005; Revonsuo, Tuominen, & Valli, 2015). For the most part, again as found in the theme 'Worries and Emotions', this generally involved anxiety – the dream represented an interpersonal situation that the dreamer was presently worried about. This theme also included dreams of deceased loved ones.

The theme 'Work and Studies' appeared in many of the responses. Again, in keeping with previous findings regarding waking-life emotions and relationships in dreams, work and studies were usually dreamt of in terms of anxieties surrounding them. There were, however, some exceptions to this, such as a participant who dreamt of her happiness at the grade she had achieved at university. This theme was also found in a previous thematic analysis of participants' understanding of dream meaning (Malinowski, Fylan, & Horton, 2014).

The theme 'Events and Situations' was a smaller theme, and simply represents the responses in which participants recognised that the dream related to something that had happened in waking life, usually recently. Events such as shopping, playing sports, moving home, having an argument, and getting a haircut appeared in dreams. Sometimes the dreams simply represented a current situation, such as the dreamer's attempt to conceive a child. This is in line with Domhoff's (2007) finding that many dreams are similar to everyday waking reality.

The theme 'Desiring, Wanting, and Longing' was created to pull together responses in which participants stated that the dream represented something they wanted from waking life: these were varied, and included such diverse wants as sex, a relationship, to go to a party, a better car, social support, to travel, and to eat cake. In the most obvious sense this theme is a manifest version of the wish-fulfilment theory of dreaming (Freud, 1900).

The final major theme, 'Symbolism', was created to represent responses in which dreamers either explicitly described the dream as a symbolic representation of waking life, or described the way in which the dream bore a

Table 1. Major Themes

Theme	Examples of answers to the question "What do you think this dream is about, or means?"
Worries and Emotions	"I think it's connected to the general anxiety in my waking life." "I have been going through a lot of stress and confusion recently." "It probably has to do with my fears. I have been going through a lot of psychological pain and terror." "I have anxiety so it could have some significance to me feeling as though I'm being held back."
Relationships	"I believe it to be relating to my relationship with my partner." "I think this dream is about myself and C_'s relationship." "I think there's too many confusing aspects to my relationship right now that are causing me to dream a solution." "I recently found out my current girlfriend had an emotional affair with her (married) ex-boyfriend during the very beginning of our relationship. I have been dealing with the fallout from that."
Work and Studies	"Means me being anxious about the exams." "Last week I experienced a lot of tension at work." "I believe it is an encouragement to put in more effort into my assignments and reading." "Yearly evaluations were recently conducted at my office and I was disappointed about my scores, which I thought were unfair." "It generally happens when I have important exams or educational situations such as choosing subjects/courses etc."
Events and Situations	"As I am actually moving home, it is clearly on my mind, to the point that I am also dreaming about it." "I recently cut my hair short, and thinking of new hairstyles." "It means couple of days ago I had a massive argument with him in gym and it didn't end well."
Desiring, Wanting, and Longing	"It seems to be nothing but an expression of unfulfilled sexual desires." "It probably shows my wishes to have a normal mum again." "I think it represents my desire to dominate my man because he's like the ultimate Dom." "In my life while awake I do tend to yearn for companionship."
Symbolism	"I think it symbolizes the way I felt after the event took place." "There are a lot of stressful events coming together into my life at the moment and perhaps the exploration of dark corridors is symbolic of this." "The fact that I was repeatedly tackling the same person could relate to doing the same things over again which I've found myself to be doing recently." "This dream represents me drowning myself because I did not feel I was performing as well as I should."

non-literal relationship with something from waking life. In a previous thematic analysis of participants' understandings of their dreams we similarly found that dreamers often talk about their dreams in terms of metaphorical, symbolic, or otherwise non-literal portrayals of waking life (Malinowski, Fylan, & Horton, 2014).

The themes generated in the analysis were devised to richly describe and provide a full account of the data, and conform to Braun and Clarke's (2006) criterion of external heterogeneity, with each theme illustrating something different about participants' interpretation of their dream's meaning. Nevertheless there are aspects of the themes that have some overlap with each other. For example, many of the

Table 2. Minor Themes

Theme	Examples of meaning given by participants
Helpful Dreams	<p>"This dream is like a warning sign to warn me that if I do not control my speed then there will be dangerous consequences."</p> <p>"I think that the dream was reminding me of the festival and that to be careful when wondering alone."</p>
Past and Future	<p>"The dream showed [the] possibility of moving to next stage of my life which may involve my career and future progress in life."</p> <p>"I think I might have had the dream because I am scared of dogs in real life but have been thinking about buying a dog in the future."</p>
Portraying the Hidden	<p>"I think it means I am afraid to face a part of me that I've kept hidden."</p> <p>"I am a student who live (sic) at home with my parents it feels like it was my outlet of how I really feel about that."</p>
Influence from Television	<p>"I think this dream stemmed from the fact that I watched a scary movie last night."</p> <p>"The night before watching this dream I watched the film '2012' which is about the end of the world. I think that this was the reason for my dream."</p>

themes contain worries and emotions, such as "Work and Studies" and "Symbolism". However, it was decided to create "Worries and Emotions" as a separate theme, as there were many descriptions that included allusions to non-specific worries and emotions from waking life.

3.1.2 Minor themes

The small theme 'Helpful Dreams' comprised interpretations of dream meaning whereby the dream represented something helpful to a situation in waking life: reminders to be careful, warnings, indicating the right path, helping to process something, making decisions, problem solving, representing different options, and so on. Similarly in our aforementioned study, we developed separate subthemes for dreams that simply represented waking life, and dreams that appeared to be helpful to some aspect of it (Malinowski, Fylan, & Horton, 2014). The Inventory of Dream Experiences and Attitudes (Beaulieu-Prévost, Simard, & Zadra, 2009) likewise identified a "Dream Guidance" subscale.

The theme 'Past and Future' encompassed dreams that hark back to something from memory, or look forward to something that has not yet occurred, unlike most of the rest of the dreams, which were thought to deal with the present. Future dreams were more numerous than past. Among the most interesting of these were a dream that the dreamer thought may be about a repressed childhood memory, and a participant who believed her dream was precognitive for the future. However, all of the other future dreams simply dealt with an anticipated upcoming situation.

The theme 'Portraying the Hidden' was a small but important theme in which some participants expressed that their dream was an outlet for a waking-life secret, or compensated waking-life feelings, or was an expression of the subconscious, or represented something they were avoiding in waking life. Thus this theme is similar, though not identical, to the Jungian (1934, 1948a, 1948b) concept of compensation, in which dreams portray things that are insufficiently concentrated on during wakefulness, or may alternatively

relate to the dream rebound effect discovered in a number of experiments (e.g. Wegner et al., 2004).

The theme 'Influence from Television' simply pulls together the many statements made by participants that their dream came from something they had seen on television immediately prior to sleeping. In addition to television, there were examples of reading or hearing horror stories before bed influencing dreams.

3.2. Further exploration of perceived dream symbolism

The finding that symbolism was a major theme in the present study is in line with Malinowski, Fylan, and Horton's (2014) findings in their thematic analysis of participants' understanding of relationships between the dream and their waking life, and with other researchers' contention that dreams are often symbolic or figurative representations of waking life (e.g. Domhoff, 2003; Hall & Nordby, 1972). As such, it was decided to investigate whether the participants who perceived symbolism in their dreams differed on hypothetically relatable variables to those who saw only literal relationships with waking life.

First, data from participants who did not give an explanation for their dream, or explicitly said they did not know what the dream was about or meant, or who provided an explanation that was partly figurative and partly literal, were removed (N=40). The remaining data were split between unambiguously symbolic interpretations (N=25) and literal interpretations (N=46), judged by the author. A second independent judge blindly coded a subset of the symbolic and literal interpretations for the purposes of gauging inter-rater reliability in this measure of symbolic versus literal. The second independent judge was a final year undergraduate student with two years' worth of experience in conducting dream research. Instructions for literal and symbolic were provided with fictional examples and examples from the dataset that were not part of the subset. As the number of symbolic or literal interpretations was 71, 15 (20%) interpretations were coded. The dreams to be coded by the independent judge were determined by a random number generator. It was found that there was 100% exact agreement between the two coders on the subset of interpretations, indicating that the coding of symbolic and literal interpretations was reliable.

Six analyses were then conducted, comparing symbolic interpreters to literal interpreters on six dimensions. To account for inflated Type I error in multiple testing significance was determined using the Holm-Bonferroni sequential correction method (Holm, 1979).

3.2.1 Testing Freud's disguised wish theory

According to Freud's wish-fulfilment theory, which is currently perhaps the most famous and influential of all psychological dream theories, dreams symbolically picture waking-life wishes such as sexual or aggressive urges because they are unacceptable, and so the waking, conscious mind represses them. Based on this theory, it could be expected that individuals who have a tendency to want to suppress waking-life thoughts more than others would also have more symbolism in their dreams than others. Two separate dependent variables were calculated based on scores from the White Bear Suppression Inventory: thought suppression, and thought intrusion (Schmidt et al., 2009). Data

for the symbolic interpreters were non-normally distributed for both thought suppression and thought intrusion, so the data were compared using a non-parametric Mann Whitney U test comparing median scores. It was found that symbolic interpreters had significantly more thought suppression ($Md = 4.14$) than literal interpreters ($Md = 3.50$), $U = 794.5$, $p = .002$, $r = .31$. However, symbolic interpreters and literal interpreters did not differ significantly in thought intrusion, $U = 693$, $p = .035$, $r = 0.17$.

Next, in order to test the Freudian notion that dreams may be perceived as symbolic for unacceptable content, such as sexual or aggressive, two further analyses were conducted comparing participants who made symbolic associations to waking life with those who only made literal ones on their answers to the questions "how sexual is this dream?" and "how much violence or aggression is in this dream?". Symbolic interpreters did not score significantly differently on amount of sexuality in the dream ($Md = 15$) compared to literal interpreters ($Md = 8.5$), $U = 107.50$, $p = .46$, $r = .11$, 1 tailed. However, symbolic interpreters did score significantly differently on amount of violence or aggression in the dream ($Md = 31$) compared to literal interpreters ($Md = 11$), $U = 436.50$, $p = .005$, $r = .31$, 1 tailed.

3.2.2 Testing the suppressed emotion rebound theory

Finally, because in Malinowski (2015) it was found that thought suppressors dreamt more of their waking-life emotions than non-suppressors, and thus it was suggested that waking-life suppression of emotions may lead to dreaming of them, the effect of symbolic interpretation was also investigated in relation to dream emotions and dream continuity with waking-life emotions, hypothesising that symbolic interpreters would report more emotions and more emotional continuity in their dreams. It was found that symbolic interpreters reported more emotional dreams ($Md = 80$) than literal interpreters ($Md = 60$), $U = 775.50$, $p = .005$, $r = 0.31$, 1 tailed. Likewise symbolic interpreters reported more continuity in their dreams with waking-life emotions ($Md = 80$) than literal interpreters ($Md = 62$), $U = 742.00$, $p = .014$, $r = 0.26$, 1 tailed.

4. Discussion

4.1. Main findings

Six major themes were drawn together from participants' responses to the question "What do you think this [Most Recent Dream] is about, or means?": 1) Worries and Emotions; 2) Relationships; 3) Work and Studies; 4) Events and Situations; 5) Desiring, Wanting, and Longing; and 6) Symbolism. All six of these themes pertained to how the dream related to the dreamer's waking life. In addition, four minor themes, which did not describe a large portion of the data but indicated something interesting about participant perceptions of their dreams, were created: i) Helpful Dreams; ii) Past and Future; iii) Portraying the Hidden; and iv) Influence from Television.

The theme "Symbolism" was further investigated, to investigate whether individuals who perceived symbolism in their dream differed in noticeable ways from those who perceived only literal, direct relationships with waking life in their dream. It was found that symbolic interpreters had more trait thought suppression, measured by the White Bear Suppression Inventory (Wegner & Zanakos, 1994), than liter-

al interpreters, and in addition perceived more aggression/violence in their dreams, and more intense emotions and well as more continuity with their waking-life emotions, but did not score higher on thought intrusions, nor sexual content in their dreams.

4.2. Dreaming of negative aspects of waking-life

Based on the major themes, it is clear that participants mainly interpreted their dreams as having a basis in an aspect of their waking life, and, in particular, aspects of waking life that were especially troublesome for some reason, be it worry, stress, fear, or some other unpleasant emotion. The huge influence of waking-life worry and other (primarily negative) emotions on dreams has often been noted by dream researchers. Domhoff (e.g. 2003), in his extensive coding of participants' dreams and dream series using the Hall-van de Castle (1966) content analysis method, found that dreams primarily pictured participants' conceptions of the world and their concerns about it. Others have noted a so-called "negativity bias" in dreams, denoting the preponderance of negative emotions in dreams compared with positive emotions (e.g. Domhoff, 1996; Hall and Van de Castle, 1966; Merritt et al., 1994; Snyder, 1970). Such evidence as this lends credence to an emotion-processing theory of dreaming (e.g. Cartwright, 2011; Hartmann, 1996a), since it indicates that dreaming preferentially pictures waking-life concerns, perhaps in order to creatively come up with solutions, and/or ameliorate the emotions.

However, other research has indicated that the negativity bias is an artefact of methodology: it is only found when independent judges rate the emotions in dreams, and not when the dreamers themselves rate them (Schredl and Doll, 1998; Sikka et al., 2014). Furthermore, there is an emerging consensus that it is the emotional intensity and/or personal significance of a waking-life event, but not the valence (i.e. it doesn't matter if it is a positive or a negative event, as long as it is emotional or significant), that influences whether or not it is subsequently dreamt of (Malinowski & Horton, 2015; Schredl, 2006; van Rijn et al., 2015). This line of evidence is more in accordance with a memory assimilation theory of dream function; and in particular, emotional and autobiographical memories (Horton & Malinowski, 2015; Malinowski & Horton, 2015).

How can these divergent findings be reconciled? On the one hand the evidence from Domhoff's and other work on wake-dream continuity is extensive, and convincing in its assertion that dreams primarily picture waking-life concerns; on the other hand several independent experiments have now confirmed the intensity-but-not-valence effect. Perhaps differing methodologies and methods of analysis may be the reason for the differences. In the present study, participants reported their Most Recent Dream. It may be that there is a memory bias toward recalling dreams that are particularly troubling, since they reflect what is troubling also in waking life, which the participants may have been ruminating upon. Similarly, the bias towards negative life events and situations in the present study may, perhaps, be accounted for by expectation; it may be that participants expect dreams to represent negative waking-life experiences because this is their understanding of what dreams are for. Some of the more well-known theories of dream function that are available in bookshops today include the emotion-regulation function (e.g. Cartwright, 2011; Hartmann, 2014). Anecdotally, I often hear people tell me that they believe

dreams are the brain's way of working through emotions and thoughts overnight.

In Domhoff's and other content analysis work, the preponderance of negative waking-life emotions may come from the use of independent judges as opposed to self-report. In studies which have found an even split between positive and negative waking-life events in dreams, participants recorded their dreams systematically, and rated the emotionality themselves. Thus, it may be that the bias towards waking-life worries or concerns in the present study and in content analysis work comes from participant memory bias and the misjudgement of independent judges. If this were to be the case, it adds levity to the argument that dream research must apply careful, systematic methods of dream report collection, lest they draw conclusions that are based on participants' memory biases rather than the dreams themselves. Similarly, it would suggest that, wherever possible, both independent judges and participant ratings are used, in order to facilitate comparison between the two. Further study is needed to investigate these matters.

4.3. Dreaming of waking-life relationships

One of the major themes found was Relationships: participants dreamt very often of the important people in their lives, those with whom they shared some sort of close relationship with (family, friends, romantic attachments, colleagues, etc.). This is in keeping with previous findings that dreams are highly social experiences. McNamara et al (2005) found that social interactions were more frequent in dreams than in waking reports. Similarly, Roussy (2000) and Roussy, Camirand, Foulkes, de Koninck, Loftis, and Kerr (1996) found that interpersonal themes are dreamt of more than they are thought about – whereas finances and work are thought about more than they are dreamt. In keeping with the idea that the relationships pictured in dreams often related to concerns, research has also found that the most frequently reported theme in bad dreams is interpersonal conflict (Robert & Zadra, 2014). Continuity between one's social experiences and dreams has also been empirically evidenced: for example, people tend to dream up characters who are their own race and the race of their own interpersonal exposure (Hoekstra, Stos, Swendson, & Hoekstra, 2012), and gender role constructs in dreams have been shown to reflect gender role constructs in waking life (Schredl, Sahin, & Schäfer, 1998).

Thus, several lines of evidence converge to indicate that dreams are very social and interpersonal experiences: we interact with people often in our dreams, we dream of people that are important in our lives, and our dream characters reflect our social experiences. The preponderance of social interactions in dreams, and the high frequency with which we dream of people from our waking lives, may support the theory that dreams help us to consolidate and assimilate important waking-life experiences (Malinowski & Horton, 2015). The evidence here suggests that perhaps social experiences are especially important to consolidate; more so than, for example, experiences to do with work, finances, and so on. This suggestion is in keeping with Dunbar's (1998) social brain hypothesis, which argued that human intelligence evolved to enable us to survive in complex social groups. Bonded relationships of the kind experienced by humans are cognitively demanding (Dunbar, 2009), so it may be that dreaming about relationships is a way of practising or rehearsing interpersonal interactions (see e.g.

Bulkeley, 1993, 2004). A recent theory of dream function suggests that dreams act as a simulation of our social realities (Revonsuo, Tuominen, & Valli, 2015).

4.4. Evidence for the influence of dream theories in perceived meaning

One aim of the study was to consider whether the themes that were pulled together provided any evidence for participant awareness of various theories of dream meaning and function that exist. Overwhelmingly participants said that their dreams reflected waking-life worries. The theory that this is most clearly in line with is the Continuity Hypothesis (e.g. Domhoff, 2011; Hall & Nordby, 1972). However, this is not a particularly popularised theory, so it seems unlikely that the preponderance of this response is due to familiarity of the Continuity Hypothesis. Rather, it seems more likely that it is due more simply to the fact that the Continuity Hypothesis accurately describes dreaming: that we do dream of our waking-life concerns often.

The fact that a major theme was Desiring, Wanting, and Longing would appear to reflect Freud's (1900) wish-fulfilment theory. Freud suggested that some dreams picture waking-life wishes veridically, as long as these wishes are not unacceptable ones; it is only when the wish is unacceptable that it undergoes censorship and disguise in the dream through symbolism. That Desiring, Wanting, and Longing was found to be a major theme in the present study may indicate that Freud's theory accurately describes at least some dreams. Conversely, it may indicate that people interpret their dreams in this way because Freud's theory is so well known.

The theme Symbolism may evidence the very influential and well-known concept that dreams provide symbolic, metaphorical, or disguised meaning for waking life, which is known from popular psychoanalysis (e.g. Freud, 1900, Jung, 1934, 1948a, 1948b), from the innumerable "dream dictionaries" which purport to translate dream symbolism into waking-life meaning, and from historical and religious texts which indicate that dreams can be symbolically prophetic. Conversely, or in addition to this, it may evidence actual symbolism in dreams. Symbolism in dreams is extraordinarily difficult to research objectively, because dream symbolism is necessarily a subjective experience. Contrary to what dream dictionaries would have people believe, dream symbolism draws on individual, personal experience, and individual, personal mythology (as well as collective experience and collective mythology). Thus, each dream symbol is likely to have a unique meaning for each dreamer (Domhoff, 2003). Indeed, the majority of oneirologists do not attempt to investigate dream symbolism, because, although they recognise that dreams are likely to be symbolic for waking life, the extreme difficulties in doing so make it prohibitively unwieldy (e.g. Bulkeley & Kahan, 2008). Nevertheless, there is much speculation and interest in the topic (e.g. Domhoff, 2003; Hall & Nordby, 1972; Hartmann, 1996a; Malinowski & Horton, 2015).

4.5. The effect of perceived symbolism in dreams

One way of investigating symbolism in dreams, while acknowledging its inherent subjectivity, is to look at individual and dream content differences in individuals who perceive symbols in their dreams, compared to individuals who do not (and only see literal relationships with waking life). Par-

ticipants who saw symbolic meaning in their dreams in the present study scored higher on thought suppression than those who only saw literal relationships with waking life. This could be interpreted as supporting Freud's contention that dreams symbolically picture repressed waking-life thoughts: it may be that those who are more likely to suppress thoughts are also more likely to have symbolic, rather than literal, representations of those thoughts in dreams. Of course, it is equally possible that the relationship between thought suppression and dream symbolism is only to do with the likelihood of perceiving symbolism, rather than the likelihood of actually experiencing symbolism. There are more objective methods for investigating non-literal dream content (e.g. Davidson & Lynch, 2011), which may pave the way for further investigation into individual differences in dreaming symbolically versus literally.

Staying with Freud for a moment, it was also found that symbolic interpreters in the study had more violence/aggression, but no more sexual content, than literal interpreters. Again acknowledging that this is a measurement of perception rather than actual experiencing, this could also be interpreted in light of Freud's theory. He suggested that it is unacceptable waking-life wishes that appear in dreams, such as sexual and aggressive. The present study found evidence for the latter, but not former contention. Of course, one of the major issues with Freud's theory is that it cannot be falsified, and it could be argued that the lack of relationship between symbolism and sex is because the symbolism in the dream disguised the sexual element so well that the participant could not perceive it. The relationship between perceived symbolism and dream aggression/violence is, however, noteworthy. An investigation into trait thought repression (Bell & Cook, 1998) found that repressors (people who deliberately avoid consciously experiencing things such as sexual and aggressive thoughts) had more aggression and fewer flight behaviours in their dreams than non-repressors, which was interpreted as illustrating that these are the kind of thoughts that are repressed during wakefulness.

Finally, it was found, as anticipated, that symbolic interpreters perceived more emotions in their dreams, and more overlap between waking-life emotions and their dreams, than literal interpreters. This again could be perceived as evidence for a theory that symbolism in dreams is related to picturing suppressed waking-life thoughts, particular those that are emotional; or, it could merely be that people who believe in the notion that dreams are symbols for waking life, also perceive lots of emotion in their dreams.

4.6. Limitations and ideas for future research

Clearly, this study is limited in what it can tell us about symbolism in dreams, both because it refers to perceived symbolism, rather than symbolism per se, and because it used the Most Recent Dream method, so participants contributed only one dream each. It is entirely possible that participants who perceived symbolism in this particular MRD might only see literal relations with waking life in another one, and vice versa. There are a number of ways in which (perceived) dream symbolism could be researched in future studies. It would be interesting to conduct longitudinal research with participants who are able to perceive both symbolic and literal relationships with waking life, and see whether there are certain waking-life experiences or thoughts that appear in dreams in symbolic ways, and others that appear in more

literal ways. For example, research conducted with Vietnam veterans who experienced traumatic dreams upon their return from the war found that to begin with, when the experience was not yet adapted to, the dreams were highly literal, but as the experience began to be assimilated and coped with, the dreams became more bizarre and symbolic (Hartmann, 1996b; Wilmer, 1996). Similar findings have been noted elsewhere (Schreuder et al., 2000).

In addition to researching whether some waking-life situations or issues are more prone to symbolic representation and/or interpretation in dreams, individual differences in symbolic perception could be researched further, such as personality traits like boundariness or openness, or general attitude towards dreams. Furthermore, it would be interesting to investigate whether individuals who mostly or only perceive literal relationships between their dreams and waking life would perceive symbolic relationships with more experience or training in dream exploration.

Another potential avenue of research could be to identify whether deliberately suppressed thoughts appear in dreams in symbolic and/or bizarre ways, as opposed to literal ways, and what effect emotionality has on this. Individual differences in perceived symbolism could be further investigated with longitudinal methods also, comparing those who perceive much symbolism to those who tend to only perceive literal relationships with waking life; and in addition to this, individuals differences in dream symbolism could be investigated using more objective methods of detecting non-literal relationships between waking-life events and dreams such as that of Davidson and Lynch (2011).

The sample of participants in the study comprised primarily female psychology students, although there were also a smaller number of male psychology students and non-students in the sample, and aimed to paint a snapshot picture of their understandings of their Most Recent Dream. It is not claimed that the findings here are generalizable to the wider population. Future research should investigate dream meaning among other demographics, and more quantitative research with representative samples is also needed to further our understanding of dream beliefs and attitudes.

5. Conclusions

This study has painted a snapshot picture of participants' understandings of dream meaning among psychology undergraduates and people generally interested in dreams. Despite the very different methods, there were notable crossovers between the findings identified here, and those of the Inventory of Dream Experiences and Attitudes (Beaulieu-Prévost, Simard, & Zadra, 2009), and Malinowski, Fylan, and Horton (2014). These three studies combined, using a range of methodologies, begin to uncover the construction of meaning and understanding of dreams among a general Euro-American population. The fact that so many people identified patterns of meaning in relation to their waking life suggests that dreams may be an untapped resource, able to provide greater insight into one's waking life, perhaps especially their worries. While dreamworkers, therapists, and other healthcare workers have long worked with dreams as tools able to provide personal insight and therapeutic value, experimental psychology has only recently been able to provide empirical evidence for the efficacy of dreamwork: working with dreams not only provides high levels of insight (Edwards et al., 2013), but does so more efficaciously even than working with a waking-life event (Edwards et al., 2015).

Further, the relationships between thought suppression, dream symbolism, dreaming of waking-life emotions, and aggression/violence in dreams, may offer empirical evidence for psychoanalytical theories of dreaming. Much more work is required to further understandings of how working with dreams can lead to insights in waking life, whether dreams picture and can uncover suppressed thoughts, and what role symbolism has to play in dreaming.

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Qi stagnation and its manifestations in dreams

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Summary. Qi stagnation, which is believed to result from repressed emotions and bear directly on dream experiences, is an important diagnostic entity in Chinese medicine. This belief, however, has not received much empirical attention. In view of this, the study presented here was geared toward testing the relationship between anger expression, qi stagnation, and dreaming themes relating to qi stagnation. The Chinese versions of the Stagnation Scale, Buss-Perry Aggression Questionnaire, and Dream Motif Scale were administered to 117 Chinese participants. Qi stagnation was measured by the indicator variables overattachment, body-mind obstruction, and affect-posture inhibition; the incidence of dreaming about ego anger, bodily inhibition, and botanic elements was assessed as a nocturnal correlate of qi stagnation. It was found that the positive relationship between qi stagnation and dreaming was significant even after taking a person's aggressive tendencies into consideration. Specifically, dream themes involving ego anger were positively predicted by internal anger and overall qi stagnation, dreaming of bodily hindrance and botanic elements being respectively indicated by overattachment and body-mind obstruction. Nonetheless, the presenting findings do not necessarily lend support to the qi mechanisms described by traditional Chinese medicine but might instead reflect certain psychological mechanisms for dream formation, such as dream symbolism and internalizing emotions in waking life.

Keywords: Dream themes, Chinese medicine, ego anger, Five Elements (Wu-xing), inhibition

1. Introduction

Stagnation (yu; 鬱/ yu-jie; 鬱結) is a group of obstruction-like symptoms that was first mentioned in the Yellow Emperor's Canon of Internal Medicine (Huang-di Nei-jing; 黃帝內經) over 2000 years ago and is still an important diagnostic entity for the practice of Chinese medicine today. In traditional Chinese medicine (TCM), which lays much emphasis on the holistic perspective and the reciprocal body-mind relationship, repression of emotions is thought to obstruct the flow of vital energy (qi; 氣) inside the body and in the long run, cause stagnation syndrome. Since the liver is believed to play the primary role in regulating and ventilating the flow of qi, blood, and fluids in the body's circulatory systems and is particularly susceptible to the emotion of anger, qi stagnation or yu syndrome is most often associated with repressed anger and liver dysfunction. To operationalize this Chinese medical concept, Ng, Chan, Ho, Wong, and Ho (2006) developed the Stagnation Scale, which consists of 16 items measuring the self-perceived level of stagnation. The items of the scale were selected by a team of Chinese medical practitioners, psychologists, and social workers in Hong Kong. According to both exploratory and confirmatory factor analyses (Ng et al., 2006; Ng, Fong, Wang, & Wang, 2012), the 16 items can be divided into three factors: Overattachment, Body-Mind Obstruction, and Affect-Posture Inhibition. The Overattachment factor measures the tendency of overly clinging to, and being unable to let

go of, certain things. According to the authors, overattachment can be considered as dysfunctional thoughts relating to the Buddhist philosophy that the fear of losing what a person possesses distracts him or her from the path to happiness. The Body-Mind Obstruction factor is a cluster of obstruction-like symptoms occurring in various parts of the body, such as a feeling of something clogged in the throat or stomach. The Affect-Posture Inhibition factor refers to suppressed facial expressions and body movements due to excessive self-consciousness and uneasiness.

Although both stagnation and depression present with dysphoria, obsessive preoccupations, and somatic symptoms, the two conditions are distinguished from each other by their key features – that is, worthlessness and helplessness for depression as opposed to overattachment and feelings of obstruction for stagnation (Ng, Chan, Ho, Wong, & Ho, 2006). Similarly, unlike somatoform disorders, the physical symptoms of which, by definition, cannot be explained by medical reasons, the physical symptoms of stagnation are deemed to be readily attributed to the malfunctioning of internal organs in TCM (Ng et al., 2012). Such a conceptualization disparity can lead to different treatment strategies; from the TCM perspective, yu syndrome should be treated with both medications and psychological interventions. Ng et al. (2006, 2012) have validated the Stagnation Scale against the Beck Depression Inventory (Beck et al., 1961), Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983), General Health Questionnaire (Goldberg, 1972), and Body-Mind-Spirit Well-being Inventory (Ng, Yau, Chan, Chan, & Ho, 2005) in Hong Kong adults. Innamorati et al. (2015) also applied the Stagnation Scale, Beck Depression Inventory, and Italian Perceived Disability Scale (Innamorati et al., 2009) to Italian patients suffering from medication-overuse headache. The findings of both research groups based at different ethnic settings indicated that despite its association with depression and other health factors, stagnation should be conceptualized as a distinct construct. It should be noted, however, that the notion of qi or qi stagna-

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tion is far more commonly used in Asian countries than in Western countries.

Repression has long been considered an important modulator of dreaming in the psychoanalytic literature. Yu (2013a, 2013b) studied the relationship between repression, emotions, and dream experiences in Chinese samples. All three negative emotions – including anxiety, depression, and anger – were positively associated with dream experiences, their effects being stronger than those of positive emotions. Moreover, anger was the negative emotion that not only contributed most to dream experiences but was also most sensitive to repressive defensiveness. In light of the positive correlation between introversion and the frequency of killing dreams, similarly, Schredl and Mathes (2014) postulated that introverts refrain from articulating their aggressive feelings and thoughts, which promotes the homicidal inclination in their dreams. If qi stagnation is intimately related to inhibited emotions and anger, which have been consistently shown to affect dream experiences, it follows that the severity of qi stagnation might be one way or another reflected in dreams. It is interesting to note that in the TCM practice, anger expression and qi stagnation are indeed believed to have impacts on dream content. According to Huang-di Nei-jing, the liver belongs to the Element Wood (mu; 木) in the Five Element taxonomy (Wu-xing; 五行) and is responsible for qi conveyance and anger management. When anger is not sufficiently expressed, qi accumulates in the liver. Excessive qi in the liver causes a person to dream of anger themes, such as blaming and being blamed. If the condition of qi stagnation persists, qi accumulated and clogged in the liver is turned into heat (“fire”), resulting in an inflammatory condition of excessive liver fire (gan-huo-sheng/ gan-huo-wang; 肝火盛/ 肝火旺) or simply liver fire (gan-huo; 肝火) or even a syndrome called liver fire flaring up (gan-huo-shang-yang; 肝火上炎). In this case, the Element Wood and yang qi (陽氣) – a type of vital qi energy that keeps the body warm and vibrant – would manifest in dreams in the form of plants and fire, for instance, trees, wooded hills, fragrant plants, and lying or hiding below the tree with fear and being unable to rise, and something burning.

Not all Chinese people avail themselves of TCM today, yet the impacts of its tenets on Chinese everyday life are widespread and deep-seated. It is very common for Chinese people to use the TCM jargons excessive liver fire, liver fire flaring up, and mobilizing liver fire (dong-gan-huo; 動肝火) to express the meaning of getting angry or being easily given to anger, whether or not they are actually aware of the connection between anger, the liver, and Wood Element in the TCM conceptualization. Indeed, the term liver fire has long been used and accepted as the synonym for anger in Chinese classics and dictionaries. From the perspective of Chinese medicine, qi stagnation appears to be an important factor that influences dream content; this notion, however, has not received much empirical attention. Therefore, the present study was undertaken to investigate the relationship between anger expression, qi stagnation, and dreaming themes relating to qi stagnation in a Chinese sample. On the strength of the evidence for the overnight alterations in affect valence, Yu (2007, 2015) put forth a theory that dreaming is a mood-regulatory process through which pent-up emotions are worked through, thereby reverting the internal affective barometer to its homeostatic constant. In other words, dream experiences are predisposed to zeroing in on emotions that have not been sufficiently processed or

expressed; emotions that have been overtly and physically expressed, on the other hand, were expected to have less impact on dream experiences. Considering also this theory, it was hypothesized that qi stagnation as indicated by overattachment, body-mind obstruction, and affect-posture inhibition and internal anger as opposed to physical aggression can statistically predict dreaming of ego anger, bodily inhibition, and wood elements.

2. Method

2.1. Participants

117 Chinese adults, 54 males (46.2%) and 63 females (53.8%), volunteered to participate in this study without payment. Participants' ages ranged between 17 and 25 ($M = 20.34$, $SD = 2.561$). They were recruited from a counseling centre and a university in Hong Kong.

2.2. Instruments

The Chinese versions of the Stagnation Scale (Ng et al., 2006; Ng et al., 2012), Buss-Perry Aggression Questionnaire (Buss & Perry, 1992; Lv, Takami, Dong, Wong, & Wang, 2013), and Dream Motif Scale (Yu, 2012, 2016) were administered to participants after obtaining their consent.

2.2.1 Stagnation Scale

The Stagnation Scale is a 16-item scale developed for measuring self-appraised stagnation. Respondents rate on a 10-point scale, with 1 indicating “has not occurred at all” and 10 indicating “occurring every single moment.” The Stagnation Scale comprises three factors: Overattachment (Items 1-7), Body-Mind Obstruction (Items 8-12), and Affect-Posture Inhibition (Items 13-16). Item 17, which directly asks about the presence of stagnation syndrome (yu syndrome), serves for the purpose of testing the criterion validity (“I feel stagnant in mind and body, obstructed and clogged”). The overall stagnation score is the sum of all three factors.

2.2.2 Chinese College Students' Version of Buss-Perry Aggression Questionnaire

College Students' Version of Buss-Perry Aggression Questionnaire (CC-BPAQ; Lv et al., 2013) was employed in this study. The 22-item CC-BPAQ was adopted from the Aggression Questionnaire (Buss & Perry, 1992) and has been validated with college students from different provinces in China. A five-point scale is used as the response format to each item (1 = extremely uncharacteristic; 2 = uncharacteristic; 3 = neutral (between 2 and 4); 4 = characteristic; 5 = extremely characteristic). The scale can be divided into four subscales: Hostility, Physical Aggression, Verbal Aggression/Impulsivity, and Anger Proneness. The first two subscales are similar to those of Buss and Perry's original version; the latter two have been mildly modified by Lv et al. (2013). The Hostility subscale indicates the cognitive aspect of aggression, such as thoughts and feelings about being jealous, being treated unfairly, and being mocked. The Physical Aggression subscale assesses the behavior of threatening and harming other people. The Impulsivity subscale measures unplanned, thoughtless, emotional response to external provocation. Three of the six items on this subscale address verbal aggression. The Anger Proneness subscale measures the tendency to get annoyed.

Table 1. Items Selected from the Dream Motif Scale and Newly Added Items

Item no.	Dream themes	Source	Category
51	Being blamed or punished	Ego-Ideal Scale (Yu, 2012)	Ego Anger
52	Blaming others for doing something wrongly/ making troubles/ committing mistakes	Ego-Ideal Scale (Yu, 2012)	Ego Anger
57	Blaming yourself	Ego-Ideal Scale (Yu, 2012)	Ego Anger
66	Others not giving you proper credit for your achievements	Ego-Ideal Scale (Yu, 2012)	Ego Anger
91	Flying into a rage, getting into a temper, or cursing	Ego-Ideal Scale (Yu, 2012)	Ego Anger
96	Blaming others for blaming you wrongly	Ego-Ideal Scale (Yu, 2012)	Ego Anger
8	Being locked up	Inhibition Scale (Yu, 2016)	Hindrance
15	Being tied, unable to move	Inhibition Scale (Yu, 2016)	Hindrance
84	Feeling dog-tired, lack of strength in the whole body, and very difficult to move — but you have not stopped, and keep walking very hard	Inhibition Scale (Yu, 2016)	Hindrance
-	Hiding under something	Newly added	Hindrance
-	Unlocking something or solving puzzles	Newly added	Hindrance
-	Getting lost	Newly added	Hindrance
-	Attempting to escape from somewhere	Newly added	Hindrance
23	Being an object (e.g., tree, rock, etc.)	Unusual Creature (Yu, 2012)	Wood
30	Fire	Persecution Scale (Yu, 2012)	Wood
-	Trees and lights (e.g., Christmas trees, trees decorated with lights)	Newly added	Wood
-	Forest, meadow, or park	Newly added	Wood
-	Balcony or indoor plants	Newly added	Wood
-	Wet and sticky rotting wood, fungi, or moss	Newly added	Wood
-	Burning trees	Newly added	Wood

2.2.3 Dream Motif Scale

The Dream Motif Scale (DMS) assesses the lifetime frequencies of typical and recurrent dream themes using a five-point scale (0 = never or unsure; 1 = once or twice in a lifetime; 2 = three times or more in a lifetime, but not regularly; 3 = several times a year, but not each month; 4 = once a month or more often). Fifteen dream predisposition scores can be generated by summing the frequency scores of various combinations of these dream themes. Six items of the Ego Ideal predisposition and three items of the Inhibition predisposition can be readily utilized for measuring the frequencies of dreaming anger and obstacles. Nevertheless, no DMS items depict dreamers' attempts to deal with obstacles encountered. Likewise, the Wu-xing expression of the liver's qi condition can be captured by only two DMS items – that is, “fire” and “being an object (e.g., tree, rock, etc.)” Therefore, in addition to the original 11 DMS items, ten new themes were designed to supplement the measurement of confronting obstructive forces and coming across wood and botanic elements in dreams (see Table 1). The three scales were labelled as Ego Anger, Hindrance, and Wood. The sum of these three scale scores yields a total score for Dream Stagnation. Reliability and descriptive statistics of all scales and subscales employed in this study are shown in Table 2. All Cronbach's alpha coefficients were above the conventional .7 level.

3. Results

The DMS Dream Stagnation total score showed a significant correlation with all Stagnation Scale and CC-BPAQ scores, except the CC-BPAQ Physical Aggression score (see Table 3). The Stagnation Scale, Overattachment subscale, and Body-Mind Obstruction subscale scores were significantly correlated with all three DMS factors, the Affect-Posture Inhibition subscale score being correlated only with the Ego Anger subscale score. The criterion validity item of the Stagnation Scale significantly varied with the CC-BPAQ total, $r = .292, p = .002$, Hostility subscale, $r = .442, p < .001$, and Anger Proneness subscale scores, $r = .237, p = .010$, and the DMS Dream Stagnation, $r = .230, p = .018$, Ego Anger, $r = .200, p = .035$, and Wood scores, $r = .238, p = .011$. The regression analysis showed that the Dream Stagnation total score was positively predicted by both the Stagnation Scale total score ($\beta = .267, t = 2.754, p = .007$) and the CC-BPAQ total score ($\beta = .254, t = 2.617, p = .010$), $F(2, 99) = 11.090, p < .001, R^2 = .183$.

A stepwise multiple regression analysis was carried out to predict the DMS Ego Anger score with the Stagnation Scale total score and the CC-BPAQ Hostility score. The resulting model included both predictors, $F(2, 107) = 9.343, p < .001, R = .386, R^2 = .149$. The standardized beta values of the predictors are presented in Table 4. Another stepwise regres-

Table 2. Descriptive Statistics of Stagnation Scale, CC-BPAQ, and DMS Scores (n = 117)

Scales	No. of items	Mean (SD)	Cronbach's alpha
Stagnation Scale	16	69.71 (23.807)	.928
Overattachment	7	39.37 (12.550)	.937
Body-Mind Obstruction	5	17.47 (8.696)	.900
Affect-Posture Inhibition	4	12.80 (6.808)	.892
CC-BPAQ	22	55.74 (10.470)	.857
Hostility	8	21.84 (4.308)	.730
Physical Aggression	5	8.44 (3.425)	.863
Impulsivity	6	18.09 (3.904)	.709
Anger Proneness	3	7.27 (2.761)	.842
DMS Dream Stagnation	20	13.29 (9.383)	.871
Ego Anger	6	4.79 (4.074)	.819
Hindrance	7	6.72 (4.933)	.799
Wood	7	1.95 (2.624)	.745

sion analysis was carried out to predict the DMS Hindrance score with the Overattachment, Body-Mind Obstruction, Hostility, Impulsivity, and Anger Proneness scores. The resulting model contained only the Overattachment subscale, all other predictors being removed, $F(1, 109) = 8.806$, $p = .004$, $R = .273$, $R^2 = .075$. Finally, the regression analysis for predicting the DMS Wood score took in the Body-Mind Obstruction subscale but removed the Overattachment subscale, $F(1, 110) = 7.893$, $p = .006$, $R = .259$, $R^2 = .067$ (see Table 4).

4. Discussion

The study presented here provides the preliminary evidence that qi stagnation as operationalized by a three-factor psychosomatic symptomology is positively correlated with dreaming of ego anger, bodily hindrance, and botanic elements. This still holds true even after taking into account aggressive traits – a key factor for qi stagnation and a correlate of dream experiences. All Stagnation Scale scores were found to be significantly correlated with all DMS scores, with the exception of the correlations of the Affect-Posture Inhibition score with the DMS Hindrance and Wood scores. The positive relationship between qi stagnation and dreaming was further substantiated by the significant correlations generated using the single criterion validity item of the Stagnation Scale. As per the conjecture that internalized anger, rather than its externalized counterpart, bears on qi stagnation and dreaming, the Hostility subscale exhibited a stronger correlation with the Stagnation Scale validity item and the DMS scores than did the other CC-BPAQ subscales; the Physical Aggression subscale was hardly significantly correlated with any Stagnation Scale and DMS scores, except with the Body-Mind Obstruction subscale score, $r =$

.188, $p = .042$. Although the present findings demonstrated the connections between qi stagnation, aggression, and dreaming, they do not necessarily lend support to the liver qi mechanisms delineated by TCM in that the triadic relationship can be to a certain degree explained by psychological mechanisms, such as repression of emotions, metaphoric representation, and ancient symbolism.

The DMS Ego Anger score was predicted concurrently by the Stagnation Scale global score and the CC-BPAQ Hostility score. This result has two important implications. First, qi stagnation makes a unique contribution to the prediction of dreams with anger, for which daytime aggression cannot fully account. Second, hostility, but not physical aggression, verbal aggression, and anger proneness, in waking life is related to the feelings of rage and resentment and the vignettes of blaming or being blamed in dreams. In other words, the tendency to act out anger during wakefulness does not necessarily continue into dreaming life; instead, it is those people who feel infuriated but do not take verbal or physical actions in the daytime that are likely to give vent to such feelings during dreaming. This implication echoes not only the argument that introverts dream about killing more often than do extraverts (Schredl & Mathes, 2014) but also the affect regulation theory that dreaming serves the cathartic function by working through and therefore eliminating pent-up emotions experienced during wakefulness (Yu, 2007, 2015).

The Overattachment score significantly predicted the DMS Hindrance score, its predictive effect overriding those of all other significant correlates, including the Body-Mind Obstruction score. The Hindrance scale did not even show a significant correlation with the Affect-Posture Inhibition subscale. Similar to the findings regarding ego-anger dreams, these findings imply an indirect continuity between

Table 4. Standardized Beta Coefficients of the Regression Models for Predicting Dream Stagnation Factors (n = 117)

	DMS Dream Stagnation		
	Ego Anger	Hindrance	Wood
Stagnation Scale			
Overattachment		.273**	sc
Body-Mind Obstruction		sc	.259**
Affect-Posture Inhibition			
Total Score	.228*		
CC-BPAQ			
Hostility	.224*	sc	
Physical Aggression			
Impulsivity		sc	
Anger Proneness		sc	
Total Score			

Note. * t-value significant at the 0.05 level, ** t-value significant at the 0.01 level; sc = a significant correlate that was entered into but was removed by the regression analysis.

Table 3. Correlation Coefficients of DMS Scores with Stagnation Scale and CC-BPAQ Scores (n = 117)

	DMS Dream Stagnation			
	Ego Anger	Hindrance	Wood	Total
Stagnation Scale				
Overattachment	.282**	.276**	.213*	.333***
Body-Mind Obstruction	.275**	.250**	.259**	.307**
Affect-Posture Inhibition	.207*	.180	.094	.206*
Total Score	.318**	.264**	.246**	.339***
CC-BPAQ				
Hostility	.328**	.263**	.058	.304**
Physical Aggression	.165	.092	.056	.171
Impulsivity	.152	.206*	.177	.236*
Anger Proneness	.166	.188*	.103	.275**
Total Score	.301**	.260**	.136	.347***

Note. * correlation significant at the 0.05 level, ** correlation significant at the 0.01 level, *** correlation significant at the 0.001 level

real-life and dreamed symptoms characteristic of inhibition. Accordingly, dreaming of bodily inhibition and the inability to free oneself, which cannot be ascribed to similar waking-life somatic symptoms alone, can perhaps be conceived as the metaphoric representation of the difficulty of letting go that the waking mind suffers during the day.

The DMS Wood score was positively correlated with the Overattachment and Body-Mind Obstruction scores but not with any CC-BPAQ scores. This result is not in line with the Wu-xing principle that the emotion of anger is represented by the Element Wood. Furthermore, in light of the regression analysis, it seems that wood elements in dreams are more accounted for by the somatic than cognitive component of qi stagnation. TCM is not the only cultural-specific healthcare practice that associates plants in dreams with health conditions. Indeed, similar practices can be observed in other cultures and in particular in the Karbi tribe of North-east India. Karbis believe that different plants in dreams are indicative of different health conditions. Terangpi, Phangchopi, and Terno (2015) discussed how Karbis interpret the meanings of dreaming 35 plants. All 35 interpretations of botanic dreams are consistent with the Karbi folk beliefs about the plants and virtually all of them surround the issues of mental disorder, trauma, headache, stomachache, dermatological problems, being scolded or criticized by elders, and being safeguarded from diseases. It is also noteworthy that Karbis make use of plants for treating diseases and nightmares. For example, jok anso (a plant of the Apocynaceae family), dreaming of which is interpreted as good health, is regarded by Karbis as an important medicinal plant. As in the Karbi healthcare practice, herbal therapy constitutes the major treatment tactic in TCM, including the treatment for qi stagnation and yu syndrome. Perhaps, both the TCM and Karbi practices reflect the humanity's ancient capacity to self-medicate with herbal remedies (Huffman, 2001). This primordial instinct or the folk belief about the harmful and healing effects of plants not only forges sym-

bolic connections between plants and health conditions but might also explain why the presence of botanic elements in dreams is linked to somatic complaints experienced in waking life and alludes to the intuitive desire for seeking cure. This speculation, however, requires clarification through further investigation. Future studies may explore whether subjective beliefs in herbal or Chinese medicine would moderate the relationship between qi stagnation and dreaming of botanic elements.

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Dreams and extraversion: A diary study

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Summary. Dreams have always been fascinating and were interpreted according to cultural norms and beliefs. Based on the continuity between waking and dreaming, one would expect that personality traits are related to dream content. In the present study, of the 108 participants, mostly psychology students, 91 reported at least one dream in a dream diary for 14 days and all participants completed a questionnaire concerning socio-demographic variables, dream recall frequency and extraversion assessed by the NEO-FFI. As expected, extraverted persons had a higher dream extraversion, thus, confirming the continuity hypothesis of dreaming. In addition, extraverted persons had more physical interactions in their dreams and included more positive emotions. Further research might investigate, for example, how modern social networks including social media affect dream content.

Keywords: Dreams, extraversion, personality, continuity hypothesis

1. Introduction

Jung (1921) was the first to popularize the extraversion and introversion personality traits while Eysenck (1985) continued this line of investigation: Extraverted persons are said to be more outgoing, energetic and talkative while introverted persons tend to be more reserved. He found a biological explanation for the two different personality types in the ARAS (Eysenck, 1985). Following the continuity hypothesis of dreaming (Hall & Nordby, 1972), stating that activities in waking are incorporated into dreams, this relation might be found for extraversion as well: Persons with many friends in their waking-life might be extraverted in their dreams as determined by their having more social contacts with more dream characters.

Previous research indicated that social activities in dreams are highly important, for example the Social Stimulation Theory (Revonsuo, Tuominen, & Valli, 2015) suggests that dreams are a specialized training for social skills that are needed in the waking-life since humans are a social species. Talking with friends was found as being the most frequent dream activity (Schredl & Hofmann, 2003), while reading, writing and calculating in dreams rarely occurred, even in students who spend a lot of time with cognitive activities during waking.

Several studies support the correlation between extraversion and dream content (Bernstein & Roberts, 1995; Hall & Domhoff, 1968; Lang & O'Connor, 1984; Samson & De Koninck, 1986). While there was only a marginally significant relation between waking extraversion and dream extraversion (Samson & De Koninck, 1986), waking extraversion was positively associated with the number of dream characters (Lang & O'Connor, 1984) and with the number of social interactions in dreams (Bernstein & Roberts, 1995). Since

the results are partly conflicting, further empirical studies are necessary to investigate the relation of extraversion and dreams.

The present study investigated the hypothesis – based on the continuity hypothesis of dreaming (Hall & Nordby, 1972) – that extraverted persons are also more extraverted in their dreams. This will also imply that more characters will occur in the dreams of extraverted persons and that extraverted participants will have more verbal and physical interactions in their dreams. Lastly, we expected more positive emotions in the dreams of extraverted persons as “positive emotions” is a sub-factor of extraversion in the Big Five personality model (Ostendorf & Angleitner, 2004).

2. Method

2.1. Participants

Overall, 108 persons (87 women and 21 men) with a mean age of 23.94 ± 10.47 years (range: 18 to 86 years) participated in the present study; 98 are psychology students and 10 from the personal environment of the author. The students (78 women and 20 men) with a mean age of 21.79 ± 2.98 (range: 18-35 years) were recruited by a mailing list and received course credit for participating. As some dream diaries haven't been returned and two participants failed to recall a dream during the study period, the sample finally included 91 persons reporting at least one dream in two weeks.

2.2. Measurement Instruments

The participants had to answer a three-page questionnaire concerning socio-demographic variables, dream recall frequency and the extraversion personality trait as assessed by the NEO-FFI. The questionnaire concerning dream recall frequency was generated by Schredl (2004). The scale ranged from 0 = no dream recall, 1 = less than once a week, 2 = once a month, 3 = 2 to 3 times a month, 4 = once a week, 5 = several times a week, to 6 = almost every morning. The retest reliability was $r = .85$ with an mean interval duration of 55 days (Schredl, 2004). The NEO Five-Factor-Inventory (NEO-FFI) is a multidimensional measure of the

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Big Five factors of personality (Borkenau & Ostendorf, 1993), only the extraversion items (N = 12) were presented. The internal consistency of the extraversion scale was $r = 0.812$ (Cronbach's alpha) in the present sample (N = 108). To be informed about the social network, the persons had to state how many friends and how many close friends they have. Second, the participants had to report their dreams in a structured dream diary for 14 continuous days. If able to recall at least one dream, participants were asked to write down their dreams as completely as possible (on a maximum of five days per person). They were explicitly asked to describe the social interactions and their perceptions of the surroundings. They also had to rate the intensity of positive and negative emotions occurring in the dreams, measured by a four-point-scale (0 = no emotion, 1 = mild, 2 = moderate, 3 = strong).

2.3. Dream content analysis

The dream content analysis was done with a dream manual (Schredl, 1998) including a coding system for different dream content qualities. In the present study the number of dream characters was counted and the number of characters interacting verbally (conversation, being addressed) and physically (touching, fighting) with the dreamer. Extraversion was explained to the external judges by presenting the different sub-factors such as sociability, agreeableness, impulsivity, activity and positive emotions with brief explanations according to the Big Five model of personality (Ostendorf & Angleitner, 2004). Afterwards, the judges had to code the dream extraversion by a scale ranging from 1 to 5 based on the social behavior of the dream ego (the dreamer acting within the dream). When extraversion couldn't be assessed (e.g., short dream reports), 0 was coded. Then, a second rating measure was introduced with the instruction to estimate the extraversion of the dream ego despite sufficient information. This was done because a relatively small number of dreams did allow the extraversion based on explicitly mentioned social behavior of the dream ego.

2.4. Procedure

The completed dream diaries and questionnaire were returned at the end of the study period. The dream reports were typewritten, randomized and serially numbered. A rater analyzed the numbered dreams by the scales presented in the "dream content analysis" section. A second rater independently rated 100 dreams in order to compute interrater reliability indices. Statistical analysis was performed using SAS for Windows 9.2. Pearson correlations as well as partial correlations were used to test the one-tailed hypotheses. The correlation between dream recall frequency and extraversion was tested by a Spearman rank correlation. To correlate the data from the dream content analysis and personal data, the mean values for the dreams per person were calculated.

3. Results

The descriptive statistics concerning extraversion, friends and close friends in waking as well as the dream recall frequency are shown in Table 1. The subsample of psychology students had more friends and more close friends, while the value of extraversion was significantly correlated with more friends ($r = .371$; $p < .0001$), as well as with the number of

Table 1. Descriptive statistics for the whole sample and the subsample of psychology students

Variable	Total sample (N = 108)	Psychology students (N = 98)
Extraversion scale	2.56 ± 0.54	2.59 ± 0.53
Number of friends	24.63 ± 19.97 (N = 106)	25.58 ± 20.46
Number of close friends	6.92 ± 5.47	7.19 ± 5.64
Dream recall frequency (Questionnaire)	3.45 ± 1.54	3.39 ± 1.54
Number of dream reports (Dream diary)	3.29 ± 1.49 (N = 93)	3.27 ± 1.50 (N = 83)

close friends ($r = .264$; $p = .0057$). A Spearman rank correlation yielded a marginally significant negative relation between dream recall frequency and extraversion ($r = -.181$, $p = .0750$ for the psychology students and $r = -.125$, $p = .1984$ for the whole sample).

The total number of reported dreams (N = 306) had a mean dream length of $92.42 ± 86.44$ words (range: 5-686). The number of reported dreams per participant is depicted in Table 1. For 100 dreams, the external judge estimated that there was enough social behavior of the dreamer to code his or her extraversion. With the additional instruction of coding as many dreams as possible even based on insufficient information, 217 could be coded regarding the extraversion of the dream ego. Descriptive statistics of the dream variables are shown in Table 2, yielding similar results for both samples on the number of dream characters, verbal and physical interactions, dream extraversion and emotions. The interrater reliability for these scales was calculated as Pearson correlations: $r = .954$ for dream characters, $r = .809$ for verbal interactions, $r = .574$ for physical interactions, $r = .770$ for dream extraversion (N = 11) and $r = .513$ for estimated dream extraversion (N = 100).

Table 2. Dream content and the average frequency per person

Variable	Total sample (N = 108)	Psychology students (N = 98)
Dream length	87.03 ± 67.51	86.79 ± 68.94
Positive emotions (self-ratings)	1.40 ± 0.78 (N = 88)	1.38 ± 0.80 (N = 79)
Negative emotions (self-ratings)	1.70 ± 0.73 (N = 89)	1.75 ± 0.74 (N = 80)
Number of dream characters	2.18 ± 1.41	2.10 ± 1.30
Number of dream characters verbally interacting with the dreamer	0.53 ± 0.53	0.52 ± 0.52
Number of dream characters physically interacting with the dreamer	0.16 ± 0.24	0.17 ± 0.25
Dream extraversion	3.76 ± 1.12 (N = 56)	3.81 ± 1.11 (N = 50)
Estimated dream extraversion	3.50 ± 0.90 (N = 84)	3.48 ± 0.93 (N = 79)

Table 3. Correlation of dream content and extraversion for the whole sample and a subsample of psychology students

Variable	Total sample (N = 91)		Psychology students (N = 81)	
	r	p	r	p
Dream length	-.078	.4633	-.139	.2172
Positive emotions (self-ratings)	.212 (N = 88)	.0238 ¹	.232 (N = 79)	.0198 ¹
Negative emotions (self-ratings)	-.025 (N = 89)	.4093	-.074 (N = 80)	.2597
Number of dream characters	.075	.2420 ¹	.121	.1430 ¹
Number of dream characters verbally interacting with the dreamer	.151	.0779 ¹	.092	.2070 ¹
Number of dream characters physically interacting with the dreamer	.219	.0193 ¹	.214	.0282 ¹
Dream extraversion	.420	.0007 ¹	.426	.0011 ¹
Estimated dream extraversion	.284	.0047 ¹	.308	.0038 ¹

¹one-tailed

Pearson correlations for the dream length and emotions variables as well as partial correlations partialled out for dream length for the other dream content variables are depicted in Table 3. Waking-life extraversion and the extraversion measures in dreams correlated significantly in both samples. Second, extraverted participants had a larger number of dream characters interacting physically with the dreamer. Third, the total number of dream characters and the number of dream characters with whom the dreamer verbally interacted were not significantly related to waking extraversion. Lastly, there were significantly more positive emotions in the dreams of extraverted participants.

In addition, there was a significant relation between having more friends in waking and the occurrence of dream characters ($r = .203$; $p = .0289$ for the whole sample and $r = .301$; $p = .0034$ for the psychology students).

4. Discussion

The main finding of the study indicates that extraverted persons are also extraverted in their dreams and have more physical interactions in their dreams, thereby supporting the continuity hypothesis (Hall & Nordby, 1972). Second, there were more positive emotions in the dreams of extraverted participants.

As there have been many investigations on the link between personality and dreams (Blagrove, 2007), different instruments for eliciting dream extraversion have been used: dream questionnaires and dream content analysis of diary dreams (Samson & De Koninck, 1986). Comparing dream content questionnaires and the results from dream content analytic studies yielded conflicting results with positive relations between waking extraversion and number of dream characters and social interaction in dreams measured via questionnaire but non-significant relations with the diary measures (Bernstein & Belicki, 1995). Their explanation was that retrospective measures might be more affected by the participants' self-concepts compared to the recording of dream reports. Furthermore, Schredl (2002) showed that low dream recallers' retrospective estimates of dream con-

tent did not correlate well with the content of their diaries. Samson and De Koninck (1986), on the other hand, used only one diary dream per participant thereby increasing the error variance; Schredl (1998) has shown that increasing the number of dreams per participants increased the reliability of the measured dream characteristics.

Regarding the new developed extraversion scale, it should be noted that the correlation between waking extraversion and externally rated dream extraversion was higher when only the dream reports with sufficient information for the extraversion assessment were present in the dream. I.e., the findings clearly support to notion to elicit at least several dreams per participants as not all dreams are suitable for reliable estimates of dream extraversion.

The result that extraversion in dreams was positively related to waking extraversion was partly in line with the Samson and De Koninck (1986) study reporting a small, marginally significant correlation coefficient of $r = .14$ and, thereby, supporting the continuity hypothesis of dreaming (Hall & Nordby, 1972). Compared to the study from Lang and O'Connor (1984), who reported that extraversion is significantly correlated with more dream characters, the hypothesis was not confirmed in the present study. Nevertheless, the partial correlation for dream characters and number of friends in waking showed a significant relation between more friends in waking and the occurrence of more dream characters, so that the present study is in accordance with the results of Lang and O'Connor (1984).

The positive relationship between the number of dream characters with whom the dreamer interacted physically and waking extraversion partly confirms the results of Bernstein and Roberts (1995) who reported a significant correlation between the number of social interactions in dreams and waking extraversion. However, we found only a small but non-significant correlation for verbal interactions. Maybe, a more accurate recording of the social network, including social media (texting, etc.), might also provide significant results for the number of dream characters and verbal interactions.

The study of Samson and De Koninck (1986) reported an interaction between neuroticism, extraversion, and dream extraversion; for the low neuroticism group ($N = 53$), the correlation between waking extraversion and dream extraversion was negative ($r = -.29, p < .04$). As in the present study only the extraversion items of the NEO-FFI were used, we were not able to do similar analysis. It would be interesting for future research to investigate whether mediating factors may have an effect on the continuity between waking extraversion and dream extraversion.

Finally, there were significantly more positive emotions in the dreams of extraverted participants, which might be explained since "positive emotions" are mentioned as a sub-factor of the extraversion personality trait (Ostendorf & Angleitner, 2004) and, again, supporting the relationship between waking personality and dream content.

To conclude, the main finding is that there is a relationship between the extraversion personality trait and dream content and this is in line with the continuity hypothesis (Schredl, 2003). Future research should include social media since not only the number of friends seemed to be important for analyzing extraversion in today's modern world. Comparing the present results with previous findings, we recommend using dream diaries with as many dreams per participant as possible.

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Beds in dreams

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Summary. According to the continuity hypothesis, one would expect that the sleep surroundings (bed, bedroom, etc.) occur within dreams. In the present study, 1612 dreams of 425 participants, mostly psychology students, were analyzed. Beds are quite prominent in dreams (7.20%) but it was often not the dreamer's bedroom and an activity not related to sleep. Up to now it is an open question as to what waking life experiences bed dreams are based, e.g., only emotionally salient experiences (although erotic activity in the bed was also relatively rare in this study). Future diary studies could elicit the factual bed and bedroom in which the dreamer sleeps and also measure attitudes towards sleep as some persons are fond of sleeping whereas, for others, sleep is loss of time.

Keywords: Dreaming, beds, continuity hypothesis

1. Introduction

According to the continuity hypothesis of dreaming (Hall & Nordby, 1972), dreams reflect waking life (for reviews see: Schredl, 2003, 2012a). Sport students dream more often about sports (Erlacher & Schredl, 2004) and music students about music (Vogelsang, Anold, Schormann, Wübbelmann, & Schredl, 2016), depending on the time they spent with these activities during the day (Schredl & Erlacher, 2008; Schredl & Hofmann, 2003). Interestingly, thus far, empirical studies have not looked at a very obvious activity, namely sleeping in one's own bed. Hall and Van de Castle (1966) found that 4.10% of their students' dreams ($N = 1000$) included a bed but they did not analyze whether it was the dreamer's own bed or what activities were involved.

The present study investigated the frequency of beds in dreams. Furthermore, it was of interest to determine whether or not the dreamer's own bed and/or bedroom were dreamed about and what kind of activity was related to the bed. Based on the continuity hypothesis, we expected that sleeping in one's own bed in one's own bedroom should occur quite frequently as this is an everyday activity.

2. Method

2.1. Participants

Overall, 425 persons (361 women and 64 men, mostly psychology students) with a mean age of 23.40 ± 5.41 years (range: 16 to 61 years; two missing values) participated in the present study. The participants reported 1612 dreams with a mean dream length of 155.3 ± 130.1 words.

2.2. Dream content analysis

The dream reports (analysis unit: all dreams of one night) were scored regarding the occurrence of beds (Yes/No). The interrater reliability for this scale was $\kappa = 0.64$. If beds were present, the following three categories were rated: own bed (Yes, No, not specified) ($\kappa = 0.55$), dreamer's bedroom (Yes, No, not specified) ($\kappa = 0.74$), and activities (seeing a bed without interacting (only coded if no interaction), sleeping/waking up/plan to sleep, erotic activities, bed used for lying, sitting, etc., being awake, and other activities ($\kappa = 0.63$).

based on the social behavior of the dream ego (the dreamer acting within the dream). When extraversion couldn't be assessed (e.g., short dream reports), 0 was coded. Then, a second rating measure was introduced with the instruction to estimate the extraversion of the dream ego despite sufficient information. This was done because a relatively small number of dreams did allow the extraversion based on explicitly mentioned social behavior of the dream ego.

2.3. Procedure

The dream reports were typewritten, randomized and coded by an external judge for the presence of beds. The analysis unit were all dreams reported in the morning and dream length was determined as number of words (excluding all non-dream related information). A second rater coded independently a subsample of 288 dreams. The subset of bed dreams was coded by two raters independently along the three categories in order to compute interrater reliability coefficients (Cohen's kappa). Chi-square tests were used for comparing frequencies.

3. Results

Overall, 116 dreams with at least one bed (7.20% of all 1612 remembered dreams) were found. In three dreams, two different beds were coded ($N = 119$ beds). A total of 136 activities were coded since two bed-related activities were found in 15 dreams and one dream included three bed-related activities. The 116 bed dreams were reported by 100 participants (23.53% of 425 participants), two reported three bed dreams, 12 two bed dreams, and the other participants one bed dream.

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Table 1. 119 Beds in 116 bed dreams

Category	Bed	Bedroom
Dreamer's bed/bedroom	32	26
Not specified	47	20
Not the dreamer's bed/bedroom	40	73

Whether the bed or the bedroom was the dreamer's is depicted in Table 1. Of the 100 participants with bed dreams, 32 reported a bed dream including their own bed and 36 reported bed dreams with a bed not their own. This difference comparing whether the participant has bed dreams with his own bed versus having bed dreams with beds not his own was not significant (Sign rank test: $M = -2$, $p = .7122$). Twenty-six participants reported of having a bed dream featuring their own bed room, whereas 62 reported at least one bed dream in which the bedroom was not their own (one participant reported 3 of those dreams, 6 participants two, and the remaining participants one dream). The difference between reporting bed dreams regarding the bedroom (own bedroom vs. bedroom not belonging to dreamer, e.g., apartments of other persons, hotels) was significant (Sign Rank test: $M = -18$, $p < .0001$).

The distribution of bed-related activities is presented in Table 2. Whereas just seeing a bed and using a bed for sitting and lying (while being awake), the bed within these dreams was comparatively rarely used for sleeping and/or erotic activities. Other activities were being in a hospital bed and receiving medical care ($N = 4$), talking about beds ($N = 4$), making beds ($N = 3$), and sitting beside a bed ($N = 3$). The following activities occurred once each: Flying with the bed, being attacked, being killed, hiding under the bed, jumping with a bike on the bed, putting a child to bed, playing something in the bed, moving the bed, bringing breakfast to someone lying in a bed.

4. Discussion

The main finding of the study indicates that, at least in diary dreams, 7% of all remembered dreams contain beds and this finding is thus in line with the continuity hypothesis of dreaming (Schredl, 2003), i.e., that dream content reflecting topics that are relevant to the dreamer. However, only in a minority of dreams, beds are clearly identified as the dreamer's own bed in the dreamer's own bedroom; this is in line with other studies (Fosse, Fosse, Hobson, & Stickgold, 2003; Malinowski & Horton, 2014) that dreams rarely replay episodic memories of the waking life including all the details (e.g., location). Moreover, sleeping/waking up is also a relatively rare topic.

From a methodological viewpoint, it has to be considered that the findings are based purely on coding by external judges, i.e., therefore the relatively high number of unspecified beds (in many of these cases one could assume that it is not the dreamer's bed because it is specified as a hotel room or an unfamiliar apartment). In order to decrease this percentage adding specific questions about the bed and the bedroom would be helpful. However, in the present study, the participants were not familiar with the research topic and, thus, not biased to reported bed-related details,

Table 2. 136 bed-related activities in 116 bed dreams

Category	N =
Seeing a bed	41
Sleeping/waking up	25
Erotic activities	11
Sitting/lying on the bed (awake)	35
Other activities (hospital procedures, talking about beds, making beds, putting a child into a bed, etc.)	24

which might be a problem if those topics were probed every morning.

The low percentage of bed-related activities regarding sleeping/waking up compared to the total number of bed dreams was not expected. One might speculate that everyday activities, repeating over and over again in a similar way, are not often incorporated into the dreams; for example, glasses worn every day occurred only in 1% of the dreams of a short-sighted person (Schredl, 2012b). The relatively high occurrence of foreign bedrooms (hotels, etc...) might indicate that emotional involvement might be an important factor, since being on the road, spending an exciting holiday is much more salient than sleeping in one's own bed. As not only waking-life activities are reflected in dreams but also concerns (Domhoff, 2011), it would be very interesting to study whether persons who are preoccupied with sleep (common in patients with insomnia) dream more often about beds and sleeping.

To conclude, beds are fairly prominent in dreams but, up to now, it is an open question as to what kind of waking life experiences this is based on, e.g., only emotionally salient experiences (although erotic activity in the bed was also relatively rare in this study). Future diary studies could elicit the factual bed and bedroom in which the dreamer sleeps and also measure attitude towards sleep as some persons are fond of sleeping whereas, for others, sleep represents a loss of time.

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Sleep positions of couples at sleep onset: A questionnaire study

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Summary. How and with whom we spend the night has changed over time; in modern times it is common for couples to share beds. Although research has shown that co-sleeping affects sleep architecture, the relationship between the couples' waking lives and their nightly behavior has rarely been studied in detail. The present study investigated 90 participants with stable relationships regarding their sleep-onset position while sharing the bed with their partner and relationship characteristics like satisfaction and duration via questionnaire. Spooning was the most common sleep-onset position. A small but non-significant correlation between the intimacy of the couples' position at sleep onset and overall relationship quality was found; however relationship duration was associated with less intimate sleep onset positions. Future studies should elicit the include questions about the couples' sleep rhythm, possible co-sleeping of children, and the presence of sleep disorders.

Keywords: Sleep position, couples' sleep, relationship quality

1. Introduction

How and with whom we spend the night has changed over time (Klösch, Dittami, & Zeitlhofer, 2009). The brief historical review here follows the book of Klösch et al. (2009). In ancient Egypt wealthy people slept in the first beds and it was clear from the bed sizes that men and women could not share them. In ancient Greece and Rome the people first started to establish extra rooms for sleeping. Back then, a group of men would share one bed room and women would share a separate one. The "lectus genitalis" (lat. marriage bed) was meant only for the simple people and the poor. In early medieval times (830 A.D.) husbands and wives were still expected to share a bed only for the purpose of reproduction. It is difficult to set a date at which men and women in the West started sharing a bed (Ekirch, 2005). Premarital couples were allowed to share a bed without engaging in intercourse in preindustrial times (Ekirch, 2005). To be more precise – it consisted in so-called "bundling" rooted in the European countryside in the late eighteenth century. Although there are documented cases like Duncan McCurriein 1721 who went to court because he shared a bed with Isobel Midy and declared that "there are many others who lay together as they did", it is difficult to say when exactly bundling began. Ekirch (2005) has illustrative pictures from 1558 and 1530 showing men and women sharing a bed and describes incidents in which wives in 1737 complained about the sleeping behaviour of their husbands.

In their review article, Troxel, Robles, Hall, and Buysse (2007) showed that co-sleeping impacts the objective sleep

parameters, e.g., increased number of body movements during sleep (Pankhurst & Horne, 1994), and reduced sleep quality in women (Dittami et al., 2007). Especially if a sleep disorder like sleep apnea syndrome is present in one partner, the sleep of the bedpartner is often disturbed (Blumen et al., 2012). An actigraphy study (Spiegelhalder et al., 2015) reported better subjective sleep quality in young couples sharing the bed compared to sleeping alone. Despite possible impairments of the sleep architecture, most couples want to share bed as this sharing is linked to feelings of safety and intimacy (Rosenblatt, 2006).

In addition to sharing the bed, the sleep positions might be related to the quality of the couple's relationship, e.g., an intimate sleep position might reflect an intense relationship. Dunkell (1977) described a woman whose sleeping behaviour embodied her feelings towards her husband: In the beginning of their marriage she found herself kissing and hugging her husband in her sleep and as time went by conflicts emerged within their relationship that led to the woman literally kicking her husband out of the bed. El-Sheikh, Kelly, Koss, and Rauer (2015) found that if men used constructive conflict or negotiation before bedtime, both partners' sleep duration and the men's sleep efficiency were increased. If there was a destructive conflict between the partners, however, the sleeping situation worsened. Klösch et al. (2009) reviewing Dunkell's (1977) cases and theories put forward the hypothesis that intense body contact while sleeping is related to high relationship intimacy. However, there is no empirical evidence for this hypothesis published so far.

The aim of the present study was to test whether the intimacy of the couples' positions at sleep onset positively related to relationship quality. In addition, it was tested whether the duration of the relationship has an impact on the sleep-onset position, i.e., less intimate the couples' positions would be at sleep onset with longer relationship durations.

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2. Method

2.1. Participants

The sample used in this study consisted of 90 students at the University Mannheim, Germany. The mean age was 21.28 (SD = 2.75) years and ranged from 19 to 31 years (N = 88). 77 of the participants were female, 13 male and all of them were in a relationship at the time of the study. Of the 89 participants who stated their marital status 85 were unmarried and 4 were married. 66 of the 90 students studied psychology, 19 German studies, 1 social science, 1 cultural science, 1 "Berufsakademie" (BA), 1 Magister und 1 was not stated. All of the 90 participants completed a self-developed questionnaire regarding the position they fall asleep in with their partner. In addition 60 of the participants filled out a questionnaire regarding their relationship itself (Partnerschaftsfragebogen, PFB). This sub-sample consisted of 52 female and 8 male psychology students. The mean age was 21.62 years (SD 2.99) and ranged from 19 to 31. 58 of the participants were unmarried, and 2 were married. There were thus no differences between the two samples regarding these variables.

2.2. Measurement Instruments

Two questionnaires were used in this study. A self-developed questionnaire capturing the position they preferred to fall asleep in – in bed with their partner (Sleep position questionnaire, see Appendix). The second was a standardized questionnaire regarding the relationship itself (Partnerschaftsfragebogen, PFB).

The sleep position questionnaire consisted of 11 items (the translated questionnaire can be found in the appendix) that include questions concerning the ages and sexes of the participants as well as questions about their relationships, e.g., the length of the relationship and the frequency of sleeping together. Six illustrations (see Tables 2 and 3) were presented to capture the position the couple preferred to fall asleep in, i.e., the most frequent one. In addition, the participants estimated the percentage of falling asleep in this preferred position. The authors ranked the six positions in terms of intimacy from 1 = not intimate to 5 = very intimate. The same level of intimacy within the ranking was assigned to the positions c and d (see Appendix).

In case none of the illustrations matched the most frequent position, there was an option to describe the position in words as completely as possible. In addition to the most frequent sleep onset position, the participants were asked to provide the percentage of all other sleep positions. We created an additional variable by averaging the percentages the participants provided for each sleep position position separately, i.e., obtaining the mean percentage of every sleeping position within the sample.

The standardized relationship questionnaire by Hahlweg (1996) assesses the quality of the relationship and consists of 31 items in total. There are 10 items for each sub scale "Fighting behaviour" (S), "Tenderness" (Z) and "common unity/communication" (GK) and one for the happiness of the relationship in general. The questionnaire used 4-step Likert scales to evaluate the frequency of each behaviour and which ranged from 0 = never or very seldom to 3 = very often and the relationship-happiness item was a 6-point Likert scale from 0 = very unhappy to 5 = very happy. The total score for each subscale was calculated by adding the

scores of the 10 items per subscale (range 0-30). The sum of these three subscale scores formed the overall score for the whole questionnaire (PFBG, range 0-90).

Item 5 "Before falling asleep we snuggle up to each other" was used by us to verify the intimacy stated with the position chosen in the sleep position questionnaire. The internal consistencies were very good (S = 0.93, Z = 0.91, PFBG = 0.95) and good (KG = 0.88). The re-test reliability was tested with 50 people after 6 months and resulted in S; r = 0.68, Z; r = 0.74 and GK; r = 0.83. The construct validity was determined by intercorrelations between the PFB and other questionnaires regarding relationship quality (Hahlweg, 1996).

2.3. Procedure

Information regarding the study "Couple's positions at sleep onset" was introduced to eligible participants just before various lectures the students attended. The single inclusion criterion for participation was to be in a relationship at the time of the study. The participants were asked to fill them out by themselves and not to talk to others about the study. There was no time restriction for the answering and the participants were asked to answer as spontaneously as possible. After approximately ten minutes the questionnaires were collected. The statistical analysis procedures were carried out with SAS 9.4 and Spearman Rank correlations were used.

3. Results

The average length of the relationships was 21.39 months (SD = 19.83), ranging from 0.13 to 123.0 months. 72 (80%) participants did not and 18 (20%) did live together with their partner. Of those 18 participants 11 lived in their own flat, 3 lived with roommates, 2 lived with one of their parents and 2 in some other situation. The frequencies of seeing each other and spending the night together are shown in Table 1.

Table 2 shows the rank order of the most frequent positions. The percentage indicates how many participants stated that the corresponding position was the most frequent one. On average, the couples started 69.96 ± 15.80% of all nights together in their preferred sleep-onset position. Table 3 shows the frequency in percentage of every sleeping position within the sample. This time the percentages are averages of all participants that spend X% of their shared sleep-onset in the respective position. Table 4 shows the mean and standard deviation of the total PFB score, the subscales and the single items "Before falling asleep we

Table 1. Frequencies of seeing each other and spending the night together/sleeping in the same bed together (N = 90)

Variable	Frequency seeing each other	Frequency sleeping in the same bed
Daily	23.33%	16.67%
Five to six times a week	15.56%	6.67%
Three to four times a week	21.11%	22.22%
Once or twice a week	20.00%	30.00%
Less than once a week	20.00%	24.44%

Table 2. Percent of participants reporting this sleep-onset position as their most frequent position (N = 90)

Ranked Position	Frequency	Ranks
	3.33%	1
	22.22%	2
	44.44%	3
	22.22%	4
	3.33%	5

snuggle up to each other” and “Happiness relationship”.

To test the first hypothesis, we used a Spearman Rank correlation between the total score for the PFB and the ranked positions (age, gender and the percentage participants spend in their preferred position were partialled out, i.e., statistically controlled for the possible effect of these variables). The result of the one-tailed analysis was not significant: $r = .103$, $p = .2238$ ($N = 60$). The Spearman Rank correlation between the duration of the relationship and the ranked position, again partialling out the influences of age, gender and percentage participants spend in their preferred position, was significant: $r = -.18$, $p = .0455$, one-tailed, $N = 88$.

Table 3. Distribution of every sleeping position within the sample (N = 80 participants completing all items)

Position	Frequency	Ranks
	20.56 ± 28.72%	1
	4.19 ± 12.89%	2
	31.05 ± 30.51%	3
	12.19 ± 20.33%	3
	21.86 ± 26.78%	4
	9.71 ± 22.93%	5

Table 4. Means (M) and standard deviations (SD) of the total PFB score, the subscales and the single items “Before falling asleep we snuggle up to each other” and “Happiness of the relationship” (N = 60)

Variable	M ± SD
Fighting behavior (S)	6.63 ± 4.82
Tenderness (Z)	24.72 ± 3.09
Common unity/Communication (GK)	22.47 ± 3.51
PFB total score	70.55 ± 7.95
Item 31 “Happiness of the relationship”	4.10 ± 1.00
Item 5 “Before falling asleep we snuggle up to each other”	2.78 ± 0.49

In addition to the testing of the hypotheses, several exploratory analyses were performed. The Spearman Rank correlation between the percentage spent in position b, which was the most intimate and the subscale “Tenderness” (Z) of the PFB was $r = .317$, $p = .0163$, $N = 57$. The percentage of position e, which also was one of the most intimate positions, correlated significantly with the total PFB score: $r = .323$, $p = .0143$, $N = 57$. The percentage of position f, which was the least intimate, correlated negatively but not significantly with the total PFB score: $r = -.247$, $p = .0639$, $N = 57$. Furthermore there was a positive correlation between Item 5 (“Before falling asleep we snuggle up to each other”) and the ranked position: $r = .444$, $p = .0004$, $N = 60$. Lastly, we found a link between the percentage spent in position f and age: $r = .242$, $p = .0316$, $N = 79$ and the frequency the participants spend the night with their partners and the percentage with which they fall asleep in the most frequent position: $r = .211$, $p = .046$, $N = 90$.

4. Discussion

The present findings showed a small but non-significant correlation between the intimacy of the couples’ position at sleep onset and overall relationship quality, but long relationship duration was associated with less intimate sleep onset positions. These findings might correspond with the results of Gunn, Buysse, Hasler, Begley, and Troxel (2015), who found that the higher the perceived relationship quality of the wife, the higher the sleep concordance and presumably more intimate sleeping positions.

The link between how often the participants spend the night with their partner and how often they fall asleep in their preferred position might be explained as follows. The more often two people spend the night together, the more frequent (the preferred) position becomes as the couple get used to this particular position. The other explorative correlation between the percentage spent in the least intimate position f and the age of the participant should be interpreted with caution as the present sample’s age range was very small and, thus, should be tested with a more extensive sample.

From a methodological viewpoint, several limitations of this pilot study have to be mentioned. For this study we assumed that the partners go to bed at the same time, because otherwise the partners could not find a position to fall asleep

in together. This might not be the case every night the couple sleeps together, even though the correlation of bed times is quite high in young couples (Spiegelhalter et al., 2015). Future questionnaires should elicit whether respective how often the partners start their bed time together. Another issue might be the effect of the social desirability. It is possible that people who assume their relationship to be a good one and who have a high relationship satisfaction tend to state that they sleep in very intimate positions with their partner. I.e., future studies should control for social desirability. Even though it is unknown how the sleep environment affects the sleep positions of couples, it would be interesting to use objective measures of sleep positions (De Koninck, Lorrain, & Gagnon, 1992). Focusing on the sleep position of each partner, Lorrain and De Koninck (1998) found no relationship between sleep position and sleep stages but they did not analyze the closeness of the bed partners. Another approach to increase validity of the subjective measures is to include the data of the bed partner independently. This would also allow to obtain estimates how comfortable the sleep-onset positions are and whether the couples subjectively observed a relationship between sleep-onset positions and sleep quality. The most obvious limitation of this study is the selectiveness of the sample. The participants are young students with relatively short relationship durations and, thus, the findings of the present study cannot be generalized. This pilot study should be complemented with surveys of samples with broader age ranges. In this context, other factors like bed size (small bed might not allow to sleep apart from each other) and the presence of children in the room or in the bed should be assessed.

The positive correlation between Item 5 ("Before falling asleep we snuggle up to each other") of the PFB and the ranked positions are a validation of the 5-point picture scale used in the present study. Furthermore, only one participant described another sleep position not included in the six images (Male lying on the back, female lying on the side). Studies in larger samples might reveal a larger variability in sleep onset positions. Another important factor that could affect pair sleep is the presence of sleeping disorders, e.g., insomnia, sleep-related breathing disorders as some couples decide to sleep in different rooms. This should be elicited in samples with a larger age range.

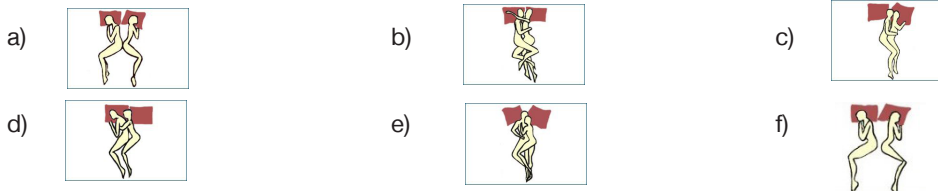
To summarize, the present pilot study indicated that there might be links between sleep onset positions and relationship variables like duration of the relationship. As the correlations were relatively small, larger samples are needed to corroborate the present findings. Future studies should include questions about the couples' sleep rhythm, possible co-sleeping of children, and the presence of sleep disorders.

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Appendix: Sleep position questionnaire

1. How old are you?
2. You are male female
3. You are unmarried married
4. Course of studies ____ Semesters
5. How long are you and your partner in a relationship already?
6. Do you live together?
7. During the semester; How often do you and your partner meet on average per week?
8. During the semester; How many nights to you and your partner spend together on average per week?
9. Which of the following illustrations matches the most common/frequent position (at sleep onset) in your relationship?



g) other position (Please describe the position): _____

10. How often do you fall asleep in this – the most frequent – position? (Please state in percent)
 _____ %

11. Which of the illustrations occur in addition (please rank the positions with the matching percentage)?

- | | | | | | | | | |
|----|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|---|----|
| 1. | <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | <input type="radio"/> e | <input type="radio"/> f | (| %) |
| 2. | <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | <input type="radio"/> e | <input type="radio"/> f | (| %) |
| 3. | <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | <input type="radio"/> e | <input type="radio"/> f | (| %) |
| 4. | <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | <input type="radio"/> e | <input type="radio"/> f | (| %) |
| 5. | <input type="radio"/> a | <input type="radio"/> b | <input type="radio"/> c | <input type="radio"/> d | <input type="radio"/> e | <input type="radio"/> f | (| %) |

Frequency of sport dreams and dreams about politics: An online study

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Summary. Many recent studies supported the continuity hypothesis of dreaming which suggests that dream content reflects waking life experiences. This study investigated factors that affect the frequency of sport and politics dreams. The online survey (N=2929 German speaking participants) showed a prevalence of about 6% sport dreams and 4% politics dreams. Results indicated that younger and male participants dreamed more often about sport and politics. Furthermore, higher education was positively correlated with a higher frequency of politics dreams. Moreover, a positive correlation between lucid dream recall frequency and sport dreams was found. Further research is needed to corroborate the present findings using dream diaries to minimize the bias of the retrospective estimates. In addition, the political and sport-related activities of the participants during the day should be assessed in order to correlate waking variables with frequencies of the dream topics directly. These studies might help to further understand the continuity between dream content and waking life experiences.

Keywords: Sport dreams, dreams about politics, lucid dreams, dream recall frequency, attitude toward dreams, continuity hypothesis

1. Introduction

Previous studies have shown that daily waking life events are mirrored in the contents of dreams (Schredl, 2003). This relation is defined by the so-called “continuity hypothesis” which was first named in its general form by Hall and Nordby (1972). One study (Schredl & Hofmann, 2003) showed, for example, that the frequency of dreaming of driving reflects the amount of car driving in waking life. In addition, there was a close connection between daytime mood and emotional tone while dreaming (Schredl & Reinhard, 2009-2010). The continuity between waking and dreaming has been demonstrated in many areas (Schredl, 2012) and, thus, should also be valid for themes like sports and politics.

In accordance with the continuity hypothesis, studies measuring the frequency of sport dreams reveal that sport students have more dreams of sport than psychology students (Erlacher & Schredl, 2004; Schredl & Erlacher, 2008). In a dream diary study, 38% of the dream content of sport students refer to sporting activities compared to only 14% in the dreams of psychology students (Erlacher & Schredl, 2004). Using a retrospective estimate for the frequency of sport dreams, the overall frequencies were lower but showed a comparable difference (Schredl & Erlacher, 2008): 17.30% in sport students compared to 4.49% in psychology students. Furthermore, German athletes reported that 23.7% of recalled dreams were sport dreams

(Erlacher & Schredl, 2010). Time spent doing sports in waking life correlated positively with the frequency of sport dreams (Erlacher & Schredl, 2010; Schredl & Erlacher, 2008). A survey in German athletes (Erlacher, Strumbys & Schredl, 2012) showed that 9% used lucid dreaming for practicing sport skills. For future research it would be of great interest to estimate the frequency of sport-related dreams in the general population.

A study by Kern et al. (2014) showed that 11.72% of the dreams of politics students are dreams about politics, compared to a frequency of only 6.71% in psychology students. These results support the continuity hypothesis as well since politics students spent more time with political topics in waking life than psychology students. Once again it would be interesting to know the frequency of politics dreams not only in specific groups of students but also in the general population.

The present study aims to determine the frequency of sport and politics dreams in a population-based sample. In addition, the effects of socio-demographic factors such as gender, age and education were studied – controlling for possible confounders like dream recall frequency and attitude towards dreams. It was expected that the effect of age and gender are comparable to age and gender effects on these domains in waking life and, thus, supporting the continuity hypothesis of dreaming. We also studied the relationship between sport dreams, lucid dream recall frequency, and overall emotional tone of dreams.

2. Method

2.1. Research Instrument

Several items of the MADRE Questionnaire (Schredl, Berres, Klingauf, Schellhaas, & Göritz, 2014) have been used as the basis for the present study. The participants had to estimate

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their dream recall frequency on a seven-point scale (coded as 0 = never, 1 = less than once a month, 2 = about once a month, 3 = about 2 to 3 times a month, 4 = about once a week, 5 = several times a week, 6 = almost every morning) with a high retest reliability ($r = .756$; Schredl et al., 2014) and their lucid dreaming frequency on an eight-point scale (coded as 0 = never, 1 = less than once a year, 2 = about once a year, 3 = about two to four times a year, 4 = about once a month, 5 = two to three times a month, 6 = about once a week, 7 = several times a week) with a retest reliability of $r = .89$ (Stumbrys, Erlacher, & Schredl, 2013). The definition of lucid dreaming included in the questionnaire was as follows: "In a lucid dream, one is aware that one is dreaming during the dream. Thus it is possible to wake up deliberately, to influence the action of the dream actively, or to observe the course of the dream passively". The overall emotional tone of the dreams was measured by a five-point scale (-2 = very negative, -1 = somewhat negative, 0 = neutral, +1 = somewhat positive, +2 = very positive); the retest reliability was $r = .617$ (Schredl et al., 2014). The general attitude towards dreams was measured by six items (Schredl et al., 2014). All of them have a five-point format, e.g., "I think that dreams are meaningful" (0 = not at all, 1 = not that much, 2 = partly, 3 = somewhat, 4 = totally) with high internal consistency ($r = .910$) and high retest reliability ($r = .842$; Schredl et al., 2014).

The participants were asked to estimate the percentage of their recalled dreams that had political or sport content. The following definitions of political and sport dreams were given: Politics dreams are defined as "dreams with social and/ or political content, for example, when politicians discuss and review social questions such as integration or global problems. The dreamer can be the actor as well as an observer. It is also adequate, if the dream's setting is political.", and sport dreams as "every way of direct or indirect activity with a sportive topic, that means sporting activity as well as informing and discussing about sport events". No time interval was given. The two-week retest reliability of the subjective estimated frequency of politics dreams was $r = 0.612$ ($N = 2274$) and the two-week retest reliability of the subjective estimated frequency of sport dreams was $r = 0.559$ ($N = 2280$); unpublished data.

2.2. Procedure and participants

The link for the study was posted on the online panel www.wisopanel.net from April 18th, 2014 to April 29th, 2014. In this panel, German speaking persons who are interested in online studies and having heterogenic demographic backgrounds are registered. For some studies they receive a reward such as money. However, participating in this study was voluntary and unpaid. In total, 2929 persons participated in the study (1742 women, 1187 men) with the mean age of 45.88 ± 14.38 years. Evaluating the question regarding education showed that $N = 25$ participants did not finish school, $N = 314$ went to school for 9 years ("Hauptschule"), $N = 848$ for 10 years ("Mittlere Reife"), $N = 829$ for 12 - 13 years ("(Fach-)Hochschulreife"), $N = 839$ for 16 - 18 years ("(Fach)Hochschulstudium") and $N = 74$ participants had a doctoral degree.

The SAS 9.4 software package for Windows was used for statistical evaluation. To analyze the predictors that effect dream variables ordinal regressions (cumulative logit analyses) were used.

3. Results

Overall, the averaged sport dream percentage was $5.94\% \pm 12.90\%$ ($N = 2901$) and $4.11\% \pm 10.22\%$ ($N = 2902$) was the percentage political dreams. As can be seen in Table 1, different categories were used because the data were not normally distributed. About 80% of the participants dreamed never or very seldom of politics or sport. However, a small group of people reported that 40% and more of their dreams have politics or sport content. The mean dream recall frequency was 3.57 ± 1.77 , which means that dreams are remembered between 2 to 3 times a month and once every week. The mean lucid dream frequency on the eight-point scale was 2.01 ± 2.08 . The mean general tone of dreams (scale ranging from -2 to +2) was neutral (0.04 ± 0.83). The mean value of the 6-item attitude towards dreams scale is 2.48 ± 0.92 .

Age, gender, dream recall frequency, lucid dream frequency, and general tone towards dreams affected the frequency of sport dreams (see Table 2). The ordinal regression showed a $R^2 = 0.134$. Young and male participants dreamed more often of sports. The general tone towards dreams significantly influenced the frequency of sport dreams: Participants with a positive tone towards dreams dreamed more often about sports as well as participants with a positive attitude towards dreams. Lastly, the lucid dream frequency and dream recall frequency correlated with the frequency of sport dreams. The more often a person can recall lucid dreams and dreams in general, the more they dream of sports.

The results regarding the factors that influence political dream frequency were similar as for sport dreams (see Table 2). The explained variance of the ordinal regression was $R^2 = .0930$. Interestingly, in contrast to the effect on sport dreams education had a highly significant influence on the percentage of political dreams: The more educated the participants were, the more they dreamed of politics. The general tone factor did not correlate with the frequency of political dreams.

As it can be seen in Table 3, lucid dream frequency correlated positively with the frequency of sport dreams. The effects of the other variables on sport dream percentage were not altered by introduction lucid dream frequency into the regression analysis.

Table 1. Percentage of sport dreams ($N=2901$) and dreams about politics ($N=2902$)

Category	Sport dreams		Dreams about politics	
	N =	Percent	N =	Percent
0 %	1668	57.50%	1924	66.30%
0.01% - 5%	577	19.89%	471	16.23%
5.01% - 10%	286	9.89%	232	7.99%
10.01% - 20%	149	5.14%	151	5.20%
20.01% - 40%	128	4.41%	76	2.26%
40.01% - 100%	93	3.21%	48	1.65%

Table 2. Ordinal regression analysis for the categorized sport dreams variable (N=2901) and the categorized dreams about politics variable (N=2902)

Variable	Sport dreams			Dreams about Politics		
	β	χ^2	p	β	χ^2	p
Age	-.2491	130.5	<.0001	-.1133	25.1	<.0001
Gender	-.1587	54.8	<.0001	-.1419	39.0	<.0001
Education	.0055	0.1	.7934	.0765	11.8	.0006
Dream recall frequency	.2358	100.2	<.0001	.2665	107.9	<.0001
Overall emotional tone	.1049	25.7	<.0001	-.0222	1.0	.3068
Attitude toward dreams	.0501	4.6	.0314	0.995	15.8	<.0001

β = Standardized estimates

4. Discussion

The present study showed that 6% of the participant's dreams were sport dreams; this is comparable to previous studies (Kern et al., 2014; Schredl & Erlacher, 2008) ranging from about 5% to 10% sport dreams. Referring to our result of 4% of dreams about politics, the study of Kern et al. (2014) showed a similar frequency of 6.7% in psychology students. The frequency of political and sport dreams declined with age and men reported more dreams of politics and sports. Moreover, higher education was associated with more dreams about politics.

One has to keep in mind that the present sample is – despite its large range in age and education – not representative as high dream recallers are slightly overrepresented (Schredl et al., 2014), i.e., there was a self-selection regarding dream recall but not particularly regarding the topic of sports and politics. As dream recall frequency is related to the percentage of sport dreams and dreams about politics, the percentages might be somewhat lower in representative samples.

The percentage of sport dreams found in the present study using retrospective estimates is smaller compared with the diary study findings of Erlacher and Schredl (2004) of about 14% of those dreams in psychology students. This difference might be explained by a recall bias in the retrospective measure, i.e., forgetting some incidences of sport dreams. This underestimation of retrospective measures has been demonstrated for other dream-related variables by Zunker et al. (2015). In addition, the positive correlations between dream recall frequency and sport (as well as politics dreams) also support the recall bias hypothesis as low dream recallers might forget their sport dreams more easily. On the other hand, the difference in sport dreams of sport students and psychology students was of comparable magnitude, irrespective of using diaries (Erlacher & Schredl, 2004) or retrospective measures (Schredl & Erlacher, 2008), i.e., the retrospective measure is a reliable and valid measure for determining influencing factors despite the overall underestimation. For future studies, it would be very interesting to use diaries in a larger, more diverse sample to assess sport dream frequencies.

The gender difference regarding sport dreams can be explained by the continuity hypothesis which states that waking life events are mirrored in dreams (cf. Schredl, 2003)

as Taniguchi and Shupe (2014) found a significant gender difference: 19.0% of men participated in sports (average of 1.8 hours per day) compared to only 15.3% of women participating in sports (average of 1.2 hours per day). Asking 30292 Participants (16873 women, 13419 men), Apostolou (2015) found that younger persons engage in sports more frequently than older people and, thus, the negative correlation between age and sport dreams might also be explained by the continuity hypothesis.

Similar to music dreams (Schredl, Berres, Klingauf, Schellhaas, & Göritz, 2015), the frequency of sport dreams were associated with a more positive overall emotional tone of dreams. This would also fit into the continuity hypothesis as practicing sports is generally experienced as more positive than negative (Lavega, Alonso, Etxebeste, Lagardera, & March, 2014).

Our result that lucid dream recall correlated with sport dreams fits in with the study by Erlacher, Stumbrys, and Schredl (2011-2012) as German athletes reported a higher percentage of lucid dreams compared to the general population (14.5% vs. 7.5%). This increased incidence of lucid

Table 3. Ordinal regression analysis for the categorized sport dream percentage variable (N = 2901)

Variable	Sport dreams		
	β	χ^2	p
Age	-.2451	126.2	<.0001
Gender	-.1555	52.4	<.0001
Education	.0027	0.0	.8978
Dream recall frequency	.2003	66.0	<.0001
Overall emotional tone	.1065	26.4	<.0001
Attitude toward dreams	.0353	2.2	.1340
Lucid dream frequency	.1079	24.7	<.0001

β = Standardized estimates

dreaming and sports might be explained by the fact that some athletes practice sport during lucid dreaming and have the impression that this enhances their skills in waking life (Erlacher et al., 2011-2012).

Regarding the result that men dream more often about politics, a study by Verba, Burns, and Schlozman (1997) showed that women are less politically interested, informed, and efficacious and, again, the gender difference in dreams parallels the gender difference in waking life.

Di Gennaro and Dutton (2006) investigated the political participation in the UK with a peak in the age group 35 to 54 years (for example: contacting politicians online, getting political information online, offline political participation, etc.) and that after the age of 55 years political participation was declining. This would explain the decrease in frequency of dreams about politics with age in the present sample (mean age: 45.88 years) – based on the continuity hypothesis of dreaming.

The continuity hypothesis is also able to explain the result that more educated participants dreamed more often about politics as Kam and Palmer (2008) showed that education and political participation correlated positively. For example, about 80% of college graduates engaged themselves in collecting signatures for petitions compared to only about 60% without college graduation (Gisart, 2016). Gisart (2016) also showed that younger persons participated less often in political meetings than older persons (32% vs. 23%).

To summarize, age, gender, education, lucid dream frequency, and general attitude towards dreams affected the frequency of sport and political dreams and, thus, the findings were congruent with the continuity hypothesis as comparable effects were found for sports and politics in waking life. Further research is needed to corroborate the present findings, using dream diaries to minimize the bias of the retrospective estimates. In order to correlate waking variables with frequencies of dream topics directly, it would be necessary to assess the political and sport-related activities of the participants during the day. These studies might help to elucidate the continuity between dream content and waking life experiences.

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Applications of lucid dreams and their effects on the mood upon awakening

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Summary. In lucid dreams the dreamers are aware that they are dreaming and can use this state for a variety of different purposes. In an online survey, 528 respondents, of whom 386 were lucid dreamers, were asked how often have they used different applications of lucid dreams lately and how did this influence their mood upon awakening. According to the reports, wish fulfilment was the most frequent application, followed by solving waking problems, overcoming fears/nightmares, spiritual experiences, physical/mental healing, and training motor skills, with meditation being the least popular application. Younger participants, as well as men, were more likely to engage in wish fulfilment, whereas older and more experienced lucid dreamers more used their lucid dreams for inner work (solving waking problems, physical/mental healing, meditation). Women were more likely to use their lucid dreams for overcoming fears/nightmares and healing. All applications influenced mood upon awakening positively to neutrally, with the most positive moods being after wish fulfilment, which helps to elucidate why it is the most popular application of lucid dreams. Future longitudinal studies should examine long-term effects of different lucid dream applications.

Keywords: Lucid dreaming; applications; wish fulfilment; nightmare treatment; motor learning; problem solving; spirituality; meditation; healing

1. Introduction

A lucid dream is a dream in which the dreamer is aware that he or she is dreaming and often can influence the dream content (LaBerge, 1985). Although lucid dreaming is considered to be a rare ability, a recent meta-analysis of lucid dream prevalence and frequency shows that 55% of population have experienced lucid dreaming at least once in their lifetime and 23% experience it regularly (once a month or more frequently) (Saunders, Roe, Smith, & Clegg, 2016). It is a learnable ability (cf. LaBerge, 1980) and a variety of different techniques have been suggested for lucid dream induction (Stumbrys, Erlacher, Schädlich, & Schredl, 2012).

While lucid dreamers in their lucid dreams most often seek pleasurable activities such as flying or sex (Stumbrys, Erlacher, Johnson, & Schredl, 2014), a number of practical applications for lucid dreams have been suggested (LaBerge & Rheingold, 1990). According to several case reports and a pilot study, lucid dreams can be successfully applied for nightmare treatment (e.g. Brylowski, 1990; Spoomaker & van den Bout, 2006; Spoomaker, van den Bout, & Meijer, 2003; Zadra & Pihl, 1997), helping to reduce nightmare frequency and intensity. Lucid dreams can also be used for rehearsing motor skills and research supports that such practice is effective in improving subsequent performance in wakefulness (Erlacher & Schredl, 2010; Stumbrys, Erlacher, & Schredl, 2016). Further, some studies indicate that lucid dreams can be successfully applied for creative problem

solving (Stumbrys & Daniels, 2010) or seeking spiritual experiences (Bogzaran, 1990; Esser, 2014). Moreover, according to some anecdotal and tentative evidence, lucid dreaming may be applied for physical and mental healing (e.g. Kellogg, 1989; LaBerge & Rheingold, 1990; Tholey, 1988; Waggoner, 2009; Zappaterra, Jim, & Pangarkar, 2014). Finally, parallels between lucid dreaming and meditation have been observed (Gackenbach & Bosveld, 1990; Hunt & Ogilvie, 1988) and the lucid dream state has been used as a tool for deepening meditation practice in traditions such as Tibetan dream yoga (Norbu, 1992; Wangyal, 1998).

However, the extent to which lucid dreamers use their lucid dreams for various practical purposes has not been extensively studied. A survey of German athletes showed that only 9% of athletes with lucid dream experience used such dreams for their sports practice (Erlacher, Stumbrys, & Schredl, 2011-2012). In another survey of 301 lucid dreamers (Schädlich & Erlacher, 2012), 81% of the respondents indicated that they have used their lucid dreams at least once for having fun, 64% used lucid dreams for changing nightmares, while other applications – problem solving (30%), creativity (28%) and practicing skills (21%) were less frequent. Yet other applications such as healing or seeking spiritual experiences were not explored and it remains uncertain *how often* the different applications are used.

The aim of the present study was to investigate how often lucid dreamers use their lucid dreams for different purposes and what is the effect of different applications on the mood upon awakening, as well as to examine possible underlying factors (age, gender, lucid dream frequency).

2. Method

2.1. Participants

Five hundred twenty eight participants (290 men and 238 women) completed an online questionnaire. Their ages ranged from 11 to 67 years, with the mean age of

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26.4 ± 10.6 years. There were 161 working professionals, 152 students, 125 schoolchildren, 34 in vocational training, 8 housewives/-husbands, 4 retired, 20 unemployed and 5 at military or civilian service (18 participants marked "other occupation" and 1 participant did not provide information).

2.2. Materials

In addition to biographical data (age, gender, occupation), the questionnaire included items about lucid dreams, their applications and effects on the waking mood. The participants were asked to estimate their lucid dream frequency on an eight-point scale (0 – never; 1 – less than once a year; 2 – about once a year; 3 – about 2 to 4 times a year; 4 – about once a month; 5 – about 2 to 3 times a month; 6 – about once a week; 7 – several times a week). Re-test reliability for the scale was found to be high ($r=.89$; $p<.001$; $N=93$; Stumbrys, Erlacher, & Schredl, 2013). In order to obtain units in frequency per month, the scale was recoded using the class means: 0 → 0, 1 → 0.042, 2 → 0.083, 3 → 0.25, 4 → 1.0, 5 → 2.5, 6 → 4.0, 7 → 18.0. To ensure a clear understanding of lucid dreaming, a short definition was provided: "In a lucid dream, one is aware that one is dreaming during the dream. Thus it is possible to wake up deliberately, or to influence the action of the dream actively, or to observe the course of the dream passively".

Further, those participants who had lucid dreams were asked to indicate (in percentages, summing up to 100%) for what purpose have they used their lucid dreams recently. Seven categories were provided (as well as one additional open-ended where other applications could be specified): (1) wish fulfilment (e.g. flying, dancing, laughing, having sex); (2) training motor skills (e.g. practicing sports or playing a musical instrument); (3) solving waking problems (e.g. asking dream characters for advice); (4) overcoming fears or nightmares (e.g. confronting frightening dream characters); (5) for spiritual experiences (e.g. feeling at one with the environment); (6) meditating (e.g. applying certain meditation techniques); (7) alleviating or healing physical or mental problems (e.g. relieving physical pain, handling grief). For all the categories, the participants were asked to specify how did that particular application influence their mood upon awakening from the lucid dream on a five-point scale (1 – very positive; 2 – positive; 3 – neutral; 4 – negative; 5 – very negative).

2.3. Procedure

The study was conducted in German. The online questionnaire was posted on the German website on lucid dreaming <http://www.klartraum.de> between August 22, 2007, and January 8, 2008. The newsletter with an explicit reference to the study was sent by email to approx. 1500 registered users of the website. The survey was anonymous, however participants were asked to provide their email address in order to minimize the risk of multiple responses to the questionnaire. To answer the questionnaire, the participants had as much time as they needed.

2.4. Statistical analysis

SPSS (Version 17) was used for statistical analysis. For each lucid dream application (e.g. wish fulfilment) a logistic regression analysis with the frequency of the lucid dream application as the dependent variable was calculated to inves-

tigate possible influencing factors of age, gender and lucid dream frequency as independent variables.

3. Results

Three hundred eighty-six respondents (73.1%) reported that they had at least one lucid dream. Two hundred sixty-three respondents (49.8%) had at least one lucid dream per month and following Snyder and Gackenbach (1988) can be classified as frequent lucid dreamers. In average, the participants estimated to recall 3.95 ± 5.94 lucid dreams per month (whole sample: 2.93 ± 5.40, 521 responses).

Wish fulfilment was the most popular application of lucid dreams, employed in over 40% of lucid dreams. The second most popular application was problem solving, followed by overcoming fears/nightmares and spiritual experiences, while meditation was the least popular (Table 1). Among other applications participants most often mentioned exploring the dream space (e.g. visiting unknown dreamscapes) and performing experiments in the dream (e.g. tasting, smelling things in dreams). According to the participants' reports, they also attempted to increase the number of lucid dreams, to increase the level of control in their lucid dreams and to stabilize the lucid dream. For all applications, the influence on mood upon awakening was positive/neutral, with most positive moods after wish fulfilment and most neutral moods after meditation (Table 1).

Regression analyses revealed several differences of lucid dream applications in relation to age, gender and lucid dream frequency. Younger participants were more likely to use their lucid dreams for wish fulfilment, whereas older participants more employed their lucid dreams for solving waking problems, meditation and physical/mental healing (Table 2). Men were more likely to use lucid dreams for wish fulfilment and meditation, while women for overcoming fears/nightmares and physical/mental healing. More frequent lucid dreamers more often used their lucid dreams for solving waking problems, meditation and physical/mental healing and less for overcoming fears/nightmares (Table 2).

4. Discussion

This survey gathered data on lucid dream applications and their effects on the mood upon awakening. The most frequent application of lucid dreaming was wish fulfilment, especially for younger participants, while older participants and more frequent lucid dreamers were more likely to try other applications, such as solving waking problems, healing, meditation. Men more tended to use their lucid dreams for wish fulfilment and meditation, whereas women for overcoming fears/nightmares and healing. All applications influenced mood upon awakening more positively/neutrally, with most positive moods being after wish fulfilment.

Before discussing the findings, some limitations of the present study have to be acknowledged. The majority of the participants were lucid dreamers (73%) and half of them (50%) were frequent lucid dreamers. These proportions are much higher than in general population (55% and 23%, respectively, Saunders et al., 2016), but comparable to other online surveys of lucid dreamers (e.g. Stumbrys et al., 2014). Further, the participants were self-selected due to their interest in lucid dream research. Therefore the generalizations of these findings should be cautious. Furthermore, the data were collected via an online questionnaire, which

Table 1. Applications of lucid dreams and their effects on the mood upon awakening for a total of n = 357 respondents

	Application %			Effect on mood*		
	N	M	SD	N	M	SD
Wish fulfilment	297	42.8	33.7	290	1.8	0.8
Solving waking problems	205	14.5	19.7	200	1.9	0.8
Overcoming fears/nightmares	167	10.8	19.3	164	2.2	0.9
Spiritual experiences	153	8.1	14.8	153	2.1	0.9
Physical/mental healing	142	6.5	11.4	136	2.2	0.9
Training motor skills	110	4.2	9.7	109	2.3	0.7
Meditation	39	1.3	4.1	27	2.3	1.1
Other	94	12.0	25.4	89	1.8	0.8

Note. *1 – very positive; 2 – positive; 3 – neutral; 4 – negative; 5 – very negative

might have had some effect on the quality of the responses, although comparative analyses show that data gathered via the Internet are at least as good as data gathered via traditional methods and do not appear tainted by false responses (Gosling, Vazire, Srivastava, & John, 2004).

The finding that wish fulfilment is the most popular application of lucid dreams, supports the classical Freud's (1913) idea of dreams being a fulfilment of wishes, and is in line with previous studies which showed that most lucid dreamers use their lucid dreams for having fun (Schädlich & Erlacher, 2012) and that flying and sex are among the most popular actions planned for lucid dreams (Stumbrys et al., 2014). Two next popular categories – solving waking problems and overcoming fears/nightmares – resemble findings by Schädlich & Erlacher (2012), where changing nightmares and problem solving were also the second-third applications by popularity, and their effectiveness is backed by some preliminary research (e.g. Spoomaker & van den Bout, 2006; Stumbrys & Daniels, 2010). Spiritual experiences and physical/mental healing were not included in the previous research and while they seem to be somewhat less frequently used, their effects and phenomenology warrant

further research. Training motor skills appears to be rarely used application (cf. Erlacher et al., 2011-2012), although research supports the effectiveness of such training (Erlacher & Schredl, 2010; Stumbrys et al., 2016). Therefore perhaps more publicity is needed to flag up such potentials of lucid dreaming, especially in specific populations where this is most applicable (e.g. athletes, musicians). Meditation, while being the least popular application of lucid dreams, is nevertheless another interesting area that needs further investigation. Numerous studies showed positive effects of meditation on physical and psychological health and well-being (reviews: Arias, Steinberg, Banga, & Trestman, 2006; Goyal et al., 2014). According to Tibetan dream yoga, meditation practice carried out in the lucid dream state is even more effective than in the waking state (Norbu, 1992). Therefore it would be interesting to study the effects of meditation carried out while lucid dreaming and to compare their physiological and phenomenological aspects.

The age differences found regarding lucid dream applications – that younger lucid dreamers were more likely to seek wish fulfilment, while the older ones were more likely to engage into more serious applications (such as solving

Table 2. Regression analysis for lucid dream applications with age, gender and lucid dream (LD) frequency as independent variables

	Age	Gender	LD frequency
Wish fulfilment	$\beta=-0.25$; $t=-4.91^{***}$	$\beta=-0.11$; $t=-2.05^*$	$\beta=0.03$; $t=0.60$
Solving waking problems	$\beta=0.03$; $t=0.49$	$\beta=-0.03$; $t=-0.56$	$\beta=-0.05$; $t=-0.84$
Overcoming fears/nightmares	$\beta=0.29$; $t=5.70^{***}$	$\beta=0.05$; $t=0.95$	$\beta=0.11$; $t=2.13^*$
Spiritual experiences	$\beta=-0.02$; $t=-0.41$	$\beta=0.19$; $t=3.55^{***}$	$\beta=-0.11$; $t=-2.09^*$
Physical/mental healing	$\beta=0.06$; $t=1.16$	$\beta=0.01$; $t=0.22$	$\beta=-0.01$; $t=-0.14$
Training motor skills	$\beta=0.14$; $t=2.69^{**}$	$\beta=-0.16$; $t=-3.01^{**}$	$\beta=0.11$; $t=2.09^*$
Meditation	$\beta=0.11$; $t=2.00^*$	$\beta=0.11$; $t=2.12^*$	$\beta=0.13$; $t=2.43^*$
Other	$\beta=0.01$; $t=0.20$	$\beta=-0.06$; $t=-1.11$	$\beta=-0.10$; $t=-1.78$

Note. * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

waking problems, meditation, physical/mental healing) – are also in line with previous research, as well as gender differences that men were more likely to seek wish fulfillment while women to overcome nightmares (Schädlich & Erlacher, 2012). Generally, women have more nightmares than men (Schredl & Reinhard, 2011) and perhaps working with nightmares in lucid dreams may facilitate more general self-work with mental and physical healing in lucid dreams, in which, according to the present results, women are also more likely to engage. The finding that men were more likely to use their lucid dreams for meditation is somewhat unexpected, as generally women seem to engage in meditation more often than men (e.g. Barnes, Bloom, & Nahin, 2008). Similarly to older participants, more frequent lucid dreamers also tend to engage more into an inner work in their lucid dreams (i.e. solving waking problems, physical/mental healing, meditation), which is likely to reflect their growing maturity with the development of the lucid dream ability. On the other hand, they seem to be less using their lucid dreams for overcoming fears/nightmares, which perhaps may be considered as preliminary “shadow” work in Jungian terms (Jacobi, 1973) to be accomplished in the earlier stages of lucid dreaming (lucid dreams quite often originate from nightmares, see Stumbrys et al., 2014).

The effects on the waking mood for all applications were perceived as more positive or neutral. Wish fulfillment appears to lead to the most positive emotions upon awakening, which may explain why it is the most popular application of lucid dreams. Generally, lucid dreams contain more positive emotions than non-lucid dreams (Thomas, Pollak, & Kahan, 2015). The successful application of a lucid dream for a particular purpose may give a further boost of positive emotions, which will influence the mood after awakening (cf. Schredl & Reinhard, 2009).

Future studies should explore long-term effects of different lucid dream applications, for example, to see if wish fulfillment in lucid dreams leads to increases in overall daytime mood, whether solving waking problems or working with nightmares and fears in lucid dreams help to cope better with them while awake and to reduce related daytime distress. Further, if seeking physical/mental healing or spiritual experiences through lucid dreams can contribute to better physical, mental and spiritual health. To investigate this, longitudinal studies would be especially useful.

In conclusion, the present findings support the notion that lucid dreamers, especially the younger ones, most often use their lucid dreams for wish fulfillment. With the advancing age and more frequent lucid dream experience, lucid dreamers are more starting to use their lucid dreamers for inner work, such as solving waking problems, physical/mental healing and meditation. Meditation and training motor skills, however, were found to be the least frequently used lucid dream applications. Practical applications of lucid dreams have positive to neutral effects on the mood upon awakening. Among them, wish fulfillment gives the most positive boost on the waking mood, which elucidates why it is the most popular application of lucid dreams. Future longitudinal studies should examine long-term effects of different lucid dream applications.

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Dreams: The missing link in evolution

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Summary. Freud and Jung are the pillars of the modern scientific study of the mind. Their ideas are based upon diverse sources, ranging from mythic literature to the case studies of their individual patients. The work of those who came later, even when it veered away from that of these two pioneers, still took into account the theories they forged. Today, modern laboratory techniques and equipment have taken psychological research into new realms, even challenging our assumptions about the relationship between the psychological and the physiological realm. It is fitting at this time of new discoveries to reconsider the basic tenets that have been attributed to one idea in particular to which both Freud and Jung gave only a passing regard--the prognostic nature of dreams. The Theory of Relativity has undermined our assumptions regarding the nature of time, demolishing its primacy in the consideration of universal concepts, even forcing us to question the relationship between cause and effect. The dream, properly observed, is like the universe as seen by Einstein; it challenges our perception of the sequentiality of apparently determinative events. The ancients assumed that dreams foretold the future, but this prognostic aspect of the dream has been all but ignored in modern times. "Dreams: The Missing Link in Evolution" maintains that, along with the need for a deeper consideration of the hegemony of consciousness itself, the dream deserves scientific study and serious conjecture. The predictive nature of dreams is the keystone that crowns and supports the twin columns of conscious and unconscious thought. This study attempts not only to clarify this contention but, perhaps even more importantly, to show that such an idea ought not to surprise us.

Keywords: Precognitive dreams, Sigmund Freud, Carl Gustav Jung, Theory of Relativity

*Dreams and Sleep are an integral part of our being.
Since they are fully automated,
Why should the waking state be any different?*

1. Short History of the Theory of Evolution

There are two main camps in the theory of evolution. In one of them stand the *Theists*, in the other are gathered the *Objectivists* and *Materialists*. This division goes back a very long way and was never really bridged over the past 2000 plus years.

The pre-Socratic philosophers such as Anaximander and Empedocles proposed that one type of organism could possibly descend from another type. Some Roman thinkers adopted this view of evolution. The foremost of these was the poet *Lucretius* who published his perception of life evolving in his masterpiece "de rerum natura", 'on the nature of things'. (1)

In opposition to such materialist understanding stood Aristotle who firmly believed that all natural things, both sentient and insentient, were manifestations of different 'fixed forms', or 'eternal ideas'. (2)

In other words, he was convinced that all things in creation had an *intended* role to play in a divine and cosmic order. Aristotle's approach to nature was later adopted and variously modified by mediaeval Christianity. Aristotle himself did not insist that the manifest organisms were always

exact replicas of their metaphysical model, but could vary to some degree.

During the *Age of Enlightenment* Aristotle's manner of thinking lost credibility among the scientific fraternity. The view that there was a *divine plan* to creation was replaced by purely *mechanistic processes*, which applied to all things equally. Yet the abolition of God did not happen over night. Biologists like Carl Linnaeus, for instance, still regarded species as fixed in accordance with a divine plan.

Jean-Baptist Lamarck put forward the first evolutionary theory devoid of any divine intervention in 1809. (3) It envisaged spontaneous evolutionary transmutation (4) that continually produced simple forms of life. These were thought to be capable of transforming to ever-greater complexity. Part of this unfolding was their ability to *adapt to the environment*, a process that was later on dubbed 'Lamarckism'. (5) Ultimately it was Charles Darwin's theory of "natural selection" that eventually won the largest following among scientists.

Thomas Henry Huxley agreed with Darwin and also applied the theory to humans, providing strong evidence *that humans and apes shared a common ancestry*. Naturally, this disturbed the Theists sorely; after all it not only implied that humans no longer held a special place in creation, but above all that their creator God was being theorised into redundancy.

There is a consensus among the materialist biologists that instead of a divinity, the ancestors of all living beings were *self-replicating molecules*, dating back to 4 billion years. (6) It is thought that *highly energised chemistry* triggered such self-replication.

2. Lack of Proof and Feasibility

Such a view of life is hard to adopt, not only for Theists, but also for more discriminating minds. Indeed, this electrochemical perspective demands detailed and credible

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explanation of how a *purely mechanistic process* would be able to produce life from dead matter, life from insentient substance, from material that has not the slightest innate potential of transforming itself into a living substance. What such a transformative process demands of us is equal to believing in primitive magic.

It also disregards the laws of probability. It demands of us a belief that the shaking of a box filled with all the words Shakespeare ever wrote would culminate in his works verbatim, given sufficient time. Both human instinct and common sense are utterly against the feasibility of such a result. But then neither common sense nor instinct would be accepted as a scientific rebuttal of such mechanistic elucidation. What is needed is to show that there are facts and factors involved in the 'creation' of intelligence, factors which are often ignored or misunderstood by those who are inclined to go along with the magic of the Shakespearean box. One of these facts and factors is life itself, another is *intelligence*, another the question of the reality of time, while the most important one is *consciousness*.

3. So what is consciousness?

Ironically, consciousness is at once the most familiar and the most mysterious thing there is. A long time ago, I read in a book on psychology that it was easier to say what consciousness is *not* than what it is. At the time this struck me as the most succinct exposure of the problem consciousness poses.

In Western thought the modern concept of consciousness is frequently attributed to John Locke. In his essay of 1690, "Concerning Human Understanding", he defined consciousness as "the perception of what passes in man's own mind." (7)

The English word 'conscious' was derived from the Latin 'con scius' ('together' and 'to know'), which meant 'knowing with'. (8) Some other Latin texts contained the phrase 'conscius sibi' that meant 'knowing with oneself', implying 'sharing knowledge with oneself about something'. It intimated 'being conscious onto oneself'. Another, related Latin word in use in antiquity was 'con sentia', which for Descartes became the modern term for 'conscience'. (9)

Perhaps it was this very thinker that impacted the perception of consciousness with the greatest force. Descartes proposed that consciousness resides in the immaterial domain of thought, which contrasted with the realm of matter. Since his work was written in Latin, these two domains were respectively 'res cogitans' and 'res extensa', suggesting that they interacted in the brain. (10)

Although his work expounded his ideas with clarity, later philosophers were not satisfied with his model of the way body and mind worked together. Alternative models that sought to improve his own were quite diverse. They can be divided into two camps: that of the dualists and that of the monists.

The dualists were content with Descartes' division between matter and consciousness, but found it necessary to explain the interaction of these two elements with one another in a modified manner.

The monists, on the other hand, dispensed with the idea of two realms interacting with one another, proposing instead that there was only *one realm* of being where consciousness and matter were simply two aspects of the whole. It was not long before monism split into three types: 1. *Physicalism*, 2. *Idealism*, and 3. *Neutral Monism*.

Physicalism implies that mind is subtle *matter* organised in a particular way, *Idealism* maintains that only thought or experience truly exist with matter being merely an illusion, and *Neutral Monism* holds that both mind and matter are aspects of a whole which is other than either mind or matter. (11)

After Newton had elucidated his clockwork universe, attempts have been made to explain consciousness in terms of physical operations. The first of this school of thought with some influence was Julian Offray de La Mettrie. He expounded his ideas in "L'homme machine".

Neuroscientists like Gerald Edelman (12) and philosophers such as Daniel Dennett (13) envisaged consciousness to be neural exchange within the brain. Computer experts also are part of this dialogue of consciousness, seeking to explain it in terms of artificial intelligence.

Some theoretical physicists argue that experimentation with consciousness is outside the domain of classical physics, while some other theorists have put forward 'quantum mind' theories of consciousness. (14) Two such theorists are Stuart Hameroff and Roger Penrose. So far arguments in favour of QM elucidation of consciousness have remained largely unconvincing.

4. Problems of Other Minds

Many theorists believe that consciousness can only be EXPERIENCED and not viewed OBJECTIVELY. Since we can only have a *subjective* perspective on the matter, the question arises why most people believe that other people are also conscious, but rocks and trees, for instance, are not. (15) This predicament has been dubbed the "*problem of other minds*". (16) It has its most acute repercussions among people who believe that there could well be individuals such as zombies, who are physically indistinguishable from humans, yet would have no consciousness. (17) This issue is related to the question of artificial intelligence, whether or not computer driven robots were conscious.

5. Animal Consciousness

Descartes could be blamed for the mistreating of animals because it was he who proposed that animals were not conscious, which could imply that they have no feelings. Some philosophers, like Thomas Nagel, argued that to have certainty with regard to this question, we would have to be able to put ourselves into the mind of the animals themselves. (18)

Others, like Douglas Hofstadter, dismiss this argument as incoherent. (19) There are several physiologists and ethologists that argue in favour of animal consciousness. They point to their behaviours. Donald Griffin's book of 2001, "Animal Minds", reviews some of the evidence in favour of animal consciousness. (20)

On July 2012, a gathering of eminent scientists from different branches of neuroscience signed the '*Cambridge Declaration on Consciousness*': "We decided to reach a consensus and make a statement directed to the public that is not scientific. It's obvious to everyone in this room that animals have consciousness, but it is not obvious to the rest of the world. It is not obvious to the rest of the western world or the *Far East*. It is not obvious to society".

(21) "Convergent evidence indicates that non-human animals [...], including all mammals and birds, and other creatures, [...] have the necessary neural substrates of con-

sciousness and the capacity to exhibit intentional behaviours". (22)

6. Scientific Study

There is a simple reason why scientists have shunned consciousness as a research topic. It is the fact that consciousness is a *subjective experience*, which consequently cannot be studied by means of so-called *objective experimental means*. (23) Since 1980, however, an ever-growing number of neuroscientists and psychologists have banded together under the flag of 'Consciousness Studies', thus opening the floodgates for the publication of a stream of books (24) and journals. One example is 'Consciousness and Cognition, Frontiers in Consciousness Research'. (25) A good example of current scientific literature is Stuart Hameroff's theory on QM consciousness. He agrees with all students of the subject saying: "The nature of consciousness remains deeply mysterious and profoundly important, with existential, medical and SPIRITUAL implications". He then goes on to say, "We know what it is TO BE CONSCIOUS", and then poses the most crucial of all questions we humans can ask: "Who, or what, are 'we' who know such things"?

"The general assumption in modern science and philosophy", so he continues, "is that consciousness EMERGES from complex computations among neurons". And further on he expands this by saying: "On the other hand, spiritual and contemplative traditions, and some scientists and philosophers consider consciousness to be woven into the fabric of the universe INTRINSICALLY".

From this it is not difficult to infer that the two major campuses surface once again. And as in the case of neutral monism, Hameroff sees a way of bringing the two divergent views together. In his own words: "My research involves a theory of consciousness, which can BRIDGE these two approaches". The name he and his fellow researcher, Sir Roger Penrose, have given to this compromise is 'orchestrated OBJECTIVE reduction ('ORCH OR') It suggests that quantum vibrations in protein polymers called microtubules inside the BRAIN'S NEURONS...GENERATE CONSCIOUSNESS". He ends this theoretical summary, which I have cut short, by saying: "Consciousness is more like MUSIC than computation". (26)

7. Biological Function and Evolution

Even just a glance at this subject reveals that opinions abound as to when and where and with what in the biological unfolding consciousness EMERGED. Some theorise that it made its first appearance with the first humans, others with a somewhat broader view of the matter think that it appeared with the first mammals. Others still believe that it came into existence with mammals and birds, or with the first reptiles. The first animals with a nervous system also get a badge. In his book, "Animal Minds", Donald Griffin proposes a *gradual evolution* of consciousness. (27)

"As the steam-whistle, which accompanies the work of a locomotive engine is *without influence upon its machinery*", writes Huxley in 'On the

Hypothesis that Animals are Automata, and its History', so consciousness is a CAUSALLY INERT EFFECT on neural activity". (28)

William James objects to this by presenting an evolutionary argument for mind-brain interaction. Implied in it is that if the DEVELOPMENT of consciousness in evolution was

the result of natural selection, then it made good sense that consciousness has not only been influenced by neuronal processes, but also had a survival value. (29) Some philosophers argue that consciousness offered NO FUNCTIONAL ADVANTAGE in evolutionary processes. (30) This diversity of opinion on consciousness is surely the most graphic testimonial to the difficulties of this subject.

8. States of Consciousness

Some believe that there are some brain states during which consciousness appears to be absent. Those who believe that refer to DREAMLESS SLEEP, COMA and DEATH. There occur also various altered states of consciousness, some coming into effect naturally, and others being induced by drugs or hypnosis or brain damage. Of these the most widely accepted altered states are, of course, SLEEP and DREAMING.

There are also states of consciousness that are drug or alcohol induced. LSD, for instance, and mescaline, psilocybin and others produce major distortions of perception and hallucinations. Some users of such drugs believe they are of a *spiritual nature* akin to *mystical ecstasies*. While the mechanism of this kind of alteration is not well understood, it is thought that serotonin has an essential part to play. (31)

Some attempts have been made to study changes in yogis and individuals who practise different techniques of meditation. Changes of brainwaves have been observed and differences noted between relaxation and meditation. Results of such undertakings have been largely disputed. (32)

9. Stream of Consciousness

Generally it is thought that it was William James who popularised the notion that *human consciousness flowed like a stream*. He proposed this idea in his "Principles of Psychology" of 1890. He believed that the "stream of thought" was governed by five characteristics: "(1) Every thought tends to be part of a personal consciousness. (2) Within each personal consciousness thought is always changing. (3) Within each personal consciousness thought is sensibly continuous. (4) It always appears to deal with *objects independent of itself*. (5) It is interested in some parts of these objects to the exclusion of others". (33)

Some researchers maintain that his view is not unlike what Buddhist philosophy encapsulated in the term *Citta-santana*, which is usually translated as *mind-stream* or *mental continuum*. Unlike in western opinion, this stream of thought is considered to be a distraction that obscures the *changeless underlying reality*. (34)

Delving into the problem of mind-stream or stream of consciousness raises a question, which neither James nor the researchers of Buddhism have addressed: Is it consciousness that streams or is it the thoughts and sense impressions that form an apparent stream?

10. The Spiritual Approaches

To 'materialist' philosophers, the word *consciousness* signifies a relationship between the mind and the world; to writers of the Theist camp, this also includes a relationship between the mind and God. For them it implies a relationship between man and deeper truths considered to be fundamental to a worthwhile life.

The mystical psychiatrist Richard Maurice Buck distinguished between three types of consciousness: *Simple Consciousness*, awareness of the body, possessed by many animals; *Self Consciousness*, awareness of being aware, possessed only by humans; and *Cosmic Consciousness*, awareness of the life and order of the universe, possessed by humans who are enlightened. (35)

The most thorough account of the spiritual approach to consciousness may well be "*The Spiritual Approach of Consciousness*", by Ken Wilber.

It compares Western and Eastern ways of thinking about the mind. He sees the spectrum of consciousness stretching from ordinary awareness to awareness at a higher level. (36)

11. The Creation Myth

Creation myths are first and foremost oral traditions. Because of this, there are usually different versions of one and the same essential plot. Within all religious traditions they are held by many to be literal truth and thus considered to be SACRED WORDS. In the believers' view, a 'myth' is not a false narrative, but one that reveals otherwise inexpressible truths. The fact that the word 'myth' has tumbled from the most elevated place in humanity's thinking to the depravity of 'falsehoods' is the most graphic testimonial to the depreciation of the sacred words of religions. With many people of today these stories have largely been supplanted by secular plots in the belief that they tell the human story in a more detached and therefore scientific manner. Yet, some of the heated arguments among the creators of our new 'myths' seem to indicate that they are no less dear to them, than what were the old myths to their believers.

In the Middle East and the West, the most familiar creation story is the one recorded in the Bible. It asserts that there was a God whose word brought heaven and earth into being. To begin with the earth was formless and plunged in deep darkness with the spirit of God moving "upon the face of the waters". His command, "*Let there be light*", changed all that and gradually the world took on the form we know today, with plants stretching skyward and animals populating the earth. The crown of creation was mankind, represented by Adam and Eve.

According to one account they were made in the likeness of their Creator, both at the same time. (Genesis I: 27) According to a different version, Adam was created first from the dust of the earth and brought to life by God's breath, which made him a living being. Then he was put to sleep in order to have one of his ribs excised, after which it was transformed into his wife, Eve. (Genesis II: 21 & 22)

But there are also two accounts on creating the earth. In one of them (Genesis I: 2) "the spirit of God moved over the waters", in the other, there had been no rain for the plants to grow, but then rose "a mist from the earth and watered the whole ground". (Genesis II: 5-6)

S.H. Hooke explains these contradictory accounts by pointing to the fact that different writers were drawing from their own respective sources. One of these scribes was what he called the Priestly writer, the other, was a combination of Jahvist and the Elohist narrators. (37)

From this it must be clear that Genesis is not only a combined effort of scribes, but that it also was quite open to additions and amendments for a time. The contributors and editors drew from older and newer sources. The older one, the 'dry version', dates back to the time of desert dwelling,

the newer one from the captivity at well-watered Babylon. But in the main it seems that they relied mostly on Sumero-Babylonian narratives. The unmistakable parallels between the biblical version of the Flood and the version recounted in the myth of Gilgamesh are well known. They seem to point at a strong Sumero-Babylonian influence. Also Adam, the first man, got his name from 'Adamah', the first man of the Sumero-Babylonian tradition. (38)

"The idea of Adam's magic birth-giving rib came from the Sumerian childbirth-goddess, Nin-ti, 'Lady of the Rib'. Since 'ti' meant both 'rib' and 'life', she was also Lady of Life. She made infants' bones *in utero* from the mother's ribs, which is why biblical writers thought ribs possessed the *MAGIC of maternity*". (39)

Barbara Walker sees the myths of creation as a *symbolic view of birth*. The conditions before birth are much like those before the macrocosmic birth of the earth. The uterine environment is dark, liquid, and once birthing has begun, there is a stirring and churning before the *first light* appears. "Romans made the connection with birth quite clear: Juno Lucina was not only creatress, but also the Mother who brought 'light' to the eyes of the newborn".

She contends that the biblical '*Deep*' of the creation story, "was the Mother's womb, *tehom*, derived from Tiamat, the Babylonian name of the primal Goddess. In Egypt she was Temu, mother of the abysmal elements: Water, Darkness, Night, Eternity". (40)

Eliade and Charles Long, his colleague, classified the creation myths into five groups. They based their order on common motifs that appear time and again the world over. The five categories are: (41)

1. **Ex nihilo creation.** In this case creation is through thought, word, (mythos) DREAMS or even bodily secretions.
2. **Earth diver creation.** Here the diver, usually a bird or amphibian, is sent by the creator to plunge into the sea in order to haul up mud and sand to be used as the base for the newly created world.
3. **EMERGENCE myths.** Here the progenitors pass through a series of worlds and METAMORPHOSES until the present world is reached.
4. **Dismemberment myth.** It features a primordial being that is dismembered.
5. **Splitting or ordering myth.** In this narrative primordial unity is cracked like a cosmic egg or order is created in an existing chaos.

Raymond Van Over (42) notes six recurring narrative themes:

1. **Primeval abyss.** This is an infinite expanse of water or space.
2. **Originator Deity.** It is either an eternal entity within an abyss, or one that is awakened.
3. **Originator Deity.** It is poised over the abyss.
4. **Cosmic Egg or Embryo.**
5. **Originator Deity:** creating life through sound or word.
6. **Life generated:** from a corpse or dismembered parts of an originator Deity.

12. Hiranyagarbha

This Hindu myth undoubtedly belongs to Eliade's fifth category of creation myths: the splitting open of the COSMIC EGG, the PRIMORDIAL UNITY. Here Barbara Walker's prem-

ise that creation myths are 'cosmic projections' of natural processes like childbirth is vindicated.

Hiranyagarbha is a Sanskrit word that literally means 'golden egg'. The Hindus regard it as the 'universal germ' from which the universe sprang.

"After Mahapralaya, the great DISSOLUTION of the universe, there was DARKNESS everywhere. Everything was in a state of SLEEP. There was nothing, either moving or static. The Svayambhu, Self-manifested Being arose, which is a FORM BEYOND SENSES. It created the primordial WATERS first and established the SEED of CREATION into it. The seed turned into a golden WOMB, Hiranyagarbha. The Svayambhu entered the egg". Matsya Purana (2.25-30)

"A form beyond senses, the seed of creation" is more than reminiscent of what Leon Lederman, the particle physicist, penned in his book 'The God Particle':

"In the very beginning, there was a *void*, a curious form of vacuum, a nothingness containing no space, no time, no matter, no light, no sound. Yet the laws of nature were in place and this *curious vacuum* held *potential*. A story logically begins at the beginning, but this story is about the universe and unfortunately there are no data for the very beginnings--none, zero. We don't know anything about the universe until it reaches the mature age of a billion of a trillionth of a second. That is, some very short time after creation in the Big Bang. *When you read or hear anything about the birth of the universe, someone is making it up--we are in the realm of philosophy*. Only God knows what happened at the very beginning". (43)

The fact that Lederman named the germ of creation the 'God Particle' must tell us that he has at least one foot in the camp of the Theists. Indeed, in some way his theory, from what we can gather from this excerpt, looks like some kind of revision of Genesis I. Like the biblical text, which departs from the assumption that there was nothing manifest before the very beginning, which may be gathered from the fact that the formlessness of the earth, the void and the darkness upon the face of the deep are a description of the initial stages of the creative process, and not a condition before its unfolding.

In this respect Lederman's sequence of creation differs from the biblical one in as much as his 'vacuum' that might be seen as corresponding with the biblical 'void', existed before the Big Bang, while the 'void' of Genesis came into awareness once the creative process had begun. Disregarding this inversion of sequence the two creation stories look astonishingly alike. As I have said, Lederman's 'vacuum' seems to match the Bible's 'void', while his 'potential laws of nature' correspond squarely with the formlessness of the earth and the waters of Genesis.

While they may differ with regard to the sequence of the creative process, they both agree with one another in the perception that there was once a *very* beginning. This is in direct contrast with the Hiranyagarbha story, which clearly has a *new* beginning in mind after the dissolution of an older creation.

But perhaps what is more important is the fact that he admits that his theory is 'made up'. In other words, it appears to be much like the traditional creation stories whose originators knew nothing of western science. Another important point is that he acknowledges a Creator God, which reveals that despite his belief in a 'very beginning' there was something in the background that was enduring, some lasting '*form beyond the senses*', as is the case in the Hiran-

yagarbha story; an entity that was capable of bringing into existence a visible world, something like the Svayambhu, or an eternal God.

That being the case, the view that the 'Big Bang' was a first and unique event, must be at least, with regard to Lederman's thesis, called into question, if not abandoned.

In light of this, it is tempting to replace this kind of outlook, which seems to be quite common among physicists, with the Babylonian creation story to which Genesis is considerably indebted. Marduk, Babylon's chief deity, for instance, did not create the world from nothing, but formed the earth and the heavens from Tiamat, the obviously eternal goddess of the sea. In short he merely infused new *order* into the *chaos* of a pre-existing world. And it seems clear that all the various gods that participated in this *renewal* were simply representatives of the different aspects of a physical world that had gone through a Mahapralaya of one kind or another. Incidentally Marduk, according to the Babylonian Epic of Creation, after his conquest of Tiamat, makes man from *clay* mixed with the blood of the god Kingu. "In the Jahvist's source the blood of the god as the vital principle is replaced by the divine breath; Jahveh breathes into the nostrils 'breath of life'. This idea of the creation of man is also found in Egyptian mythology, where the god Chnum is depicted as forming the first man and woman on a potter's wheel". (44)

It must here be reiterated that Babylonian myth, like many others, was never mere philosophy or some kind of theory of creation, but was a manifesto of the priesthood's metaphysical outlook, which was made public and confirmed in their annual regeneration festival. Its text, a kind of credo, was recited every year on the fourth day of the ancient Babylonian New Year's festival. (45)

This doesn't mean that none of our forebears ever speculated upon creation. The Greek philosopher Heraclitus, for instance, had a firm view about the origin of the universe, a view that separated him from his contemporaries for whom he had little regard. He said, "*This universe, which is the same for all, has not been made by any god or man, but has always been, is, and will be an ever-living fire, kindling itself by regular measures and going out by regular measures*". (46)

Clearly, at first encounter, Heraclitus' universe does not fit into any of the creation categories enumerated either by Eliade or Van Over. We can appreciate why Heraclitus had no time for his fellow philosophers. Indeed, he seems to be utterly unique in as much as he sees no need for a god or any other creator figure. This must indicate that he regarded existence as something timeless, something that always was, is and will be.

It makes us wonder, though, if he asked of us to infer that matter was eternal? Matter, in other words, that merely changed its form and flowed on much like a river forever? It makes us also wonder what it might be that sustains this river of numberless stars and worlds? As we have a closer look at the word 'EXISTENCE', we realise that it implies that something is '*standing out*' from something else. This would imply that his eternal fire was an *expression* of something equally enduring as the fire, something no less eternal than the river of fire itself. If this was no god in his view, we must ask, what it might have been for him?

When we now refer to his writings under DK 22B1, it turns out that he did believe in a creative power after all. He called it LOGOS, which is Greek for WORD. So his view of the

universe comes after all under one of the creator categories, number 5 in Van Over's register. He says in the article quoted: "This Logos *holds always* but humans always prove unable to understand it, both before hearing it and when they have first heard it".

'Holds always' is a clear indication that it is an enduring entity, an eternal 'form beyond senses', as the Rigveda would put it. It means that Heraclitus, while not believing in a personal god or goddess, acknowledges an equivalent creative power. In short, for him the eternal fire is an EMANATION of the Logos, just as the Hiranyagarbha is an emanation of Svayambhu.

So his thesis concurs with both the Hindu and indeed Leon Lederman's perception of things. Put another way, Heraclitus was not unique, as he thought, but differed from his fellow philosophers and priests merely insofar as he preferred to speak of a creative word instead of a creator god. This abolition of a personal deity of possibly anthropomorphic Gestalt makes him nevertheless a Theist.

Babylon's creation story, of course, is clearly theistic where, as we have seen, the chief deity merely puts order to the chaos left over from a previous creation.

When we take an overview of all creation myths, we find that they all share the idea of an enduring presence behind all material manifestations.

Also, apart from Eliade's category 1) all creations are really re-creations, thus concurring with Heraclitus' universe that is an 'ever living fire, kindling itself by regular measures and going out by regular measures.' A similar picture is presented in Van Over's register.

As historian David Christian remarks, "Each beginning seems to presuppose an earlier beginning...Instead of meeting a single starting point, we encounter an INFINITY of them, each of which poses the same problem...There are no entirely satisfactory solutions to this problem". (47)

As I see it, this perpetual renewal of a disintegrated world, together with a presence of a creator force, is not really such a problem when we realise that the very word EXISTENCE presupposes two aspects of the material world: 1) An

invisible background entity, which presumably always was, and 2) its accompanying emanation. After all, this same principle can be found reflected in an inverted direction in the everyday world, where each and every object casts a shadow in the light. Equally, the principle of perpetual renewal is no less apparent in all life forms, which are born, unfold, deteriorate and eventually die only to resurface again in the generations that follow.

We will have to look at this relationship between matter and its apparently everlasting ground more specifically later on. For the time being we only need to keep in mind that MATTER appears to have an 'invisible' part to it; that it is not an absolute reality.

13. Biogenesis and Abiogenesis

In 1870, Huxley introduced the term *biogenesis* and its opposite, *abiogenesis*. Biogenesis refers to the theory that life, as we know it, arose from pre-existing living matter. Thus, this perception of the origin of life could be interpreted to agree with all those myths that tell of endless creations of new worlds from old ones that have in time disintegrated and plunged into chaos.

In contrast to this, abiogenesis refers to the theory that life can arise from non-living matter. So while the first hypothesis proposes that life, like Heraclitus' living fire, has never

had a first genesis, but was an infinite series of renewals and demises, the second hypothesis asserts that life could possibly have emerged from non-living matter; of one single creation as proposed by the Big Bang theorists.

Both theories have one aspect that is difficult to comprehend. With regard to abiogenesis I have already remarked how difficult it is to think that lifeless matter would somehow spring spontaneously to life. But it is also no less difficult to accept Heraclitus' principle of infinite regression, of an existence without origin. As I have just mentioned, he himself remarked in that context: "Humans always prove unable to understand it, both before hearing it and when they have first heard it".

It is not difficult to see that here too, the two camps of the Theists and the Materialists make their presence felt again. There may never be a resolution to this problem, if it is a problem. We are, after all, living in a dualistic world, a world whose very appearance utterly depends on opposites and on contrasts. Indeed, for a picture to appear, an artist has to destroy the unity of the 'primordial' canvas and put order into its design.

14. Panspermia

One of the theories of life from living matter is the panspermia hypothesis, which maintains that microscopic life carried by meteoroids, asteroids and similar bodies throughout the universe may have brought living matter to earth. Such a thesis quickly ends up in an infinite regression; the argument only hops from one universe to the other. The question of how life arose remains unresolved.

15. Miller-Urey Experiment

This is the classic *abiogenic* experiment. Stanley Miller undertook it in 1952 under the supervision of Harold Urey at the University of Chicago. (48)

This chemical experiment simulated the conditions of early earth, testing the possible chemical origin of life. It sought to test the hypothesis of Oparin and Haldane that early earth provided the best conditions for synthesising more complex organic compounds from simpler inorganic ones. The setup imitated the conditions of the archaic sea with overhead electrodes that simulated lightning, which was thought to induce the transformation of chemicals and gases to amino acids. Miller successfully produced over twenty different amino acids that naturally occur in life. The apparatus Miller constructed is now on display in the Denver Museum of Nature and Science. (49)

While this experiment was able to create the building blocks of life, it still awaits a builder and engineer who will recreate life from chemistry.

16. Proto Cells

Proto cells are self-organised, endogenously ordered, spherical collections of lipids. They are considered to be stepping stones toward the origin of life.

A central question in evolution is how simple proto cells first arose. As well as that it is vital to know how they differ in reproductive contribution to the next generation driving life's evolution. Although such cells have not yet been created in laboratories, the hope is that this will soon be within reach. (50)

In 2002 scientists confirmed that by adding *montmorillonite clay* to a solution of fatty acid micelles (lipid spheres), the clay sped up the rate of vesicles formation one hundred-fold. This means that this one mineral can get precursors (nucleotides) to assemble spontaneously into RNA and membrane precursors to assemble into membranes.

It seems quite curious that *clay* raised the hopes of some Abiogenesisists of reaching their aim of creating life from it, for by some quirky coincidence, if there is such a thing; this was the very stuff from which the first man was fashioned. As we have seen, the entry for 'Adam' in Barbara Walker's Encyclopedia states: "In pre-biblical myths, a creature formed by the Goddess of Earth from her own clay (Adamah)". (51)

17. Deep Sea Vent Hypothesis

Another such 'Adamic' coincidence happens to surface in the Deep Sea Vent Hypothesis. Michael Russell demonstrated that alkaline vents created an abiogenic proton motive force (PMF) chemiosmotic gradient. In it conditions for an abiogenic hatchery for life are apparently ideal. (52)

Once again, we have an abiogenic parallel to an ancient 'theist' myth as it were. In this case we are looking at Eliade's category 2) and Van Over's category 1). At first sight, we are inclined to say that the abiogenic search has nothing to do with the mythological narrative. But when we consider both the Deep Sea Vent and the mythological quest for 'mud of life' in the deep sea or primal abyss from a less literal point of view, they move closer together. Both the 'chemical quest', which is unashamedly physical, and the mythological drama can be viewed as symbolical for the greater quest of finding the roots of human existence, of the wherefore of the self, its ambience and autonomy.

18. Epiphenomenalism

There is precious little we can be sure of in this life, yet there are two things we can always rely on. The first is that we exist; the second is that this existence will surely end at one time or another.

That we will die one day we know from the history of life, from what happens in our environment. The other fact we know from personal experience. We don't have to argue that we are alive, we just know. It is self-evident. The basis of this knowing is consciousness. Indeed, without it there is neither a world for us, nor a self or the ego, which is Latin for 'I', me, my sense of being.

The 'Reader's Digest' dictionary, for instance, records these meanings of 'ego': "1) a person's sense of self-esteem or self-importance 2) Psychoanalysis: the part of the mind that is responsible for the interpretation of reality and the development of a sense of self".

Part of our sense of self is the conviction that we are autonomous beings, endowed with special intelligence that enables us to make choices. In fact in the current climate of humanity, the word 'choice' is almost like a clarion call implying that it is of prime importance.

Indeed, there is nothing people in general loathe more than servility. They treasure their freedom and the gift of free will. The latter is perhaps the signature 'tune' of society and is most likely the hottest topic in the realm of philosophy. There is a stream of books parading through history that evidence much futile disputation on free will in the field of philosophy. Or, as Chaucer had put it with so much wit and humour and perception:

*"But that which God's foreknowledge can foresee
Must needs occur, as certain men of learning
Have said. Ask any scholar of discerning;
He'll say the Schools are filled with altercation
On this vexed matter of predestination
Long bandied by a hundred thousand men". (53)*

Once again we are faced with two camps of belief. In one of them are the subscribers to the freedom of choice; in the other stand those who believe in predestination.

The conflict between free will and fate has never been resolved by philosophical argument, although there is abundant evidence against free will, such as the fact that our will is not always 'coming up trumps'. Perhaps more often than not there is some unforeseen intervention that works against our plans and intentions, so demonstrating that free will turns out to be nothing more than an initial feeling, one that in the end collapses in disappointment and ill will.

This is supported by the existence of slavery alone; but also by addiction to drugs, sex and alcohol. This is powerful evidence against our blind conviction that we do have free will. It may at times win the day. But this happens mostly in small matters, so giving our belief in free choice a battering in the end. Yet, despite untold defeats we cling to our sense of autonomy, to our acquired belief in freedom of choice.

Before the 1970s there had never been a scientific verification that would support either one view or the other. The first attempt to show experimentally that intention and control are questionable was made, I believe, by Huxley.

In 1874, he proposed that animals were *conscious automata*, believing that *psychical changes were collateral products of physical changes*. He regarded the stream of consciousness an *epiphenomenon*. He compared its mechanism with the bell of a clock that has no role in keeping the time. In short, for him consciousness had no role in determining behaviour. (54)

He supported his hypothesis by means of an experiment on frogs in which he performed a *lobotomy* on their brain. He observed that despite this operation, which disabled the frogs' capacity to *initiate actions*, they were able to swim once placed in water. He inferred from this that consciousness was not necessary for reflex actions.

On the basis of this he agreed with Descartes that conscious behaviour was determined alone by *physical mechanisms*. A study on a French soldier, who had sustained a gunshot wound in the Franco-Prussian War and consequently regularly entered a *trance-like state*, reinforced his conviction. In fact it gave him cause to include the human animal in his theory. Yet, when he stated that humans also enjoyed an *intelligent life*, he obviously meant to say that there was, after all, some difference between the human animal and the rest of the fauna. (55)

For some time behaviourists like Pavlov, Watson and Skinner believed in epiphenomenalism. In the 1960s scientific behaviourism came head to head with the cognitive revolution. Some of its participants, like Jerry Fodor, insisted on the efficacy of the mind and rejected epiphenomenalism.

There is convincing evidence in favour of some aspects of epiphenomenalism, which we will address at a later date. What I want to highlight here is that Huxley's explanation for the frog's ability to swim is wanting, since it is thought to be *solely dependent* on the *molecular change* in the brain. This will take us back once again to the shaking of the Shakespearean box of words. It would give the frog no chance of escaping a snake, for instance, since such a need is surely

not met with haphazard reflex action. Again this ignores the vital question of efficient governance. In short, it faces only half the problem of the wonders of intelligent behaviour.

19. Instinct

The kind of reflex action that might save a frog from his peril is what we know from instinctive behaviour of animals. It is based on an action pattern that is apparently integrated in the nervous system. It is not a learnt thing from adults of a species, but is there from birth. This kind of reflex would at least be an improvement on Huxley's unexplained mechanics of the '*molecular change in the brain*', since it contains predetermined life-saving behaviour.

One experiment that verifies this comes from the Netherlands. In 1951, the Dutch zoologist, Tinbergen, repeated another similar experiment with day-old chickens. Tinbergen used motherless turkey chicks a few days old; chicks, in other words, that had no chance of being schooled by a mother. He enclosed them in an open pen with a pole in the middle. On top of this pole was a rotatable arm with a wooden cross mounted to it that could be flown either backward or forward. When the cross was moved in a forward direction, thus resembling a hawk overhead, the chicks ran for shelter at once. When, on the other hand, the cross flew in a backward direction, the chicks took no notice at all and kept doing undisturbed what chickens do. (56)

Since such behaviour is not learnt from mothers, but is, as it were, part of the chicks' hard disk, it is difficult to say how it was acquired in the first place. A most ready answer, which however would be difficult to test experimentally, is, of course, that it must be an innate survival mechanism.

Whilst this might explain some of the *intelligent and automatic molecular changes* in the animal's brain, instinctive reflexes are no useful explanation for the *creative ability of animals*. Although instincts are useful in situations of danger from natural enemies, creativity presupposes an ability to come up with new ideas that are totally original.

20. Animal Creativity

For a long time science has had a poor opinion of animals. Occasionally it was reported that chimpanzees, and even birds, used a twig or a stick in order to get at food out of reach. The general public usually greeted such things with astonishment. There were, of course, always notable exceptions reported by owners of pets. It was common knowledge among them that their pet dog understood when it was time for a walk. They could read the signs and signals that came from their owners who might have put on their hat or a coat or different footwear. Also, dogs bringing the newspaper inside from the lawn was well-known. Cats too were given the credit of being 'knowing' because they sat patiently in front of the refrigerator, looking up at it, indicating that they expected a special treat.

Today, opinions of scientists are rapidly changing in favour of greater intelligence among animals. The National Geographic Magazine of March 2008 is a good example of this. It featured an article that explored the studies of many researchers who now are beginning to discover that animal intelligence is more than reflex, or even instinct.

Some primates have already made themselves at home in the realm of technology. Azy the orangutan has learnt to communicate through abstract symbols on a computer screen. He has shown that he can, like us, understand an-

other individual's perspective. Another is able to use lexigrams to communicate, so demonstrating that he understands English. In this context I recall a TV program that showed how a chimpanzee used his sign language to tell his carer that the biscuit he had been given was too hard. He signalled 'cookie rock', a word entirely of his own invention.

Such feats make it clear that he was capable of sign language creatively, not just parrot fashion. It is also becoming more and more apparent that our expressions like 'parrot fashion' or 'bird brain' are grave insults to the avian family. How much more perceptive was Francis of Assisi when he called the birds his sisters. I should mention here that some birds, especially parrots, have in their minute brains an amazing capacity for strategy. I have witnessed a case where a parrot outclassed his human competitors in the exasperating task of disentangling two twisted metal rings. The bird, with nothing more sophisticated than his beak and tongue 'on hand' for manipulation, solved the puzzle in 30 seconds flat, while his human adversaries were still non-plussed minutes later. His owner assured everyone that this 'bird brain' had employed strategy!

The underestimation of birds is gradually being whittled away. Australian scientists have now shown by means of DNA testing and ancient fossils of birds that birdsong and bird intelligence originated on the so-called 'Down-Under Continent'. While parrots may not always be the most musical, one species from the Cape York Peninsula, for instance, not only demonstrates an ability to make tools, but also displays great rhythmic talent. It selects a suitable piece of wood, fashions it to a stick and then drums with it in measured time. The same researchers estimate that the Australian parrots bristled with intelligence between ten and twenty millions of years before intelligent apes appeared. This not only turns ornithological orthodoxy on its head, but also dampens the vanity of Adam's descendants. (See ABC TV, Catalyst, Tuesday, 10 March 2015, "Where Birdsong Began")

Also he cited National Geographic Magazine article reports on an African grey parrot that counted, identified shapes and colours and understood the concept of 'same' and 'different'. It also told of two Caledonian crows that can solve problems and use tools. In one video report, crows dropped nuts on the road for cars to do the crushing for them. After a while they moved their dropping spot to the nearby pedestrian crossing. They realised that dropping the nuts there would allow them to enjoy the fruits of their invention away from danger. I should mention here that crows only rarely become road-kill; they know our traffic rules and trust them! But not only that. There is a video on Youtube showing a crow that adopted an abandoned kitten, pecking and scratching for the kitten's sustenance, caring for it just as a mother would. In fact, it not only fed it and played with it, but also taught it road safety! (57)

Elephants, of course, are proverbial for their memory. Scientists now confirm this and add to it that they also have a sense of *self-awareness*. In this context it is worth citing a video of the elephant Suda, who is capable of drawing the profile of herself with a brush in her trunk. In addition to this she is able to write her name and decorated her portrait with a tree with heart-shaped leaves.

The Egyptians had long recognised the super-sensitivity of cats. They elevated them to divine status in the Goddess Bast. An inscription in the Valley of the Kings says: "You

are the Great Cat, the avenger of the gods, and the judge of words, and the president of the sovereign chiefs and the governor of the Holy Circle; you are indeed the Great Cat". (58)

When we now recall the celebrated Therapy Cat Oscar in the Steere House Nursing and Rehabilitation Centre, Rhode Island, USA, who has the ability to predict the death of the institution's inmates, we are no longer surprised at the Egyptians' reverence for cats. This talent does not just equal that of human consciousness, but *surpasses* it.

The sense of prescience among animals is well known. During the 2004 Boxing Day Tsunami there were lots of reports circulating that various animals fled the coasts to be inundated before the waves were able to crash on land. Theories on this subject remain contentious and inconclusive. They revolve chiefly around the sensitivity of animals to detect minute vibrations in the ground coming from a distant earthquake. Some researchers believe the animals at Yala National Park, for instance, were able to detect the earthquake and move to higher ground long before the tsunami hit. The United States Geological Survey (USGS) officially states: "Changes in animal behaviour cannot be used to predict earthquakes. Even though there have been documented cases of unusual animal behaviour prior to earthquakes, a reproducible connection between a specific behaviour and the occurrence of an earthquake has not been made.

In light of Oscar's ability to predict an event that displays no apparent physical signs, we will have to look for answers on animals' predictive sensitivities in less physical realms.

21. Diminishing Differences

The more extensive and the deeper our understanding of animal behaviour gets, the more evident it becomes that Francis of Assisi was justified in perceiving the birds as his sisters. Indeed, it becomes evident with ever-greater certainty that all life is a brotherhood; that animals are, in essence, hardly different from humans with respect to intelligence and self-awareness.

Differences are only true with regard to the bodily forms that contain these gifts. As more and more evidence is published, it will become clearer and clearer that the inner life of humans and that of animals is principally the same. Animals, like humans, are pervaded with the same life force, the same class of consciousness, and the same sense of self. The ego of an animal is no less an 'ego' than our own. And just as cats have an inflated ego, while that of dogs is generally more restrained, people's egos vary from person to person. And just as animals have inborn reflexes and instincts, so do we humans.

22. A Private Universe

In the section "Problems of the Mind" I have said that many theorists in this field maintain that since consciousness can only be *experienced*, it cannot be *examined objectively*. It is opportune at this juncture to ask, "Is there anything at all that can be viewed objectively?" Or indeed, what do we really mean by an objective point of view? In discussions of serious matters we often use the phrase 'objectively viewed'. And just as often we gloss over the fact that this can't be done, for, the truth be known, only an object can have an 'objective' point of view. The self, on the other hand -the subject- can only be *subjective*. We generally forget or

ignore this fact and go on blithely asserting how objective we were in our assessment of this or that.

There are no two ways about it. We, or more accurately put, the self, is condemned to 'solitary confinement', looking through a peephole out into a world that is entirely his or hers. Once we, or more precisely, the self, realises this, the outside world suddenly becomes a *private show*, a kind of personal theatre on an utterly solipsistic stage. *The solid and so concrete world of old is suddenly no more than a waking dream*. It is still 'solid', not an illusion, however it has lost its independence, clinging to the self throughout the day, and disappearing regularly from existence when it, the self, has gone to sleep.

Surely this can't be, protests the self, surely the world still exists when I am catching 40 winks to leave it momentarily. Surely it must exist to other selves who are still awake. But alas, that is defective reasoning, for the claim that the world persists without the waking self is founded on a double premise. In short, we cannot be in two places at once; the self cannot have two points of view at one and the same time.

So where does that leave our precious objectivity, which for the legitimacy of scientific observation is utterly indispensable? Does it mean that all theory and experimentation so meticulously executed is null and void? Not quite, for theatre on a stage does not lose its effect on the spectator, although he or she knows that all has been scripted, that all is 'just a show'. Indeed, do Shakespeare's words lose their impact on our senses just because we know that his plays are all make-believe? That Romeo and Juliet don't truly die?

There is a balcony in Verona on which, so many believe, Juliet once stood exclaiming: "O Romeo, Romeo, wherefore art thou Romeo"? This is a spinoff effect from Shakespeare's play. In reality Juliet was never there. Yet today that balcony is a shrine for lovers from all over the world. When I was there, busloads of tourists arrived. One bus was filled with Chinese visitors. Many of the crowd paid good Euros to ascend to the balcony. Even more touched the breasts of a Juliet bronze statue that stood before the building, believing no doubt, that this would bring them happiness in their relationship. Such are the effects of words first spoken on a wooden stage in England hundreds of years ago.

Clearly, even though there is no truly objective world, it nevertheless is real to the self. So what is it that bestows an unassailable sense of reality upon a subjective world and even on a fictitious plot?

23. The Myth Revisited

When we looked at the different types of myths we saw that whatever type it might have been, there was always an *enduring presence* in the background from one creation to another. There was also the same kind of presence even in the case of a very first creation. For Heraclitus this presence was the Logos, for Lederman it was a *nothingness*, a *curious vacuum* containing the laws of nature, one that that held *potential*. (59)

For others still, it was a creator sending out a diver to collect primal matter from the bottom of an existing sea, or the progenitor mutating into the present world, or again, a primordial being dismembered, a cosmic egg being split, chaos ordered, an originator deity awakened, life generated from a corpse.

To me this signals that there is clearly an *enduring presence* in all of the myths, sacred or secular. A *force*, in other words, from which emerges the world by means of *creative* dismembered, spontaneous metamorphosis, splitting of an ovum ready to unfold, ordering chaos; quite generally a new awakening.

This is in stark contrast to the theory that matter metamorphosed of its own accord in an orderly manner from simple primal molecules into the complexity of countless life forms. True, fractal math can demonstrate this reiterative process, but the primal data is not a Shakespearean box of random facts, but a *formula* that allows for logical progression, a *formula* fed into the computer by a *presence* endowed with *intelligence*.

As we reflect on this, we suddenly recognise this mythical beast as something utterly familiar. We suddenly realise that this very drama is a daily reality, a natural sequence we take for granted, and because of it take no particular notice of its presence. It is the diurnal cycle of falling asleep and waking up! It is principally the same round of absorption and re-emergence as is evident in the world creation myths. Indeed, here too we encounter a presence that never vanishes, although we forget the world as we drop into the abyss of sleep. Our little self regularly re-emerges to greet a *new morning of creation*. And literally so, for as we have seen in the solipsistic argument, the world of the little self is utterly annihilated as sleep envelops it.

So what is this enduring presence that sustains the little self in the abeyance of the world, allowing it to encounter a new creation, a freshly kindled living fire, life's renewed unfolding?

24. Another Visit to Lederman

"In the very beginning, there was a *void*, a curious form of vacuum, a *nothingness* containing no space, no time, no matter, no light, no sound. Yet the laws of nature were in place and this *curious vacuum* held *potential*". (See 59)

When we examine this 'curious vacuum of nothingness that held potential', we see without difficulty that this primeval 'nothingness' was not really 'nothing'. It shows again how we use words habitually without ever reflecting on their true meaning. In this case Lederman's 'nothing' is clearly something. It is a case of unmanifest being; '*no thing*' in other words, or no think, both of which phrases stem from the same root, twins from one ovum.

This becomes clear at once when we recognise that it is thinking that gives birth to things; that without thought there are no things, no world, no self-awareness. This indubitably prompted Descartes to make that famous proclamation of: "Cogito, ergo sum"; I think, therefore I am.

Here we should also reflect on the matter of the thought process. Obviously thinking does not occur in a vacuum. It is dependent on consciousness. I am tempted here to create a Cartesian slogan: "*Consciousness is the mother of all thought*". Of course, this would invert the Cartesian epiphany radically. Some would even say 'pervert' it. But no, this is where many scientists are seduced into giving the substance precedence over the essence. Hameroff substantiates this when he says: "The general assumption in modern science and philosophy is that consciousness EMERGES from complex computations among neurons".

But he also said, "On the other hand, spiritual and contemplative traditions, and *some scientists* and philosophers,

consider consciousness to be woven into the fabric of the universe INTRINSICALLY".

If we rely on the consistency of nature, believing that there is one principle governing the universe and not a medley of different, contradictory 'laws', then we can confidently employ the smaller cycles of the creative process as model for the largest one. One of these small rounds of creation is the diurnal cycle of falling asleep and waking up. There it is clear that consciousness is the ground of the self's awareness, that without consciousness it could not exist. This is substantiated by the fact that during sleep the EEG records the presence of consciousness even when there are no dreams and therefore no thought. But even simple logic will show that consciousness is ever-present even when someone has been knocked out by a blow and now lies on the ground 'unconscious'. Unless this 'unconscious' individual has been killed, he or she will wake up again and so demonstrate that consciousness was uninterrupted. What would have been broken is not consciousness as such, but the flow of waking thought. Hameroff also remarked in this context, "Consciousness is more like MUSIC than computation". (See 26)

In some sense this is true, but not as Hameroff envisages it. Archaic music, for example, will serve as an analogy to the relationship between consciousness and the stream of thought. There the base is a steady drone over which the melody skips and dances, relating tonally to the drone. As is easy to see, the steady drone represents in this simile the ever-present consciousness while the melody stands for the varied stream of thought that floats on it, gliding along. While in the melody there might be pauses here and there, such is never the case with the drone.

There is further evidence that Hameroff's view of consciousness is defective. This is especially the case when he insists that it '*arises* from quantum vibrations, but also that it is being *erased* in the anaesthetic process'. (Ibid) He may well have meant that awareness of the body and the world was eclipsed as happens in deep sleep, but the fact that he described the situation in terms of *erased* consciousness betrays his fundamental thinking. It testifies again to the view that consciousness depends on matter instead of matter on consciousness.

Hameroff's inversion of the relationship between consciousness and matter is like saying the statue created the sculptor. It is for this reason that his model goes against the nature of things, against the processes we know so well from everyday experience.

Indeed, it is somewhat curious that scientists, when faced with the question of consciousness, never seem to wonder why exactly it is a mystery. They acknowledge the fact that it is a deep mystery but seem to miss the opportunity to delve into the root of it.

The first thing that has to be done to get to the bottom of a mystery is to ask why it is such. With regard to consciousness it is evident that there is nothing with which it can be compared. We can't say, "It is like this, or it is like that". But what we can say is that it is like nothing else. *Since everything in the world can be compared with something else, demonstrating that everything manifest is essentially on a par, we must infer that consciousness, being beyond comparison, is not only unique, but decidedly something utterly fundamental*. This substantiates itself when we focus on the fact that matter cannot be known without consciousness,

that matter depends for its existence on consciousness. The sculptor fashions the statue, not the other way round.

25. The Matter of Time

As previously mentioned, Lederman wrote, "A story logically begins at the beginning, but this story is about the universe and unfortunately there are no data for the very beginnings—none, zero. We don't know anything about the universe until it reaches the mature age of a *billion of a trillionth of a second*. That is, some very short time after creation in the Big Bang.

In view of what I have said about the solipsistic nature of our perspective in life, the Big Bang Theory is, as Lederman himself admits, 'something made up'. What also is 'made up' is time. By this I mean that it can't be an objective fact; it is a purely subjective matter. This does not however mean that there is no substance to it, but that our view of time is flawed.

The first test of the validity of this assertion is to question the duration twelve noon precisely. Is it an hour, a minute, a second, or a billionth of a trillionth of a second or even less? The short answer is: none of these. It is none of these because all propositions produce the end result of twelve noon *plus*. Noon plus is not noon precisely. The true answer is zero, 0. This seems at once absurd because it would mean that all clocks had no purpose in our life, that they all should forever rest their hands on midday and spare their energy of running round the clock face.

So what is wrong with this answer, or is it right and we misunderstand what zero implies? The latter, I am sure, and mathematicians know that. *Zero, 0, is very much related to the word nothing, which is not nothing, but something that is real, yet unmanifest. In fact, zero is the womb containing everything, the door to Lederman's hidden potential, the pregnant void.*

Indeed, from that zero spring all the other infinite numbers, both positive and negative. Clearly zero is the mother of all numbers, of infinity in fact, or more precisely, it is the sign for eternity, which contrasts with the prostrate eight, the sign for ad infinitum. Eternity distinguishes itself from infinity, which is an endless flow of numbers, while eternity does not flow, was not born or created, has no extension, yet contains all there is, was and will be.

Such a view concurs precisely with what Heraclitus said about the universe, "which is the same for all, has not been made by any god or man, but has always been, is, and will be an ever-living fire, kindling itself by regular measures and going out by regular measures".

So, in what way is our view of time flawed? Euclid said that the straight line was the shortest connection between two points in space. Let us now imagine that the realm of abstract thought represents eternity while the physical world stands for the realm of space and time, as we know it. In the world of abstract thought the two points and the line connecting them have no extension. They are just ideas in the Platonic sense, or in the spirit of Lederman's pregnant void, prototypes of all forms on earth and in the heavens.

When we now want to manifest the definition of the straight line on paper, for instance, the points in space become disks, and the line a ribbon, no matter how fine the tips of our pens may be. It is in this manner that our view of time is flawed, or more precisely that it is a falsification of the 'ideas' in the realm of abstraction, and ultimately those of eternity.

This illustrates the inadequacies of manifestation as compared with what is held in the pregnant void.

If we think about time further, we find that it is flawed in another way. We generally hold that it is tripartite, yet it's one in reality. It shows again that when eternity manifests ideas, the primeval unity is dismantled in the same way as the unity of the artist's canvas.

All this becomes evident when we realise that the past is not an independent fact, nor the future. Both are parasitical upon the present without which their existence makes no sense. In fact if we look at this false trio really closely, we see that there is only the present. For as soon as the future becomes the present it also becomes at once the past. It elevates the present into the position of the drone of music; it reveals it to be that enduring factor around which all creation revolves.

Again, we see how easily we are duped by the manifest world; that we can readily invert the relationship between matter and essence; that we can hold dear what is distorted and corrupt while denying the status of the present, the zero, the mother of all.

It exemplifies the falsity of matter being the primary factor in the creation of life. Equally it illustrates the mistaken view that consciousness is a secondary element in the germination of life. Unified time, where past and future are adjuncts instead of separate and independent facets, also makes it clear that it is consciousness that supports matter, and that *it needs of necessity to be unbroken; otherwise it could not be the ever-present ground of manifestation.*

Clearly consciousness is the *sine qua non of existence*. And as I have pointed out before, the word existence (Latin: *ex stare*) hints at the fact that it is an offspring of something else, that it *stands out from something primeval: consciousness.*

From this it follows that the enduring presence we have observed in our various creation myths is consciousness. So, seen from a mythological point of view, thought and word, creator and progenitor, primordial being and primeval abyss, originator deity and cosmic egg are all representatives of consciousness.

And even 'nihilo' is representative of consciousness since it is not 'nothing', but zero as the womb of everything.

26. An Australian Aboriginal Creation Myth

"All was darkness in a time before time. The land was bare apart from a pole that stretched from the ground to the heavens. At the base of the pole lay Ka-ro-ra in the thick night asleep. While all around him was deep black darkness, his dreams were as bright and colourful as the world is today. He was dreaming of Bandicoots, and that the creatures were coming out of his naval, his armpits, his nose and his mouth. Suddenly dawn arose and the country was flooded with light for the first time. Ka-ro-ra rose from where he had been sleeping. He had been sleeping for a long time and he was tired and hungry. He grabbed two Bandicoots and cooked them in the sun. After he had eaten, he realised that he was lonely. The sun covered itself with necklaces and sunk below the horizon. Ka-ro-ra went back to sleep. This time he dreamt of a Bullroarer, which appeared from his armpit. This turned into a young boy, whom he sang to life. By day father and son hunted for Bandicoots. By night they slept; the father dreamed of more and more sons..." (60)

I have cut this myth short, for what we learnt up to here is the crucial point I want to make at this stage: The story be-

gins with sleep and dreaming, preceding the waking experience. It reveals two things about creation and consciousness. It shows that consciousness, although essentially one, manifests in two-fold form and that the dream is the *precursor of, and a plan* for the waking world.

27. Biblical Tradition

This concurs with the ancients' understanding of the dream. The biblical Joseph is evidence of this; so is the hero of the Sumerian Gilgamesh saga. These two are the classical examples of the view of our forebears with respect to the relationship between dreaming and waking. In time the approach to dreams corrupted into medieval superstition. Later on, in the Age of Enlightenment, dreams were largely ignored and eventually their relationship with waking was reversed.

Freud, who actually woke the dream from its ancient slumber, was one of the advocates of this reversed relationship. He contended that the style of the biblical Joseph was unreliable because 'symbolic' dream interpreting "...inevitably breaks down when faced by dreams, which are not merely unintelligible but also confused". (61)

It is quite surprising that he went so drastically against the future direction of the dream, for he had learnt his interpretation technique from Artemidorus of Daldis, a Roman second century dream interpreter who transposed his analysis of the dream into the future tense for purposes of prediction. Freud followed all of Artemidorus' steps of analysis but the last, which is the traditional transposition into the future tense. Freud was proud of his scientific approach to dreams, believing that he was justified in dismissing the ancients' approach. He could not accept their belief that dreams were predictive. He said: "*And the value of dreams for giving us knowledge of the future? There is of course no question of that*". (62)

And just to make sure that we could not possibly misunderstand what he was saying here he added: "*It would be truer to say instead that they give us knowledge of the past. For dreams are derived from the past in every sense*". (See 62) Freud however, showed no evidence that he ever tested this assertion. In other words, he left no records, which would demonstrate that he had asked his patients if his interpretations were correct, or if they could have become manifest in the future one way or another. Yet Freud insisted that his approach to dream interpretation was 'scientific'.

28. Josephian Interpretation of the Dream

My own investigations into the practice of the biblical Joseph convinced me that his approach to prediction was perfectly viable. So let us look at the baker's dream and Joseph's interpretation: "...I also was in my dream and had three white baskets on my head, and in the uppermost there was all manner of bake-meats for Pharaoh and the birds did eat them out of the basket upon my head". (Genesis 40:16-17)

The first criticism against the 'three days' in the subsequent interpretation would be that it was too much like a prescribed formula. But I have observed in one of my own dreams that the three can actually signify 'three' in the subsequent waking experience. In my own dream I saw my car in triplicate in a parking lot. Shortly after this dream one of the cylinders in my car blew up and subsequently had to be

towed to the garage for repair. It was exactly *three* weeks off the road.

It is, of course, well known what outcome the baker's dream would have. "Yet within three days shall Pharaoh lift thy head from off thee, and hang thee on a tree; and the birds shall eat thy flesh from off thee." (Genesis 40:19) This prediction proved to be accurate.

Joseph's interpretation followed in this case, as always, a well-defined interpretative rule. This is that the dream will often manifest *associatively*. In other words, there is a kind of *associative identification* of the dream image with the corresponding waking objects. Put another way, contiguous images in the dream are interchangeable. In this case the bake-meats and the head are adjacent to each other, which means that in the manifestation of the dream the birds will not peck at the bake-meats themselves, but at the object on which they rest, the baker's head, in this case especially at his eyes, a common sight in those days. I have called this *associative representation* where the dream is concerned and *associative manifestation* in the matter of the dream's manifestation.

The Josephian dream interpretation goes back to earlier traditions like those of Babylon and Sumer. Readers of the Old Testament will be familiar with the tale of Joseph's coat of many colours, which was given to him by Israel because he was the son of his old age. This privileged treatment engendered a great deal of envy and hatred in his brothers towards him. But what fanned the flames of jealousy even more were the favourable dreams Joseph kept having, in which the sheaves of the field and even the sun, moon and the eleven stars made obeisance to him.

The biblical text in which his brothers throw him into a pit is an adaptation of an ancient Babylonian ritual. It also features some plot inversions, as is so often the case when stories are borrowed from older, traditional texts. It is actually quite revelatory to look at a couple of verses of the biblical text before coming to Babylon's prototypical drama. They are from Genesis 37, verses 19 and 20: "*And they said one to another, Behold, this dreamer cometh. Come now therefore, and let us slay him, and cast him into some pit, and we will say, some evil beast hath devoured him: and we shall see what will become of his dreams*".

Barbara Walker has this to say about the prototype of this drama: "*A multi-coloured vestment was the mark of oneiro-mantic wizard priests in Babylon, which probably explains Joseph's celebrated coat of many colours (Genesis 37:23). Joseph's sojourn in the pit would naturally have taken place before, not after, he was awarded the coat. His 'brothers' (fellow priests?) lowered him into the abaton (pit) for a death-and-rebirth ritual, such as Assyrian and Babylonian priests underwent before they emerged from the pit reborn into a holy life*". (63)

While both stories share the pit or abaton scene, there is an inversion with respect to the awarding of the coloured coat. The fact that the old plot was a death and resurrection ritual still finds an echo in the brothers' intention to kill Joseph. The resurrection too is echoed by the biblical story in which Joseph survives the ordeal and eventually ends up at Pharaoh's court as the chief wizard and dream interpreter. So, despite the obvious differences between the two plots they are in essence one and the same. In both cases the hero's successful emerging from the pit is rewarded with the gift of dream divining and license to practise it.

From this we see how important dream divining was in the ancient world. The fact that in Babylon it was the priesthood who was trained in the art of 'analysis' demonstrates how important and respected dream divining was. This respect toward dream diviners is continued in the biblical context, for Joseph ended up as the advisor to Pharaoh's throne. In Pharaoh's own words: "Thou shalt be over my house, and according unto thy word shall all my people be ruled: only in throne will I be greater than thou". (Genesis 41:40) Interesting to note in this context is that there is a direct parallel between the tumble of the myth and the interpretation of the dream so that we might well say: 'The fact that dream divining has fallen from the most elevated place down to the current, off-handed, dismissal of its predictive power is a reflection of present day scientific interest in dreams'.

29. Jung

When it came to assessing the precognitive power of dreams, Jung was not as categorical as Freud. He cited many cases, which showed that *dreams do indeed come true*. There is the case of the famous mountaineering dream a colleague of his told him in the streets of Zurich. Whenever the two met, this colleague, somewhat older than Jung, always teased him about his dream-interpretations. However at one particular time he himself had an 'idiotic dream' to report, as he put it. Wanting to know if it meant anything *he proceeded to tell his dream in which he was climbing a mountain. The higher he climbed, the better he felt. When he reached the summit, he wished he could go on climbing like this forever. To his delight he found that he could actually continue in this way, mounting upwards into empty air and eventually waking up in sheer ecstasy.* (64)

Jung at once recognised the implications of this dream and implored his colleague never to go climbing alone, but always seek the company of two guides. Jung's concern amused the sceptical doctor and he went away laughing. Three months later news reached Jung that his concern had been justified, for the derisive doctor had fallen to his death while climbing a mountain on his own. He had been seen stepping literally out into 'empty air'.

This episode characterises Jung's perception of the dream's capacity to *reconnoitre* the future, as he put it. His reaction to the colleague's dream shows unequivocally that Jung understood its meaning at once. It shows that he recognised it in a flash as a death dream; and fearing for the doctor's life, he tried to dissuade him from solo climbs. There are many examples in Jung's writings that confirm his belief that the dream looked into the future, and if it was adverse, should and could be changed.

He never deviated from his conviction despite having come across numerous occasions where the dream invariably had the final word, as in the mountaineering dream. In his paper, 'The Practice of Psychotherapy', for instance, we find several dream interpretations of his that end up with comments like this: "*Circumstances prevented me from treating the patient further, nor did my view of the case satisfy him. The upshot was that the fate depicted in the dream ran its course*", or, "*both dreams point to a grave organic disease with a FATAL outcome. This prognosis was soon confirmed*". (65)

The best medicine against this Jungian conviction is surely Aesop's fable that goes under the title: '*La Forza Del Destino*'. In that story a *timid old man had an only son who was a passionate hunter of wild animals. One night the father*

dreamt that a lion killed his brave young lad. Fearing that this dream might come true, he built a grand wooden hall for his son and kept him in there under guard. To keep him amused and to compensate for his loss of the excitement of the chase, he had the walls of his sumptuous prison decorated with all sorts of animals, especially lions. But instead of being amused, his boy got utterly miserable and one day he angrily rushed towards one of the lions and shouted: "Curse you! It is because of you and my father's false dream that I am locked up here like a woman". And with that he punched the lion with all his might in his bloodshot eye. When he withdrew his fist he realised that a large splinter had lodged itself under his thumbnail. It soon became inflamed; in the end a fever racked his body from which he quickly died.

As is quite well known, every one of Aesop's stories has a moral attached at the end. The one provided in this case is: "*A man should resign himself to his fate with patience and courage, for no artifice can deliver him from it*". (66)

Since Jung was not a Stoic but a doctor, it was his inescapable duty to give his patients the sort of advice that would go directly against a dream's message if it foresaw an adverse fate. It was surely his mission as a healer that made him proclaim that the dream was merely a *reconnoitring* (67) of the future and not an ironclad fact. He must declared the futuristic aspect of the dream to be "*somewhat like a preparatory exercise or the sketching of a plan thought out in advance*". (68)

While it is acceptable for the doctor in Jung to hold this view, it is not appropriate for the scientist and serious investigator in him. His records show that he encountered enough dreams that *came true literally* to suspect that perhaps all dreams were unalterable 'psychic facts', as he put it. Psychic facts moreover, which he regarded to be as real and *objective as physical ones*, or as he phrased it himself: "*I have therefore made it a rule to regard dreams as I regard physiological facts.*" (69)

In view of this it seems rather odd that he was not prepared to admit somewhere outside his clinical work that the dream is more than a '*preparatory exercise or the sketching of a plan thought out in advance*'. Indeed, he had a plethora of evidence that *dreams simply come true*; that they are not just a catalogue of possibilities, but also solid facts of a physical calibre. Had he emphasised this perception, we would today perhaps have fewer followers of Jung's approach to dreams that confidently say: '*We can change the future by changing our dreams*'.

While we can't accuse Jung of having proposed this absurdity since he never claimed that the dream was a complete picture of the future, we can nevertheless say that his view that a dream was merely reconnoitring the future has engendered, or at least supported this fallacy. And fallacy it is, for something that is thought to be the future can no longer be seen as such once it has been changed so that it can never happen.

In defence of Jung it might be said that there is also a plethora of dreams that do not seem to manifest literally or whose symbolism may remain thoroughly obscure. In such cases it would be understandable that they might be categorised as no more than sketches of future possibilities. After all, there would be no evidence for or against such a view. However, in order to keep the study of dreams within a scientific framework, we are obliged to resolve the question whether or not all dreams '*rule both our conscious and unconscious life absolutely*'. If we were to do that, we would

need to keep fastidiously meticulous records of dreams and their possible manifestation. But this would only be the beginning of our quest, for there are a number of daunting difficulties to be surmounted on such a course. The first one would be that we needed a huge grasp of the dream language and a vast knowledge of how dreams tend to manifest. The second would be the recognition that not all dreams manifest immediately, but that they may become waking realities at varying times. In short, while some will materialise on the dream day, (after the dream, not before as in Freud's dream day!) others will do so on the second day after the dream, or even weeks or months or indeed years later.

Sikorsky, the Russian-born aeronautics engineer, for instance, dreamt as an eleven year old boy of the American Clipper, which he built in his American workshop thirty years later. He had forgotten his dream by then, and it only resurfaced as he walked along the passage of the Clipper during a test flight. (70)

This shows that not only would we need to record a vast number of dreams in order to come to some valid scientific judgment, but they would also have to be checked for possible manifestations on a regular basis over long periods of time. We would then find that there are dream day manifestations, second day manifestations, echo manifestations and protracted manifestations.

A further complication would be the fact that often a dream will not necessarily manifest all at once, but in parts, in successive stages. I call this the *serial manifestation* of a dream. This manifests much like a work of art, like a piece of music for instance. It may open with a particular theme, which then will be expanded. It may later recur in the form of a variation and then appear in combination with a new variation and so on. This is a much-misunderstood phenomenon. When such themes recur during a day or over a longer period they are thought to be *synchronicities*. Jung invented this term and we may justly blame him for the general misunderstanding of this phenomenon.

Jung coined this term in an essay called "*Synchronicity: an Acausal Connecting Principle*". It was first published in 1951 which edition proved to be more popular than his later, more extensive reworking of it. In this essay he writes that for many years he had observed a kind of recurrence of a theme that is typical for synchronicities, but remained unsure of what to make of it. When he eventually came across Kammerer's work on this curious recurrence of motifs, themes and numbers, he was at first inclined to go along with Kammerer's view that there was such a thing as a 'law of seriality'. Remaining unconvinced, however, he later abandoned this notion in favour of a *law of non-causality*. Pauli, a quantum physicist, with whom Jung was acquainted and conjointly had published a paper, supported him in this perception, and so it became acknowledged as a phenomenon that had no detectable cause. Confident of his findings, he reported in his essay on synchronicity: "*No one has yet succeeded in constructing a causal bridge between the elements making up a meaningful coincidence*". (71)

Yet there always was just such a bridge. Remarkably it remained hidden to Jung's well-trained eye despite the fact that he had recognised this very link in other circumstances. In order to uncover it, we must go for a moment into Jung's surgery. *There we encounter a woman patient of his who is about to tell the good doctor the dream she had the night before. In it she was given a golden scarab in the form of a*

piece of jewellery. While she was still recounting her dream to Jung, who had his back turned to the window, there was a soft rapping against the glass. Curious to find the cause of it, he turned around and noticed a fairly large insect trying to get into the dark room. He opened the window so as to allow it to fly inside, at which moment he caught it in his hand. To his astonishment he saw that it was a scarabaeid beetle whose gold-green colour closely resembled that of a golden scarab. Still nonplussed, Jung handed it to the dreamer saying: "Here is your scarab"! (72)

One explanation of why Jung failed to recognise the scarab incident for what it was is that *it wasn't his dream* that was being recalled as it became manifest, but his patient's. Had he had the scarab dream himself the night before and then opened the window in the evening in order to catch the beetle, he would have recognised the episode without any difficulty as a *déjà vu*. He would have done so because he would then have had that *sudden vexing notion that this has happened before*, without necessarily realising at once that it was based on a dream. That recognition would have come to him upon some reflection; after all he was well aware that the *déjà vu* is rooted in a dream. As he had said himself in his essay on synchronicity: "*The sentiment du déjà vu is based, as I have found in a number of cases, on foreknowledge in dreams*". (73)

And if the scarab episode was a *déjà vu*, as I maintain, then that '*causal bridge between the elements making up a meaningful coincidence or a synchronicity*' is clearly a dream. In other words, a synchronistic episode is nothing more mysterious than a *dream coming true*.

Those who have observed the phenomenon of synchronicities will know that they do not come alone, but appear in clusters. It is in fact these very clusters that alert the observer to the fact that there is something special happening. The chief characteristic of a cluster is a distinct continuity of a particular theme. Jung actually described one such continuity of a theme or motif in the same essay on synchronicity. There he wrote the following: "*There are, however, incidents whose 'chancefulness' seems open to doubt. To mention but one example out of many, I noted the following on April 1 1949: Today is Friday. We have fish for lunch. Somebody happens to mention the custom of making an 'April fish'. That same morning I made a note of an inscription, which read: 'Est homo totus medius piscis ab imo'. In the afternoon, a former patient of mine...showed me some impressive pictures of fish. In the evening I was shown a piece of embroidery with fish-like sea monsters in it. On the morning of April 2 another patient... told me a dream in which she stood on the shore of a lake and saw a large fish that swam straight towards her and landed at her feet. I was at this time engaged on a study of the fish symbol in history...as a pendant to what I have said above, I should like to mention that I wrote these lines sitting by the lake. Just as I had finished this sentence, I walked over to the sea-wall and there lay a dead fish*". (74)

Jung's multiple encounter of the fish motif within forty-eight hours seems extraordinary. Indeed he said himself, "*I must own that this run of events made a considerable impression on me. It seemed to have a certain numinous quality*". (See 74) However, once we realise that the dream is prone to serial manifestations, such occurrences will strike us no longer as being extraordinary; on the contrary, they become the order of the day. I discovered this phenomenon in 1970. It came like lightning strike, yet not before I had

pondered for twenty years the question of how exactly a dream did become a waking reality. It was J.W. Dunne's claim that half of our dreams came true in one way or another that set me on this path of discovery. (75)

At the time I was completely ignorant of Jung's experience. I had never read any of his papers. When I told a friend of mine of my discovery he exclaimed: "Synchronicity"! He took me straight to the university library where he pulled the publication with Jung's essay off the shelf. I recognised the fish episode at once as a serial manifestation of a dream, even though Jung had not been able to recall and report a dream that might have spawned this series of fish motifs.

30. My Research of Dreams

I recognised this series of fish motifs as a serial manifestation of a dream because I have witnessed and recorded hundreds of such episodes after my own epiphany. I also experienced many cases where a particular motif physically showed up when I spontaneously remembered a dream during the day. At one time a grasshopper actually landed on the page of my notebook while I was recording the unexpectedly recalled dream about a locust. I soon found this and similar occurrences to be such regular events that in time I formulated what I eventually called the *recall rule*. It simply says that if one spontaneously recalls a dream during the day, it is a definite sign that that very dream is in the course of manifesting. This was precisely the case in the scarab episode. The beetle appeared on the window behind Jung as the dream was being recalled, or more precisely, being retold.

While in the case of the scarab the whole plot of the dream was re-enacted - Jung *handed* the dreamer the scarab - this won't, of course, happen at every manifestation of the dream's motif. But what will happen is a recurrence of the dream's central motif or theme in a number of variations just as it happens in the arts, particularly music. Looking at the recurrence of the fish-motif gives us a good idea of how this proceeds.

When we look at the serial manifestation with greater attention we will find in time that the various manifestations of one particular theme or motif that may occur during a day are not a random collection of incidents, but a perfectly integrated and meaningful construct. In short, while one particular manifestation of a dream may be a direct reflection of its plot, the collection of serial manifestations when read together, will also make an intelligent whole! Thus, the apparently random occurrences of the fish-motif in Jung's April Fish episode would read together like the plot of the dream that had spawned the series.

Since Jung was unable to report the matrix dream that underlay the series of fish-motifs, I have exemplified this point by means of a dream published in my book *"Pre-grams of Tomorrow"*. (76) It is actually the highlight of a longer dream, characterising and summing up not only the extended dream but also the dreams of the whole night. It is comparable to the climax of a stage play of three or four acts with its numerous scenes all interwoven into a meaningful manner. (For a detailed account of the Serial Manifestation, please refer to my essay on "Synchronicity, did Jung have it right"? in the October 2015 issue of International Journal of Dream Research.)

In view of the serial manifestation's complex network of associations pervading the mundane, the sexual and the spiritual all at once, it is difficult to perceive it as a chance

grouping. It is in fact much easier to see it as a living work of art. Indeed, the coherence of the whole, the meaningful interrelation of its parts, the recurrence of the central motif together with the development of its theme from prelude to climax are all testimonial to this.

31. Freud

As is well known, the emphasis in Freud's interpretations of the dream is on sex. As he said himself: "*The more one is concerned with the solution of dreams, the more one is driven to recognize that the majority of the dreams of adults deal with sexual material and give expression to erotic wishes*". (77) This raised a storm of protests from his Victorian contemporaries. In their attacks on him they naturally exaggerated his observations claiming that he said that *all dreams* contained 'sexual materials'. Rebuffing them he wrote in later editions of 'The Interpretation of Dreams': "*The assertion that all dreams require a sexual interpretation against which critics rage so incessantly, occurs nowhere in my 'Interpretations of Dreams'*". (78)

And, of course, it does not. Yet he readily goes on showing "*that strikingly innocent dreams may embody crudely erotic wishes, and I could confirm this by many new instances*". (See 81) He certainly could and did so in abundance. In the mind of Jung, his severest critic in this matter, such evidence was little more than conjecture. Interesting for me is that Jung believed that Freud's sexual interpretations implied not just *erotic wishes*, but *sexual physicality* when he said: "*It is therefore not justifiable to take the sexual language of dreams absolutely concretely, while other dream contents are explained symbolically*". (79)

Jung had a point, of course, for the non-sexual story of the dream could just as well manifest physically, as he knew only too well. But that is not what he really meant, for he continued: "*As soon as one conceives the sexual forms of dream language as symbols for more complicated things, the whole attitude towards the nature of dreams becomes at once more profound*". (Ibid)

There is little doubt about this, for a sexual act, for instance, in a dream might be interpreted as getting on amiably with someone or even as divine union; but '*conceiving*' the dream in this manner will not resolve the argument as to whether or not Freud's '*concrete*' sexual interpretation has as much merit as Jung's emphasis on other, '*profounder matters*'.

Actually, something more substantial than '*conceiving*' is needed in order to resolve their differences in perception; something that neither Jung nor Freud ever attempted in their long career of interpretation. This more palpable approach is simply the *testing of their interpretations against future manifestations*.

Understandably, such a thing could never have occurred to Freud since he did not believe that the dream story or its sexual interpretation would in any way become a future reality. What was just as much out of the question for him was a test that verified whether or not his interpretation really corresponded with an *erotic wish* of the dreamer. This would have been too uncertain since an examiner could not determine with tangible, and therefore scientific, evidence what was in the dreamer's mind. In short, Freud could never have tested his interpretations the only way that would have yielded concrete and absolutely reliable results.

Curiously enough, such testing was also beyond Jung's grasp *even though he had spontaneously done it when he*

observed that his interpretations became waking realities, when he saw himself admitting that "this prognosis was soon confirmed" or that "the fate depicted in the dream ran its course"! Astonishingly, despite such informal testing of his prognoses by simply comparing them with their physical outcome, it never occurred to him that this could be a valid approach to scientific verification. Far from it, as is evident from this sort of pondering: "It is difficult to imagine how there could ever be a method, i.e., a technically controlled way, of obtaining absolutely reliable results, if one tries to realize the endless variability of dreams". (80)

While it may be difficult to test the whole gamut of meanings of a dream -that is all the facets of interpretation in a concrete manner- the one interpretation that caused the greatest tensions and disagreements between Jung and Freud happens to be the simplest, safest and most reliable to execute. Indeed, it is somewhat tragic for Freud that he resisted the idea of *dreams coming true* with such blind ferocity. Had he been prepared to test the claims of the ancients, the claims of his very own teacher, Artemidorus, that dreams do look towards tomorrow, he might have prevented the split between himself and Jung that caused such grief and ill-will. He might have prevented it by simply concentrating on one single procedure: *the sexual test*. Indeed this test would not just have provided the hard evidence everyone was looking for, but would at the same time also have furnished equally indisputable evidence that every dream is invariably looking towards the future, as well.

32. The Sexual Verification Test

To cut a long story short, all Freud ever had to do in order to prove his sexual interpretation was the following:

1. Translate the dream's 'innocent' story into sexual terms as he was accustomed to;
2. Verify his interpretation against the subsequent sexual behaviour of the dreamer.

The procedure of the sexual verification test is explained in my article in the 'International Journal of Dream Research'. I wish to refer the reader to my corresponding essay of October 14, 2014, entitled, "*To Test or not to Test, that is the Question*", 'International Journal of Dream Research', October 14, 2014).

In my own experience dreams are not just occasionally anticipatory, but they are prophetic without fail. When this is not apparent, it is due to incomplete observing and recording of dreams together with the inability to read the dream's language properly. Indeed, when Freud maintained, for instance, that the dream spoke in metaphors in order to disguise its real message, he was justly chastised by Jung who said that the dream was in fact teaching.

This can be taken a step further. The very factors that Freud saw as disguises turned out in truth to be revelations. They were not only glimpses of the future, but revelations of the *time and place of sex*. They turned out to be *markers* that helped to ascertain manifestations with such precision that the dream's predictions could be tested with scientific accuracy. (For detailed analysis see, "*To Test or not to Test, that is the Question*", 'International Journal of Dream Research', October 14, 2014)

33. Total Predestination

At a casual glance it may seem impossible to throw a great deal of weight into the scale of total predestination. Yet it

is. Most of it comes from the field of scientific discovery, invention and the arts. The most famous dreams that led to scientific discoveries are those of Otto Loewi and Kekulé von Stradonitz. The former was told in his dream how to set up an experiment to prove that the transmission of signals in the nervous system not only involved electrical impulses, but also chemical solutions. The latter saw in his dream, while napping, how the hydrogen and carbon molecules formed the benzene ring.

Perhaps the most well-known invention created with the help of a dream is Elias Howe's sewing machine. Srinivasa Ramanujan received his inspiration for his mathematical formulas from the Hindu goddess Namakkal who would appear in his dreams after he had prayed to her. Mozart often dreamt his musical works and then copied them in his waking hours as they had come to him in the night. Robert Louis Stevenson totally relied on his dreams for inspiration. But unlike Mozart, who was simply a 'copyist' as he put it, Stevenson admitted, "*that dreams must be shaped and honed, plotted and structured, before they can become readable stories.*" But then, adding to this that his Brownies or little people of the night "*do one-half my work for me while I am fast asleep, and in all human likelihood, do the rest for me as well, when I am wide awake and fondly suppose I do it for myself.*" (81)

While Mozart would no doubt sympathise with Stevenson's remark, all the other dreamers would most likely only agree with the first part of his comment; that '*dreams must be shaped and honed*'. As far as the rest is concerned, they would not only 'suppose', but also insist, that they were *in control* of the plotting and structuring of the dream into a presentable product. Yet none of them ever asked, so far as I can assess, who it really was that responded to these inspirational dreams in order to fashion them into a work of art or science. While Mozart seems to view himself simply as the physical hand of his ethereal dream-self, the others appear to see themselves as sovereign and independent entities that may mould their nocturnal gifts in any way they please or indeed even leave them completely aside. This gives us the impression that they make the same sort of division between their psyche and physical self, as did Freud in his contrary mode. Stevenson at least, it must be said, appears to have had some doubt as to whether he was such a totally autonomous agent. And rightly so, for his comment shows that he knew of no way to ascertain where exactly the dream-self left off and where the waking-self began.

Nor did any of the other dreamers so far mentioned, so it would seem. This naturally raises the question if such a quest could be successfully accomplished. It may come as a surprise that we can delve much deeper into this question than what would appear to be possible at first sight. A good start can be made by looking at the position of the *sleepwalker*. Although this is an area of medicine that still needs considerable research, there is nonetheless enough known about this curious phenomenon for the purpose of our enquiry.

34. Somnambulism, 'You've broken my Dream', 'Speak of the Devil', Premonitions

As the word *sleepwalking* suggests, a person susceptible to this abnormality literally walks while being completely asleep. There are various causes of this disorder, some of which are still incompletely understood. The one that is best

known and easiest to comprehend is the kind of somnambulism that occurs during dreaming. Under normal circumstances the body of the dreamer would remain still in one or the other sleeping posture. They would stay like that because their brain had caused the release of a chemical that temporarily paralyses the body almost totally. I said almost, because it has been found that if someone dreams that he or she is playing tennis, there would be more electrical activity in the racket hand than in the free hand, for instance. This shows that the dreamer and his waking body are still connected; yet the dreamer is wholly oblivious to it. But it also demonstrates why it is necessary for the brain to cause the release of a chemical to paralyse the muscles. If that did not occur, the dreamer would most certainly get up and in the given example begin to swing his arms around as if on the tennis court, and more. Indeed, he or she might well get up, fetch their tennis racket and get into a physical match without realising that they were acting out what was going on in their dream. Remaining locked into their own world; they might continue with their game for a time and then retire to bed again without remembering anything of their nocturnal escapade.

We can at once appreciate the wisdom of this muscular paralysis during sleep. Without it we would never get the necessary rest. Not only that. We might well endanger others and ourselves. Indeed, there have been cases where sleepwalkers have killed their partners in this mode. Others have gone out into the street and with their 'eyes open, yet their senses shut', as Shakespeare said so succinctly of sleepwalking Lady Macbeth, walked for ten to twenty minutes totally unaware of what they were doing and where they were going. Still others have driven their car and then woken up with an unimaginable fright after twenty or thirty miles.

Clearly with sleepwalkers in REM, the dream and waking phase are out of sync. Their dreams and the corresponding waking actions happen simultaneously instead of one after the other with delays of varying length between them. In a sense, this is a kind of inverted mirror picture of the déjà vu where the dream is remembered while it manifests. Put summarily: *in sleepwalking our dream brings on our action, while in déjà vu our action brings back our dream.*

One very important thing we learn when we juxtapose the sleepwalker with the déjà vu experience is that in both cases the dream and its corresponding waking experience are not loosely linked, but tightly interlocked. We also saw that the normal dreamer, whose muscles are in 'sleep paralysis', is also intimately coupled with his body, of which he or she is totally unaware. Here we encounter yet another inverted mirror image: *while in dreaming we are unaware of the body, in waking we remain unaware of the dream.* Yet despite this, the example of the sleepwalker and the déjà vu evince an immediate linkage between the dream and the physical world. This same phenomenon can again be seen in the normal sleeper who dreams of playing tennis with his muscles constrained. There, the physical body is still directly harnessed to the dream experience, even though the dreamer has no idea of this.

As I see it, the case of the somnambulist alone is sufficient evidence that it is the dream that directs the waking life. Indeed, it could not be clearer that the dream is the software of our computer system.

The déjà vu is by no means an isolated circumstance where dreaming and waking betray an intimate bond. We

only need to go back to the *recall rule* to see that it features a similar trigger as does the déjà vu. In other words, it is quite possible that we may recall a dream several times in a day and each time realise that at every one of those moments the highlight of the dream remembered is manifesting, as was the case in, and exemplified, by the V-dream, for instance. (See "To Test or not to Test, that is the Question", 'International Journal of Dream Research', October 14, 2014) On top of that there are other moments of dream recall as its waking correspondence is *about* to unfold. One of these is the time when we exclaim: "You have just broken my dream!" Here a conversation preceding this trigger was directly linked to the dream recalled. When closely examined, it will be found that the conversation had actually been anticipated by the dream recalled, albeit not verbatim, as so often happens in the déjà vu. Then there is the episode we call "speak of the devil". Here the feeling occurs at times minutes ahead of the appearance of the 'devil' whose coming had been foreshadowed by a dream. Here, I must add that not everyone realises that he or she has had a corresponding dream. But once they are aware that this event is based on an anticipatory dream, they will be able to recall it easier after such a 'devilish' occasion.

Strictly speaking, this episode should be categorised as a *premonitory apprehension*. The fact that *premonitions* too are dream-based shows clearly that they are also a form of *dream recall*. But whereas the recall in déjà vus happens simultaneously with the manifestation of the dream, in the case of premonitions the recall comes before. However here it often comes as *cryptomnesic recall* as frequently happens with many déjà vus where the dream as such is not remembered at once, but only *its content*.

When we reflect upon this phenomenon of recalling a dream that clearly matches a corresponding waking moment, or to put it simply, when there is such a great potential of 'déjà vus' of one kind or another in a day, we get the distinct notion that *our correlative dream memory must be shadowing the stream of waking experience uninterruptedly*. From such a realisation it is not such a wild leap to surmise that the *operational part* of Freud's and Jung's *Unconscious* seems to be nothing more mysterious than the *dream memory*. In a way, Jung would agree with this since he said himself: "the Unconscious is the receptacle of all lost memories and of all contents that are still too weak to become conscious." (82)

It would, however, be more precise to say that the Unconscious was both the source and memory of all dreams.

As we look further into this matter, it occurs to us that the term *Unconscious* is really a wholly unfortunate coinage because the *foundation of any memory*, not just that of the dream memory, has to be *nothing less than consciousness*. It is also unfortunate because it is susceptible to complete misunderstandings.

Clearly it would have been far better if he had called the Unconscious the *Pure Consciousness from which the ego derives its individual consciousness*.

Even though Jung knew very well that dreams were causally connected with corresponding waking experiences, he failed to recognise one of the most crucial causal connections. It was the 'causal bridge', as he called it, between the scarab dream and its physical manifestation. This must be a warning to all those who blithely state that dreams are merely haphazard apparitions, that they are illogical and coincide with corresponding waking experiences only ac-

cidentally, or, as some would have it, that they are a meaningless neurological sparking-off, the brain's nocturnal off-loading and/or recycling.

35. Edison and Hypnagogic Visions

There is no better evidence for the dream's causal connection with waking experience than the endless series of nightmares of Michael Barnsley and their eventual resolution. (See my essay, "To what Extent does the Dream influence the Creative Process?" 'International Journal of Dream Research', Vol. 7 No. 1, April 2014)

The latter, in fact, shows that the dream not only understood *its own logic*, but also knew years ahead of *how it would eventually mesh with the logic of corresponding waking events* in a way similar to, but not totally identical with, Sikorsky's dream and its corresponding manifestation.

We have already seen that much inspiration for literature, art, music and science comes from dreams. It is also well-known that Edison consciously exploited the dream's capacity not only to inspire, but also to resolve intricate problems as happened in Kekulé's case, for instance. When Kekulé napped in his chair he didn't have a full-blown dream, but merely what is called a *hypnagogic vision*. Such visions appear every time we are about to fall asleep. Most people never become aware of their existence because sleep overtakes them at the moment these visions light up in their head. Not so with Edison. He discovered how to snatch them from the clutches of sleep's oblivion by means of a simple but most efficient arrangement. He would sit in his 'inspiration chair' with a silver dollar on his head and a steel bucket between his legs. The moment he nodded off, his head would drop forward so that the dollar clanged into the bucket and woke him from his little dream.

He made frequent use of these hypnagogic glimpses because he found that they resolved problems he encountered in the course of developing his new inventions. Now if they had not been *logically related* to Edison's waking problems, they would have been utterly useless to him. Indeed, dream interpretation of any kind would not be possible if dreams were not susceptible to a logical approach.

Although not fully-fledged dreams, these oneiric images possess nevertheless the same powers of insight and vision of the future as do the extended dreams. The frequencies of their brainwaves are the same as for dreaming. Like dreaming they produce *theta waves* of 4-8 Hertz. While Edison recognised their ability to resolve the most difficult problems, he obviously would not have shared Robert Louis Stevenson's sentiment that he might also have been guided, albeit *cryptomnesically*, through the rest of his inventive struggles. We can infer this from his famous saying that "invention is 1% of inspiration and 99% of perspiration". Most inventors would probably agree with this. They would most likely also say that before they had any dreams that would eventually resolve their problems, they were already clear in their mind just what they wanted to create or prove. Kekulé is one example, and so is Otto Loewi, who long before his enlightening dream had harboured the suspicion that neural activity not only involved electricity, as Galvani had discovered in 1771, but also chemistry.

Whilst this is undeniably true, the question *whether or not the dream dictates the whole process of invention or artistic creation, cannot be resolved without also asking where original ideas and the impetus for a subsequent creative project come from*. While some artists, like Stevenson and

others, freely admit that the idea and impetus for their work sprang from a dream, others again have no such recollection and believe it was 'their own' idea. But what is 'their idea'? Who is it that has ideas and where do they come from? While some can safely say that some waking experience had sparked off an idea of theirs, which they wrongly call 'inspiration' instead of 'stimulation', others again are unable to say where it came from. In such cases we need to ask if those germinal ideas were not also sparked off by dreams of the night, or for that matter of the day.

In Jung's mind that must have been so for he wrote the following in his "Psychological Reflections", pages 59-60: "*But anyone keenly interested in the dream problem cannot have failed to observe that a dream has also a progressive continuity, if such an expression be permitted, since dreams occasionally exert a remarkable influence upon the conscious mental life, even of persons who cannot be considered superstitious or particularly abnormal*".

36. Against Freud's Retrograde Interpretation

We wonder what might have induced Jung to record this insight. Was it the fact that he had observed that dreams do occur in clusters, which spread over many days and are at the same time intelligently interrelated, together with the fact that some of them were also indubitably *coming true*? No doubt such observations played a significant part. But he may also have taken Freud's observation into consideration that maintains that dreams always took up an event of the previous day, which he had called the '*residue*'. This was valid evidence that dreams were at least intelligently connected in a retrospective way. But there was more to be learnt from Freud's observations since he also had found that these residues always "instigated the dreams of the ensuing night". And, expanding on this he wrote: "*There is no doubt that they find their way into dreams in great quantity, and they make use of the content of dreams in order to penetrate into consciousness even during the night. Indeed they occasionally dominate the content of a dream and force it to carry on the activities of the daytime. It is certain, too, that the day's residues may be of any other character just as easily as wishes*"... (83)

It is quite curious how Freud recognised the motivating force of residues and wishes, but underplayed the fact that the dreams they instigated were full of fresh content, of new scenarios and elements that were clearly not of the past. This must not only correct Freud's retrospective emphasis on dreams, but will also diminish his wish-fulfilment theory since the latter is also built on this same retrograde mechanism. We can infer this from what he wrote in this connection: "*Our theory of dreams regards wishes originating in infancy as the indispensable motive force for the formation of dreams*." (84)

If we now broach the question 'where new elements found in dreams might come from, factors that instigate inventions and works of art', we see from my own research without any difficulty that they need not be in any way linked to the past and therefore to a residue or a wish that reaches back to a previous waking experience. Dreams may therefore be *wholly futuristic*. They may in fact be the precursors of anything *new* we will encounter. Put another way: the dream may well be the *blueprint* of everything that we ever encounter. It was like that for Sikorsky's invention, yet without him being at all conscious of it. But a sceptic might argue that since the boy Sikorsky had recalled the dream on that

morning, it might have remained in his waking memory to be recalled in full at any time. This would then have allowed him to make use of the dream's design with complete awareness of the dream memory. But that's not how it was for Sikorsky. He had completely forgotten the dream and only remembered it again *after* he had built the S-wing. From this it is clear that he had built the machine *under the guidance of a forgotten dream memory*.

Some might be inclined to argue that a dream memory that had seen the light of day first before it slipped into the dream's memory bank had a better chance to effect a corresponding waking manifestation. This is obviously not so, since Sikorsky's case demonstrates clearly that such a 'double memory' can become just as 'cryptomnesic' as the dream memory that has slipped straight into the memory bank, or the 'software' of the human computer, without ever appearing in our waking consciousness, or, following the technological analogy, the desktop.

Conversely, the *truly cryptomnesic dream memory* will just as readily bring about a corresponding waking manifestation as Sikorsky's 'double memory'. This becomes firstly evident in context of the *déjà vu* as we have seen earlier on, and secondly it can be convincingly demonstrated by means of a simple experiment in hypnosis.

37. Post-hypnotic Suggestion

The first thing we should be aware of in this regard is that the hypnotic state produces brainwaves analogous to the dream. Thus the use of the Greek term 'hypnos', meaning sleep, as the basis of the word 'hypnosis' is remarkably appropriate.

The experiment I have in mind is called *post-hypnotic suggestion*. For this, a subject is put under hypnosis and when ordinary waking consciousness has been lost to something like theta waves, the subject is given a command such as this: "Five minutes after you wake up you will grab that vase of flowers on the table and pour the water over my head." Then the subject is told to *forget this command* and is brought back to ordinary waking consciousness of 13-30 Hz, or beta-consciousness. Precisely five minutes after waking up the subject will reach out for the designated vase and pour its water over the hypnotist's head. When asked why he or she did so, the answers are always everything but a reference to the hypnotist's command. The latter invariably remains hidden, cryptomnesic. This demonstrates clearly that a cryptomnesic command implanted into the brain in something like theta mode *has* to be executed un-faillingly. When subjects are asked why a particular action was taken, the subject can only *rationalise* the deed. He or she might say: "You looked feverish and I felt I needed to cool you down."

Thus, this experiment demonstrates the following things: 1: It suggests that whatever else a dream may be, it is in effect a *post-hypnotic suggestion*. This is the more certain since the deep hypnotic state shares REM or Rapid Eye Movement with the dream state. 2: It shows that "*the actions we ascribe to coincidence or free choice are in reality subject to 'unconscious' mechanisms*", as Freud had asserted. 3: It confirms my own suggestion that what Freud and Jung had labelled *the Unconscious is not only the source of our dreams, but is also the receptacle of the dream memory*. This means that Jung's unconscious processes, or what I have reformulated to *incognisant processes*, are really nothing more mysterious than a *reactivation of a dream*

memory, much the same as the post-hypnotic command is nothing but a reactivation of a hypnotic command given in the hypnotic state. To put it even more simply, we might say that dreams are nothing less than '*post-theta compulsions*'. This brings us to point 4: Since it is not the *waking self* that makes the decisions of what to do and what to leave undone, anything we may say about our waking actions is likely to be totally wrong. Indeed, ultimately it may be nothing but a '*post-hypnotic rationalisation*'. And to top it all: even that rationalisation may ultimately also be included in one or the other 'dream command'.

Now that we have cleared the way for the effects of the irresistible thrust of the 'post-theta compulsion', we are able to look at a case that indisputably shows the dream not only as the prompter of all ideas and actions below the footlights of the nocturnal theatre, but also as the producer-director of events that lie well in the future.

38. Benjamin Libet

That this is more likely than not is underpinned by the experiments undertaken by Benjamin Libet. In an article in 'The New Scientist' from 14 September 2002 the following paragraph penned by John Gray demands that we seriously consider this suggestion: "*If cognitive science is right, the picture of humans that philosophers conjure up when defending ideals of personal autonomy is at least partly a chimera. Other research supports this conclusion. Work by Benjamin Libet at the University of California showed that the electrical impulse in the brain that initiates action occurs up to half a second before we take the decision to act. Our actions are initiated unconsciously.*"

The paragraph then continues: "*True, Libet allowed that we can veto what the brain has initiated, but it is unclear how we can even know that we have deliberately exercised this capacity. For all practical purposes, it might as well not exist.*"

In light of Libet's research, together with Michael Barnsley's experience, Freud's pronouncement that "*the actions we ascribe to coincidence or free choice are in reality subject to unconscious mechanisms*" is vindicated. True, choice will come into our mind as a feeling; choice and free will are feelings, but that's where it ends.

In view of the fact that dreams are capable of forging ahead not only into the immediate future as Edison, Howe, Kekulé and Mozart have experienced but also into the far future as Sikorsky and Michael Barnsley would substantiate, gives us little room for 'self-determination'. My own observations of dreams over a period of sixty-five years have convinced me that not even that bit of coveted 'veto' Libet mentions is possible. And if we should be given the power to exercise it, such action would have been anticipated and dictated by one dream or another.

The classic example that a dream always has the last say is demonstrated by a dream in which we are shown that we will make a certain mistake. Then, naturally, we will do everything in our power to avoid it. We stay alert all day, watching for the situation with that built-in mistake to occur so we can forestall it. Suddenly we are distracted and ambushed by the dream's program, and make that very mistake.

39. Freud's Iron Rule of the Unconscious

Curiously enough, Freud came to the conclusion that the Unconscious ruled absolutely more by default than by systematic reasoning and exhausting enquiry underpinned by experimental evidence. In his little book about Freud, the author Mannoni says: "*This theory (Freud's) is not completely worked through. It suffices Freud to show that the actions, which we ascribe to coincidence or freely made decisions, obey in reality unconscious mechanisms. He evades the metaphysical difficulties for which he has no interest.*" (85)

Perhaps Mannoni was a little too kind when he said Freud evaded the metaphysical difficulties because he had no interest in them. We know now that he could never have substantiated his *theory of determinism* with the necessary logic and hard evidence because he barred himself from this due to his denial of the futuristic aspect of the dream. Without acknowledgement of its anticipatory capacity, any such theory was in his time, when there were no cerebral measurements such as Libet had at his disposal, doomed to failure. Because of the incompleteness of his deterministic theory, which he seemed to have forged as much by guesswork as by reason, I feel obliged to take him off his golden chair and sit him next to Jung at equal height. I do this because I feel I can make a case in favour of Jung, demonstrating that his view of human behaviour was governed to a great extent by forces other than '*conscious motives*', as he put it. In his paper, "Instinct and the Unconscious", he said: "*I am therefore inclined to believe that human behaviour is influenced by instinct to a far higher degree than is generally supposed.*" (86)

On page 132 of the same paper he states that instinct was an analogous process to intuition. Both of these arise from the Unconscious, which, as we have already seen, is for him *the receptacle of all lost memories and of all contents that are still too weak to become conscious*. Here we get very close to what I have called *the constantly present dream memory* that prompts at every step what we are about to encounter. In fact, without this uninterrupted prompting of the dream memory, (even though lost to waking consciousness), we could have no access to any kind of memory at all, whether that of dreams or of waking. The dream is the author, producer and director of the waking stage.

Since Jung also maintains that instinct and intuition are analogous functions and can be motivated neither by the ego or waking consciousness, we come close to Freud's determinism and my own, especially since Jung suspects that we are far more often driven by instinct than what is commonly assumed.

Amazingly, Jung never reflected on this matter for long enough to arrive at this same conclusion. He completely underestimated the long arm of the dream. But what is even more astonishing is the fact that he completely missed the unique opportunity to prove to himself and the world beyond the slightest doubt that there was absolutely no room for so called *free will*, that, as Freud had proclaimed, "*the actions we ascribe to coincidence or free choice are in reality subject to unconscious mechanisms.*"

40. Mystical Evidence

This opportunity came to Jung in form of the *mysterium coniunctionis*, which is described on page 327 of his book he had entitled "*Memories, Dreams, Reflections*". (87)

Before entering a discussion of Jung's mystical experience, I feel compelled to say a word about mystical experiences in general. Science has to date studiously ignored them, just as it has ignored the dream. Both the dream and the mystical experience are very much part of human existence. I believe that dreams and the mystical life are being passed over for serious study because they are purely 'internal experiences' and therefore too subjective to have any legitimacy for the purpose of scientific, and consequently 'objective' enquiry. When we remember that in truth there is no such thing as an objective reality whatsoever, as I have demonstrated earlier, it seems ludicrous to simply leave them by the wayside. Doing so is no different than studying only the outside of the physical body to the exclusion of its inside.

Such avoidance of the internal reality of the body would lead us obviously to an unacceptable distortion of its biological reality, particularly since it is the very inside of the body that drives the whole system. This situation describes with some precision of what present science is doing with respect to the evolution of life on earth. Ignoring the reality of dreams and of mystical experiences can never lead to a true picture of the origin of life, of the miracle of existence in this world. Ignoring such obvious facts as the dream life and mystical ecstasy is unscientific at the least. It establishes a premise that will inevitably lead to a gross distortion of the ultimate investigative results.

Jung's mystical experience was part of the period of visions that was triggered off by a heart attack that had struck him down after he broke his foot in 1944. As he said himself, it began with a time when "*I hung on the edge of death.*" (Opus cit. 320) A common sign of leaving the body at death is a soft light surrounding the dying person. His nurse had reported just such a phenomenon as he lay there unconscious and told him later: "*It was as if you were surrounded by a bright glow.*" (Opus cit. 320) After that followed a typical OBE (Out of Body Experience) that occurs during an NDE (Near Death Experience). Then, as the period of convalescence set in, a series of visions followed, which enveloped him in a "*magical atmosphere*". (Opus cit. 326) He understood then what the mystics meant when they spoke of "*the odour of sanctity, the sweet smell of the Holy Ghost*". (Opus cit. 326)

Introducing the crucial event of the *mysterium coniunctionis* he said: "*I would never have imagined that any such experience was possible. It was not a product of the imagination. The visions and experiences were utterly real; there was nothing subjective about them, they all had a quality of absolute objectivity.*" (Opus cit. 326-7) And then, launching the description of the experience proper he continued:

"*We shy away from the word 'eternal', but I can describe the experience only as the ecstasy of a non-temporal state in which present, past, and future are one. Everything that happens in time had been brought together into a concrete whole. Nothing was distributed over time; nothing could be measured by temporal concepts. The experience might best be defined as a state of feeling, but one that can't be produced by imagination. How can I imagine that I exist simultaneously the day before yesterday, today, and the day after tomorrow? There would be things which would not yet have begun, other things which would be indubitably present, and others again which would already be finished and yet all this would be one.*" (Opus cit. 326-7)

Although such a mystical experience may be rare, it is nevertheless known around the world. All religions and spiritual paths such as yoga have recorded this phenomenon, which is often referred to as the *Spiritual Marriage*. The notion of marriage, of course, comes about because in many religions, Buddhism is one notable exception; the mystics see themselves as the beloved of their God or Goddess. Some spiritual schools such as that of Tantra actually practise controlled sexual interaction, which is claimed to bring on a prolonged orgasm that will lift the acolyte out of the ordinary temporal zone. Curiously enough, even religions like Christianity that consider chastity to be a prerequisite for the Spiritual Marriage, will borrow terms from the world of fleshly passion in order to picture this divine consummation.

There is no doubt that the language borrowed from the realm of human love has caused many a misunderstanding among those who have not studied this subject in sufficient depth. Thus, people less well-travelled through the realm of mysticism are inclined to “imagine that the *“Spiritual Marriage” of St. Catherine or St. Teresa veils a perverted sexuality, that the visions of the Sacred Heart involved an incredible anatomical experience, or that the divine inebriation of the Sufis is the apotheosis of drunkenness*”... as Evelyn Underhill put it. (88)

Today, this phenomenon can no longer be ignored or dismissed without serious examination. We have a tool at our disposal that can be more convincing than the most eloquent arguments. This tool is the electroencephalograph. It demonstrates graphically that our brain fluctuates from one frequency range to another, depending on the state of mind. Beta waves are the most common. They appear when the brain is in its ‘normal’ waking state; in short, when the mind is active and in an alert state of deliberate thinking, or simply and unambiguously put, in Beta consciousness. These waves produce between 13 and 30+ Hertz per second. REM dreaming slows the brain waves down considerably to about 4-8 Hertz. The slowest frequencies occur in dreamless deep sleep. They are the Delta waves of 1-4 Hertz.

Each of these frequency bands induces a different form of consciousness. As I have just said, Beta produces the normal waking state, Theta the dream and the deep hypnotic state, while Delta induces a form of awareness that is devoid of any imagery, yet one of blazing consciousness, akin to the mystical state. This state is however at once forgotten when we wake up, since before we return to Beta activity we pass through REM’s Theta frequencies, which efface the memory of the peaceful and light-filled Delta phase.

In view of this it is easy to imagine that a switch in the brain, generating a frequency that stops the illusion of time, may also induce the mystical union. Thanks to Einstein everyone knows today that time is relative. But we didn’t need his mathematics to realise the sense of this. For lovers who are apart from each other time drags its feet, while those, who are having fun will exclaim: “How time flies!” In reality time neither drags its feet nor flies, for it has no existence of its own.

I have already demonstrated the illusory facet of time in the section entitled “The Matter of Time”, where I said: “Again, we see how easily we are duped by the manifest world; that we can readily invert the relationship between matter and essence; that we can hold dear what is distorted and corrupt while denying the status of the present, the zero, the Mother of All”.

It exemplifies the falsity of matter being the primary factor in the creation of life. Equally it illustrates the mistaken view that consciousness is a secondary element in the germination of life. The unified time, where past and future are adjuncts instead of separate and independent facets also makes it clear that it is consciousness that supports matter, and that it needs of necessity to be unbroken, otherwise it could not be the ever-present ground of manifestation.”

The *mysterium coniunctionis* will tell the mystic not by argument but by direct experience that *all is contained in this single moment of the NOW*. Happily there are testimonials outside the world of mysticism to such ‘eternal’ moments. There is Mozart, for instance, who told us that his Jupiter Symphony came to him in a flash beyond time. He testified that perceived in ‘an instant’ it sounded so much grander than when played by an orchestra as a twenty-one minute composition.

But there is also an opportunity to experience something analogous to this for everyone who cares to observe his or her dreams. All that needs to be done is to look back at a short dream, for instance, and then compare it with its corresponding waking manifestation. The dream of the stick figure I have described, for instance, lasted mere seconds, whereas the lovemaking went on and on. (See “To Test or not to Test, that is the Question”, ‘International Journal of Dream Research’, October 14, 2014)

From these more mundane examples, it is not such a leap to appreciate the annihilation of time in the mystical union. If it is a true experience, as Jung testifies, and not like a drug-induced hallucination, then we have not only the best proof that time does not exist, but also that everything that happens in the universe is an unexpanded “*concrete whole*”. Under such circumstances all we can do in our daily life is to lag behind the NOW as it were, and follow its prompts that come to us through our dreams. Put another way: if everything already is, what contribution can the individual ego make?

41. Synchronicity

There is no better evidence in favour of *predestination* than Jung’s experience of the *mysterium coniunctionis*. It is also the most perfect explanation of phenomena like *synchronicity* about which he wrote *seven years after* his time-shattering experience. Yet, as is clear from his 1951 search for a ‘*causal bridge between the elements making up a meaningful coincidence*’, he made no use of it whatsoever. Had he remembered that everything that happens in the waking frequency has already happened in the timeless ‘frequency’, or, perhaps more accurately put, is forever happening in that ‘frequency’, which means that everything in this world is on a par as far as causality is concerned, he would not have written: “*The suspicion that this must be a case of meaningful coincidence, i.e. an acausal connection, is very natural.*” (89) (For a more extensive exposition of this subject, please refer to my essay “Synchronicity, did Jung have it right?” Published in ‘International Journal of Dreams Research, Volume 8 No. 2, October 2015)

Yet he did, forgetting that in light of his experience everything *pre-exists*, thus obviating the need for different principles of manifestation for different occurrences. This same uniformity of manifestation must also apply to the notion of ‘*meaningful*’, so that *synchronicity could be no more meaningful than any other thing*.

If there is a discrepancy in the assessment of various events of manifestation as to their degree of meaning and cause, it is solely due to the fluctuating perceptions of the individual who makes the judgment. Indeed, what Jung himself had said about the perception of *‘the dream as an isolated psychic event’*, also applies to his own assessment of synchronicity and the April Fish series: *“If it seems to us so, that is only an illusion that arises from our lack of understanding. In reality, the relation between consciousness and the dream is strictly causal, and they interact in the subtlest of ways.”* (90)

It is indeed remarkable that despite the fact that he was fully aware of this strictly causal connection between the dream and the waking consciousness, he was unable to apply this very observation of his own to the scarab incident, which was precisely such a *‘strictly causal relation between waking consciousness and a dream’*.

Thanks to Jung the world would continue to consider synchronicity as an extraordinary phenomenon instead of a straightforward manifestation, in fact serial manifestation, of a dream as exemplified in the V-dream. (For details see “To Test or not to Test, that is the Question”, ‘International Journal of Dream Research’, October 14, 2014)

The authors of *“Synchronicity, Science, Myth and the Trickster”*, Allan Combs and Mark Holland, follow Jung’s view that *“synchronistic coincidences, such as the entry of the beetle into Jung’s study at just the right moment, likewise share the quality of being unexpected...they violate our confidence in a world of events chronologically ordered and based on cause and effect. They create a conspicuous discontinuity in ordinary reality, an opening to the miraculous.”* (91)

Like Jung, these two writers have come to this facile conclusion, because they too have *not seen* the true connections between the dream and the waking episode. Instead of realising that they were face to face with a variation of a déjà vu, with a particular type of dream manifestation, they invoked the ancient Trickster God Hermes, who, as they themselves say, *“represents the most comprehensive and sophisticated manifestation of the Trickster.”* (Opus cit. 82)

They then cite Homer as having regarded Hermes as the ‘Bringer of Luck’. While it was all right for Homer to attribute ‘luck’ and other surprise events to a god, it is necessary for modern psychology and science to provide explanations that go beyond the deification of synchronicity. Allan Combs and Mark Holland do attempt such an interpretation of Hermes whom they declare to be *“the master of the unexpected”* who *“performs his magic by virtue of his command of boundaries and his ability to cross them effortlessly.”* (Opus cit. 82)

It is in that realm where they come closest to what synchronicity is really about: *“Synchronistic coincidences are, from the Jungian perspective, boundary events. They manifest, for instance, as transitions across the margin between psychological reality on the one hand and physical reality on the other. The arrival of the beetle at Jung’s window, as well as the various representations of fish Jung himself experienced while working on the meaning of the fish symbol, can be seen as translations into the material world of psychological actualities. Such coincidences, like dreams (!) also carry symbolic messages across the boundary of the unconscious into consciousness.”* (Opus cit. 84)

Once again, we encounter here that tantalising closeness to the clear and unadorned facts. If we rephrased the above

quote only very little, we would find total agreement with what I have maintained throughout this book: *“The arrival of the beetle at Jung’s window can be seen as a manifestation in the material world of the dream, which latter Jung regarded as a psychological fact, thus carrying a symbolical message across the boundary of incognisance into waking consciousness”*. Or much more simply put: *synchronicity is a (serial) manifestation of a dream.*

It is the fact that Combs and Holland share with Jung the view that synchronicities are ‘coincidences’, which forces me to take issue with them. Whilst it is proper to say that the beetle incident was *‘a border event with a psychological actuality translating into the material world’*, it is neither *miraculous* nor *coincidental*. Here I can only cite Jung’s observation again: *“if it seems to (be) so, that is only an illusion that arises from our lack of understanding. In reality, the relation between consciousness and the dream is strictly causal, and they interact in the subtlest of ways.”* (See 89)

Thus Hermes, like our magicians on the stage with their slight of hand, tricks only those, who are not awake to the fact that all dreams, or more precisely, the *memory* thereof, translates into the material world at every waking moment. In short, what is needed here, in order to resolve this apparent mystery, is not so much the reintroduction of the old trickster god, but *the adoption of a more meticulous procedure of observation that is independent of psychiatric prejudice spawned by Freud and nurtured by Jung.*

This same need of more extensive observations and clearer analysis also applies to the interpretation of the effect the beetle incident had on the patient. Combs and Holland claim, *“Upon seeing the actual beetle fly into the consultation room, for example, Jung’s patient was so emotionally jarred that she was able to begin to free herself of a neurotically rigid world view”*. (Opus cit. 84)

The way this is reported gives the impression that the dreamer was now able to heal herself; i.e., *‘she was able to begin to free herself’*. This shows that for them the understanding of the process of border events with its translation of psychic actualities into the material world was incomplete. Had they grasped that the event in question was nothing more magical and extraordinary than a dream come true, they would have had a good look at the dream itself and then compared it with its manifestation.

As Jung had said, *“She (the patient and dreamer) had an impressive dream the night before, in which someone had given her a golden scarab – a costly piece of jewellery.”* (92)

That someone was, of course, to be Jung himself who handed her the scarab that flew into the consultation room. There is no sign in that dream that she took it upon herself to *‘free herself’* from anything. Indeed Jung has a somewhat different view of the effect of the incident. This is what he said himself: *“This experience punctured the desired hole in her rationalism and broke the ice of her intellectual resistance. The treatment could now be continued with satisfactory results”*. (Opus cit. 526) In other words it was not a case of the patient helping herself, but one where Jung catalysed the healing process. This is clear not just from what he said himself, but also from the *context of the dream* that clearly signalled that someone would HAND her the jewellery-scarab; that someone would have his HAND in the matter of the breakthrough.

Moreover, not even Jung could have helped this patient if it had not been decreed by the dream. He had to con-

fess himself before this event took place that he *hoped* that “something unexpected and irrational would turn up, something that would burst the intellectual retort into which she had sealed herself”. (Opus cit. 525)

He said this because he was unable to make any inroads into the patient’s mind even “after several fruitless attempts”. (Opus cit. 525) Under such circumstances as these, it is obvious that Jung had to wait for the time when a dream would *initiate* the whole process of recovery. We recall that Jung had to confess on several occasions that his efforts to help some of his patients were in vain, that “*the fate depicted in the dream ran its course*” or that “*his (adverse) prognosis (interpretation) was soon confirmed*”.

This sort of thing is underpinned here again. The dream’s scenario shows clearly that Jung was no more than the *catalyst* and *not the instigator* of the treatment. Without the dream’s permission he would have been powerless to aid the process of healing. Indeed, he would not even have been effective as a catalyst if it had not also been in the plan of the dream. This is evident from the fact that the scarab is an image for *breaking through the dark and flying into the light*. Scarabs lay their eggs in a ball of camel dung where the young beetles hatch and live to maturity. When that has been attained, they *break through* the ball of dung and fly to the light. Without the presence in the patient’s dream of the Egyptian symbol of enlightenment, Jung and his patient would not have been able to reconvene for further analysis. (Note Jung’s own words: “*This experience punctured the desired hole in her rationalism*”.) (Opus cit. 526)

Jung’s very phrasing shows just how deeply he himself was under the spell of the scarab dream. The fact that the scarab in the dream was a piece of jewellery was an indication that the natural scarab that flew in through the window, would have to be *worked into an artefact*, which in the end would represent something rather precious. Thus, the dream indicated that the psychiatric work would be done successfully, and so it was. Clearly, if dreams are properly read, they demonstrate anticipation not only of something broadly conceived, but also of something worked out in detail. There is nothing to be added to them or to be taken away from them. The dream’s plan is complete and its manifestation cannot be evaded.

This was certainly the view of the ancients. And if there is a need to resort to icons of antiquity such as Mercury, who is the bringer of luck, or indeed also of adversity since he carried the commands of Zeus from Olympus to all of humanity, it should be portrayed in the same spirit of the ancients. And that spirit was one of surrender to the superior forces of fate, as is clear from the Aesop fable I have cited. (See chapter 29)

In this context it is of interest to note that the function and character of Mercury has carried over to this age, but not in his form as a deity. If we reflect on his *caduceus*, around which two serpents spiral in the shape of a double helix, we recognise this construct as the structure of DNA. It too, like Mercury, is a carrier of messages that cannot be rejected, messages that build our body and with it our talents and mental predispositions. I realise that many members of the scientific fraternity would argue that we have a choice of how we manage our body despite the fact that it was built by the DNA without any of our own input. But they do not pursue at length the deeper questions of what or who makes those choices. Indeed, without the study of their dreams speculation can only yield a partial result. I cite again Jung’s

investigation of the exasperating and vexing matter of the scarab incident which caused him in the end much despair.

Concluding his essay he wrote: “*I am only too conscious that synchronicity is a highly abstract and ‘irrepresentable’ quantity. It ascribes to the moving body a certain psychoid property, which, like space, time and causality, forms a criterion of its behaviour. We must completely give up the idea of the psyche’s being somehow connected to the brain, and remember instead the ‘meaningful’ or ‘intelligent’ behaviour of the lower organisms, which are without a brain*”. (Opus cit. 505)

When reading this, it is impossible to avoid the thought that ‘*the moving body with a certain psychoid property*’ might have been an *unwitting* reference to the manner in which he ultimately assessed the way synchronicity worked. This becomes apparent when we learn that ‘*psychoid movement*’ for him approximates ‘*instinctive*’ behaviour. In light of this, what he says about the ‘*brainless state*’ is of curious interest to the crux of this study; namely that we must “*remember... that the behaviour of the lower organisms, which are ‘without a brain’, can still be ‘meaningful’ and ‘intelligent’*”. This, if we see the ‘*brainless state*’ as ‘*unconscious*’ behaviour, is surprisingly analogous to what Freud said about the matter of choice, namely, “*the actions we ascribe to coincidence or free choice are in reality subject to unconscious mechanisms*”.

Clearly, the only intelligent interpretation of Jung’s exhortation that we should see the ‘*psyche as disconnected from the brain*’ is that we are condemned to act exactly like the subject under the influence of a *post-hypnotic suggestion*. Under such circumstances the behaviour of the subject has no chance of being formulated with deliberation, but must come directly from his ‘*dream memory*’, over which he has no control since it was sealed by forgetfulness.

It seems to me that both Freud and Jung were led to their respective conclusions of behaviour under the same circumstances. This impression is unavoidable since Freud arrived at his deterministic outlook on life despite the conflicting view that dreams did not look to the future, but that the Unconscious did; while Jung, in the face of his strong belief in free choice, admitted that instinct (or psychoid properties) had a far greater say in our behaviour than rational decisions. This may easily be elaborated, as well, by saying that both men had been *directed by their dream-memory* to say and write what they did.

42. Epiphenomenalism Revisited

It is no great feat to realise that the psychological investigations of the Unconscious made by Freud and to some degree the discovery by Jung that a significant number of dreams foresee the future, parallel the conclusions Huxley drew from his lobotomy on frogs. In other words, their psychological observations lead to the same order of result as the surgical experimentation on a living organism. Like Huxley’s view that animals were automatons, psychological observations were raised from pure guesswork to ‘scientifically’ valid results.

As we have seen in the section on epiphenomenalism, Huxley also suggested that we humans were no less automated than frogs, something that Libet had experimentally substantiated. Yet, when he stated that humans also enjoyed an *intelligent life*, he obviously meant to say that there was, after all, some difference between the human animal and the rest of the fauna. It would seem that he might well

have thought that the human automaton was aware of the actions it is *compelled* to perform while the animal automaton was not. Such thinking has now been superseded by many studies, some of which I have mentioned earlier in the section on animal creativity. Put succinctly, both the animal and the human automaton are on a par as far as *basic* self-awareness is concerned.

What, however, must be settled yet is the question of who or what constitutes the instigator of motivation and action. Huxley's view that it comes from the *molecular changes in the brain* is only half the story. Motivation is not a haphazard shaking of Shakespeare's word box, but highly organised and sophisticated 'software' installed in both the human and animal automaton.

My contention, my solution to the problem is, of course, the dream. It is without a doubt a plan, the blueprint in fact not just of motivation, intention and action, but also of the entire thought process including the whole range of feelings and environment that go with it.

There is both internal and external evidence for this available to us. The internal one is the verification of the meaning of a dream, which consequently demonstrates that the waking life is determined by the dream since it foreshadows the waking scenarios. This alone underpins both the precedence of the dream and the interdependence of the two states of dreaming and waking.

The external evidence is based on observations of sleeping bodies and of experiments akin to Huxley's lobotomy. The first of these is the observation of newborn babies. Unlike adults, they spend 50% of their sleep in the REM state. This gradually declines to about 25% by the time the infants are between two and three years old. This amount, which is much the same as that of a young adult, stays at the same level until middle age, from then on it begins to slow its temporal decline. (93)

But not only do newborn babies spend more time in REM, they also enter that state much more readily than adults. In fact, they slip into it immediately, whereas grown ups take 90 minutes of sleep before their first REM phase begins. In addition to this their REM-cycle is only half the length of that of an adult, which means that the intervals between REM periods are a mere 45 to 50 minutes in infants up to one year old, instead of 90 minutes. (94)

This not only highlights the fact that dreaming is an indispensable phase of sleep, but it also shifts the weight of precedence towards the dream. Certainly, Professor Jouvet of the University of Lyons thought that the REM phases of infants were a kind of programming process for instinctive behaviour. This became clear to him when he destroyed a particular group of nerve cells in the pons of cats, which control the muscular inhibitions during REM-sleep. After such operations the cats behaved in a perfectly bizarre manner, pursuing imaginary mice, showing signs of fear and aggression and retreating from invisible enemies; invisible, of course, to Professor Jouvet's eyes, but not to those of the cats. The damaged animals were without a doubt in a dream and clearly compelled to act it out, much the same as any somnambulist is forced to do. (Opus cit. 130)

As I see it, there is no other case outside the somnambulist' which demonstrates more convincingly that the dream not only precedes waking, but also governs it. Somnambulism is both a solipsistic and an automated state. The cat in REM with the damaged pons takes no notice of its observer, but simply follows the script of the dream. Although con-

scious, it is apparently without any sense of self-awareness. It is a true automaton. Professor Jouvet's experiment supports the conclusions Huxley derived from the lobotomy of his frogs and from the observation of the injured French soldier.

Both the lobotomy and the brainstem operation demonstrate that initiating action is not a matter of specific awareness or subject to the will to act, but that it is outside of the self-aware control of the individual creature. In other words, it is something that occurs whether or not there is specific awareness of what is to take place.

But from their actions it may be inferred that both the cat and the frog are conscious beings even after their respective operations. They were living creatures, although they lacked awareness of will and intention.

But animals are not alone in this matter of having automated bodies, as Huxley suspected. He rightly believed that humans too were in the same predicament. The case of the somnambulist is irrefutable evidence for this. But we have also seen a particular testimonial in support of this conclusion in Libet's experiment. It demonstrates conclusively that very much awake and self-aware humans, in possession of all faculties, in control of their will and sense of discrimination, that the choices made by them had been pre-empted by something else. That something else could not possibly be mere random molecular jostling in the brain; it had to be the clandestine software in their 'computerised' nervous system, the dream.

But when first we reflect on this matter, it seems hardly possible that such software could cover the entire waking period after some eight hours or even less, of sleep; after all, the programming of the software is restricted to a very limited time. This becomes clear, however, when we realise that we only dream every ninety minutes during one night, beginning with a very short dream phase after ninety minutes of deep sleep.

The phases increase in duration during the night. The first dream may last no more than five minutes, while the last one of the sleep cycle could be as long as 20 to 30 minutes. If we have 4 REM or dream cycles per night, beginning with a 5-minute dream after 90 minutes of sleep, then going to a second dream of 10, then 15 and finally 20 minutes, we will have dreamt only 80 minutes, but slept 8.66 hours. This means that this amount of dreamtime will have to cover all of the subsequent waking time, which is 24 hours minus 8.66 hours, leaving 15.34 hours of waking time.

We might well wonder how the dream is able to achieve this? I have already indicated in the dream with the figurine made from water pipes (See

"To Test or not to Test, that is the Question") that dreamtime is 'compressed' time, which will expand in waking time manifold. In short, while in the dream the hand only pushed and pulled the twig four to five times, the manifestation of this action was multiplied many times.

From this it is evident that dreaming time is very much 'compressed' in comparison with waking time; that a given dream event will in waking time expand exponentially.

There is yet another device that 'compresses' dreaming time. This device is the composite imagery the dream creates. It is a kind of stenography that turns to longhand in waking. Another comparison I have made earlier on is that the dream is a kind of computer zip program that will be unzipped as it hits the desktop monitor is waking consciousness.

This will not only explain how the dream can cover such a vast amount of waking time, but it also will throw light on the essential weirdness of dreams, their apparently bizarre actions and configurations. Clearly, if we were to look at a zip program as it is before it hits the desktop monitor, we would declare it to be no less bizarre than some of our dreams.

Yet another timesaving device is the fact that the dream is a double-sided coin, with one side portraying the 'innocent' part of a dream plot, as Freud would put it, while the other side outlines the sexual implications of one and the same image or indeed, plot. So, for example, if a married man dreams of having lost his house key, the consequences of this will be a problem of entering his actual house, either by a loss of the key to it or some other difficulty such as a faulty lock at the front door. In tandem with this difficulty of entering the front door goes the difficulty in having sexual intercourse with his wife who is represented by the house in the dream. The very word 'house-wife' is a conspicuous clue to this sort of interpretation. The key, of course, is a reference to the penis because its elongated form fits the hollow lock.

In contrast with this, as we recall from the sexual verification test, (See 'To Test or not to Test, that is the Question', 'International Journal of Dream Research', October 14, 2014) the husband of the Praguian dream had no difficulty in having intercourse with his wife, for in his dream she opened the door for him and allowed him to slip inside without resistance. Just why he had this dream is explained by the fact that a girl from Prague would come to his house, which is the 'innocent' aspect of the plot. The same fact also marks the location of sex: in the house where the girl from Prague came to lodge.

The new arrival from Prague points to another reason why the dream chose to portray the citadel of Prague as the centre of attention. This is because of the fact that the Praguian was a new interest. The dream relishes such situations when referring to impending sex. But since it is not possible to meet something new all the time, the dream picks at other times for its focus something in which there will be renewed interest. *From all this it could not be clearer that the dream is the software that stimulates our neurology into Huxley's required molecular changes in the brain.*

43. Another Look at the Unconscious

Many students of psychology and others, like Alan Watts, for instance, regret that Jung had followed Freud in calling the *wellspring* of life the 'Unconscious'. In this connection I have pointed out that choosing a name like the 'Unconscious' for the *principle of life* was really standing the matter on its head, or that it was at least prone to misunderstanding and confusion. I also suggested that this term came about due to the 'projection' of Jung's own incognisance onto the principle of life. As we look at this more closely, the question raises itself if there was not some other factor in his decision to adopt the term 'Unconscious' instead of 'Super-conscious', for instance.

Indeed, when we go over his definition of the 'Unconscious' more carefully, we get the impression that he was not really so sure of the true character of consciousness. This becomes particularly evident when we read the latter part of his definition which says: *"every psychic content must possess a certain energy value in order to become conscious at all"*. Does Jung, so we are compelled to ask, believe that something unconscious can become conscious? The fact

that he spoke of psychic contents that must possess a certain energy value in order to become conscious seems to suggest just that. It appears then as though he aligned himself to scientists like Hameroff who believe *consciousness was a product of biological processes that became evident in the neurological activity in the brain.*

But then again, when we go to his statement about the continuity of consciousness, we are inclined to think that he sees consciousness as something uninterrupted after all. Indeed when he says: *"As there is a continuity in consciousness, despite the fact that it is regularly interrupted by sleep..."* {95} We see at once where the cause of confusion is to be found. It is in the lack of differentiation between 'conscious' and 'aware', and between 'unconscious' and 'incognisant'.

This, like no other of Jung's statements spells out the problem of undifferentiated usage of the word 'conscious'. Clearly, here he means to say: 'As there is continuity in consciousness, despite the fact that awareness (present in the waking state) is regularly interrupted by sleep...' From this we infer that Jung did believe in the continuity of consciousness. Indeed, it would seem absurd for him to think otherwise, most certainly after his mystical experience that showed him experientially that time was only stretching out into infinity in the ordinary waking life, but not in the realm of eternity. He would also have known from such an experience that the 'Drone Consciousness' is never extinguished even when we are in a state of unawareness.

In light of such considerations it seems all the more absurd to call the 'well-spring' of life, the Drone Consciousness, the Unconscious. True, while we are enraptured by the sound of the melody we don't hear the drone, but to negate it with 'un-' is denying its indispensability, its function as the foundation of life.

Indeed, to prefix it with un- is not only absurd, but perhaps also somewhat demeaning as an indicator of our remoteness from the source of our being. It underscores our superficial understanding of life on earth and in particular of the superficiality of scientific investigation. As I have said before, investigating life without considering the inner realities of the human species is equal to disregarding the inner reality of the human body when investigating its overall function and origin.

44. Reconsidering our Forebears' Point of View

In the section of the 'Myth Revisited' we saw that all myths, no matter what form they take, have one thing in common. It is the enduring presence. We saw that Lederman's myth was no exception. It too presupposed something that was before the Big Bang. While Lederman referred to it as 'potential' and 'laws of nature', the world myths portrayed it as an eternal entity like Heraclitus's Logos, the creative word; for others it was an originator deity or a cosmic egg. No matter what form this enduring presence took, it clearly referred to one thing only: unbroken Consciousness, 'Drone Consciousness'.

In view of the fact that most myths are ageless, that all of them concur in a belief in an enduring presence in spite of regular annihilations of the cosmos or the extinction of the perennial fire, it is difficult to declare them to be mere superstition or primitive man's explanation of the inexplicable. We need to rethink our forebears' point of view in mythology. This is the more important since myths and dreams are without a doubt twins from one ovum. Of course, ultimately

all stories are dream inspired, even those that contradict the value and purpose of the myth, yet there is a kind of family likeness between the private dream and the myth as world dream.

The point I wish to make here is that we reconsider the view of the ancients about dreams and myths; that we reflect on our readiness to shun them in scientific probing of the human lot, of origin and development.

If we do that, we will sooner or later come to the conclusion that consciousness is not something generated in the course of biological processes, but that it is a *primary reality*, an eternal presence like the Logos of Heraclitus. Indeed, when we remember, once again, that there are *no objective facts of any description*, that all investigation is subjective, no matter how much mechanical, electronic or mathematical proof we might put forward, both physical and metaphysical investigations are on a par in one thing: Ultimately they *all rely on interpretation; moreover, interpretations of subjective facts*. And let us not forget at this very point that although the consensus of the word 'fact' is that it means 'something that is indisputably the case', the word's Latin root itself points to something that is 'made' or 'done'. In short, the very etymology of the word 'fact' reveals that it's something utterly *subjective*, underpinning my contention once more that there are no objective realities. Clearly, no matter how exacting scientific experimentation and measurement might be, it can never speak for itself; it will always rest on interpretation - creative, lofty thought. In the end all experiments, all creative thought, all theories are constrained by the basic premise on which they are built and from which they proceed. *Indeed, the premise is like an egg. What will break through in the end is what is genetically determined. A hen's egg will not produce a peacock. The moment we establish a premise, we have limited our field of investigation and determined the bounds of our quest.*

What is of crucial interest here is that if our premise is founded on perennial consciousness, the question of how life originated is solved at once, for it is all too obvious that life, like the yolk in the egg is inherent in consciousness. When, on the other hand, we reject this fundamental premise, we will be looking for the origin of life in matter, which is but the shell of the egg and thus inherently lifeless, even though it envelops the yolk.

45. Number 64: Inception

"When I get older, losing my hair...will you still need me, will you still feed me, when I'm sixty-four"? So goes the song the sixteen-year-old Paul McCartney wrote in December 1966. George Martin and Mark Lewisohn speculated that the number sixty-four came into the composer's mind because earlier in that year his father had turned sixty-four. (96)

This might well have been the case, but there is also another, more intriguing, explanation for this. Those who have read the biography of McCartney and the Beatles will know that the entire melody of 'Yesterday' came to McCartney in a dream. Before I continue, I must draw attention to the way this was penned in Wikipedia: "McCartney composed the entire melody in a dream". This bespeaks our reluctance to give credit where it is due. Instead of crediting the dream, over which McCartney had no control whatsoever, the phrasing implies that the young man was fully in charge of what was happening in his nocturnal theatre.

To his credit, McCartney himself, like Mozart who freely acknowledged that he often dreamed his music, was far less possessive than is indicated in his historical note. In fact he was very concerned that "he had '*subconsciously*' plagiarised someone else's work (known as cryptomnesia)". But, when after much enquiry in the music business no one seemed to have heard this melody, he was satisfied to own it as his tune. After this, he began writing the lyrics to the melody. But this did not go well at all. Just how badly it went may be gathered from George Harrison's quip: "Blimey, he's always talking about that song. You'd think he was Beethoven or somebody!" (97)

Even with the help of Lennon, the words of the song and its title would not come together until, "*one morning Paul woke up* and the song and the title were both there, completed". (98)

I have heard this sort of comment often when inventors were asked: "Where did you get this idea from"? To which the response often was: "I woke up one morning, or, I woke up in the middle of the night, and there it was"!

So does all this suggest that McCartney not only received the melody of "Yesterday" in a dream, but also the final words and title? According to my own experience, observations and records, it does most definitely mean that. This is what I dubbed a '*cryptomnesic recall* of a dream' earlier on. All ideas, inspirations, instinct, premonitions and what have you are cryptomnesic recalls of a dream. Any other form of conceiving ideas, receiving inspirations are derived from a direct recall of a dream such as in the case of the melody of 'Yesterday'. *In short, all that we think is dream inspired; all of what we experience and feel is based on our dream-software. Nothing is from the self. It is passive; it is the recipient in every case, never the originator. To say otherwise is epiphenomenal delusion.*

In view of this, McCartney's song of 'Sixty-four' can confidently be classed as dream inspired. And when we remember Sikorsky's case that demonstrates the long arm of our dreams, or Michael Barnsley's twenty-year nightmare, it is not so farfetched to surmise that the sixteen-year-old McCartney was 'cryptomnesically aware' of what would happen when he himself would be sixty-four years old; that he would be cryptomnesically aware of the split from Heather Mills who would no longer need him or feed him; that the reverse would eventuate, where he would have to shed millions for having been attached to her.

It seems an outrageous claim to make. But it must not be forgotten that *dreams are sourced from the realm of absolute consciousness where everything is one, where time is called eternity, where all is known and where not only our 'software' is 'engineered', but also our hardware*. In light of this it is perfectly logical that this distant 'sixty-four' was quietly present when the words for the song were scripted.

It must not be thought that I am suggesting that McCartney was in some way psychically aware of this, so fastening his mind on 'sixty-four' while composing the lyrics and thus incorporating it in 'his' lyrics. To think that would mean that his self had been in possession of the power to decide that sixty-four should be a crucial ingredient of the song. This was plainly not the case, for all of it was the doings of the dream software, meaning that the self and its physical equipment was no more than a tool of actualisation of the dream's content. In short, it would have been as Robert Louis Stevenson suspected: "*The Brownies do one-half my work for me while I am fast asleep, and in all human likeli-*

hood, do the rest for me as well, when I am wide awake and fondly suppose I do it for myself.” (99)

‘Fondly suppose!’ That is as much as the self is permitted to do. But even that is a gift, just as the sense, the feeling of free will is also a given, given to endow us with a sense of integrity, but also with a sense of guilt when things go wrong.

To sum all this up, seen from the perspective of the self that is caught up in time, the coming together of these so widely spaced ideas would quite rightly be seen as coincidental. On the other hand, viewed from the perspective of absolute consciousness, which is beyond time and therefore all one, where, in other words, everything is forever in touch with each other, such coordination of a motif is perfectly natural.

And just as all the sixty-fours of this song are naturally associated with one another, so are all the rest of the sixty-fours that ever were, are, and will be, intimately associated with one another. Thus we have arrived at what Aristotle firmly believed: “*That all natural things, both sentient and insentient, were manifestations of different ‘fixed forms’, or ‘eternal ideas’*”. (100)

In other words, he was convinced that all things in creation had an *intended* role to play in a divine and cosmic order.

He was, of course, not alone in this belief; Plato shared it with him, and Jung also joined the two, but reinterpreted and consequently renamed the eternal ideas ‘archetypes’.

It is of interest here to look at the etymology of ‘idea’. Barbara Walker, in her ‘Woman’s Encyclopedia of Myths and Secrets’, tells us that it meant ‘Inner Goddess’, and then continued by saying, “occult traditions said an idea emanated from the Female Soul of the World (Shakti, Shekinah, Psyche, Sophia, etc.) Her ‘ideas’ were like personal Muses, ‘which forms she did in the Heavens above the Stars frame to herself’”. (101)

She then goes on to say, “Medieval theologians disliked the Idea’s feminine connotations and turned away from the ancient theory of the *eide* to the astral theology of Aristotle; that is to astrological determination of thought”. (Opus cit. 424)

From this transpires that in essence both the feminine and the masculine ‘theology’ are in agreement that it is not humans that originate ideas, but something else. In the pagan tradition this something else is a Goddess and in the masculine tradition it is the stars. Clearly, what matters here first and foremost is that there is agreement among the old and new ‘theologies’; that ideas come from somewhere outside the ambit of human will and action, that they are *gifts*.

This means that there is also one point of agreement between the theists and science. This point is that ideas, according to the verification test, which is a perfectly *scientific procedure since it involves prediction and verification*, ideas come from the dream-software, which too is outside man’s control.

Thus there is common ground in this matter between the theistic point of view and that of science; the differences merely extend over their respective terminology. Indeed, it would be difficult for a theist to argue that dreams did not come from a divinity, since in religious traditions it was thought that dreams were messages from a deity, messages whose interpretations were called *dreamdivining*.

Anyone who is familiar with the Old Testament in particular, will know just what an important role dreams play in that book. I have already cited the quintessential verse in the

section of ‘Freud’s Determinism’: “*For God speaketh once, yea twice, yet man perceiveth it not. In a dream, in a vision of the night, when deep sleep falleth upon men, in slumbering upon the bed: Then he openeth the ears of men, and sealeth their instruction*”. (33:14/15/16) In fact in some OT passages a dreamer and a prophet are put on an equal footing, such as in Deuteronomy 13:1-3, where it says: “If a prophet or a dreamer of dreams arises among you and gives you a sign”... Or again, “The prophet that hath a dream let him tell a dream”... (Jeremiah 23:28). And, of course, not to forget that well-known story of Joseph’s gift we have looked at in the section of ‘The Josephian Interpretation’.

So if the rest of the scientific world were to come on board, testing and verifying the *interpretations* of our dreams, not just the observing and recording of the physiological aspects of dreaming, they would have to come to the view I am advancing here, with the consequences that there could at least be a partial reconciliation achieved between physics and metaphysics.

There are pockets of receptivity toward this idea, for there are a number of oneirological studies that have now demonstrated that there is continuity between dreaming and waking. (“Finding Meaning in Dreams” G. William Domhoff: “We believe the findings to be presented in this chapter demonstrate a continuity between dreams and waking life: the concerns people express in their dreams are the concerns they have in waking life.” (Chapter 8) “There is now impressive evidence on the similarities between dreaming and waking cognition, suggesting they lie along a continuum rather than being distinctive forms of thinking. (Chapter 9))

Interestingly enough, there are researchers who have found that there are a sufficient number of dreams that have proven to be ‘*psychic*’. This has prompted them to classify them as a separate and scientifically attestable category. According to the latest research into this field they have been named ‘*psi-dreams*’. There was in fact an on-line conference launched by IASD for September and October of 2015. It dealt specifically with this category of dreams. The letter of invitation to this conference was headed: “Leaping into the Mystery: The Psi-ence of Dreams”. The letter continued as follows: “Dreams, and psi, and psi dreams, are inherently mysterious: largely unobservable except within the *experiencing mind (sic)*. *Only the boldest of scientists dare explore these hidden realms*”.

So there we have it. Boldness is required to forge ahead in this field. I feel confident that we are on the cusp of a breakthrough. Emboldened researchers will throw themselves into the Babylonian abyss of death and resurrection, emerging as initiates with the courage and skill to proclaim that the ancients were right after all.

46. Number 64: Ancient

The mathematician W. R. Ball reports the following legend: “*In a temple of Benares, there is a dome under which a plate of bronze marks the centre of the world. On this plate, there are three vertical stems of one cubit height. During the creation of the world, God placed on one of the stems 64 discs of gold of different sizes, the largest at the basis, the others going decreasing. On top the smallest disc. This accumulation is the tower or Brahma. Night and day, without stop, the priests relay to transfer the discs from a stem to another. Only one disc must be taken and it is forbidden to place a disc on another of lower diameter. When the 64 discs will be transferred from the tower of Brahma to another stem, the*

temple and the universe will crumble. This will be the end of the world". (102)

A suitable commentary on this tower is surely what Claude of Saint Martin said about 64: "This number represents the complement of the octagonal circle where the powerful number, after having covered all the depths of area and of the existence of the beings, restores the unit in its simple number, there where it was divided, and the action where reigned the nothingness and the death". (Ibid)

Clearly, sixty-four is the number of creation and destruction. It could well be the mathematical expression of Heraclitus' Logos that initiates the eternal fire of the universe and extinguishes it regularly. So it is little wonder that the ground plan of the Hindu temples generally consist of 64 squares. (103)

This floor plan is actually a sacred Mandala, which is a Sanskrit word that means 'circle'; however, temple mandalas are square. They are ritual designs representing the universe.

If we suspected that the chessboard was also a Hindu Mandala, we would not be wrong. Indeed during the Gupta Empire the temple plan was adapted to warfare. The Kshatriya or military cast was divided into four divisions: the infantry, cavalry 'elephantry' and 'chariotry', segments that would eventually evolve into what we now know as pawns, knights, bishops and rooks. (104)

To western eyes this might seem a travesty, but when we learn that the Bhagavad Gita, the most popular of the sacred books in Hinduism, represents the spiritual quest in terms of a battlefield, it is not surprising at all and becomes a powerful metaphor. The Gita itself declares in its opening verse: "On the field of Truth, on the battlefield of life, what came to pass, Sanjaya, when my sons and their warriors faced those of my brother Pandu"? (105)

But then we will find that Jehovah was not just a God of peace, but also of war. In Exodus 15:3, we find this kind of testimonial: "The Lord is a warrior; the Lord is His name".

This is widely seen as monstrous, and condemned by non-believers. They ask: "How can a God who is supposed to be a God of Love be so cruel"? Even theologians find it difficult to deal with this. We can gather this from the way they dealt with verse 7 of Isaiah's forty-fifth chapter, where it says: "I form the light, and create darkness: I make peace, and create evil: I the Lord do all these things". Their difficulty comes to light when we find that they expurgated the King James' version by translating 'evil' with 'calamity'. So we find that the ESVBible.org translation is: "I form light and create darkness, I make well-being and create calamity, I am the Lord, who does all those things".

If we remove ourselves from the concept of God for a moment and see instead a purely abstract creative principle such as Heraclitus' Logos, then we find it easier to accept that an aspect of creation is destruction; that a white canvas needs to be partly 'blackened' for the work of art to emerge. That blackness in biblical terms is either 'evil' or 'calamity'. From the point of view of the artist, the creator, it is simply black or other dark paint for the sake of contrast that begets tangible form.

In the physical world this translates to illness of the body, for instance. This is why the EVSB translates 'peace' as 'well-being. In the field of mind it becomes depression, the 'Black Dog'. Clearly, for the world to be visible, contrasts are of necessity, as I have already pointed out. And part of

this contrast is another factor that is part of life. This is the constant swinging from one opposite to the other.

47. Number 64: In Chinese Culture

China has the honour of possessing the oldest record of the number sixty-four. There it became the foundation of the I Ching, the most widely studied book of the five Chinese Classics. Its origin goes back to the legendary Emperor Fu Hi (2953-2838 B.C.) It most probably had its roots in prehistoric divination techniques, which could possibly date back as far as 5000 B.C. (106)

As a book of oracles the I Ching has spread over the entire globe and is widely consulted for advice in all of life's situations. It is thought that the 64 hexagrams the book contains represent every essential condition in human experience. (Opus cit. v) The mythological origin warrants a closer look, for it is quite instructive with regard to our study. It is said that the mythical Fu Hsi, who also invented many essential survival skills, was walking on the banks of the Yellow River when he caught a glimpse of a dragon coming out of the waters wearing on his back the signs of the 8 trigrams, which would in time form the basis of the oracular 8x8 or 64 hexagrams. (Opus cit. xxxviii)

This betrays the real channels of transmission that brought the basis of this number into human awareness. When we recall that myths and dreams were twins from one ovum, together with the fact that in Chinese myths and symbols the dragon represents the heavenly energy that reveals itself not just in clouds and lightning but also in inspirational thought, we can safely surmise that it was a dream that transferred the basis for 64 from its transcendental home to earthly awareness.

There is a case in Western science that supports this idea. The most significant contribution to biochemistry came to its inventor in a dream. The inventor in question, or perhaps more accurately expressed, the discoverer, was Friedrich August Kekulé von Stradonitz. His discovery and biochemical configuration was the Benzene Ring. He found that carbon atoms could form not only chains but also *ring* molecules. But before he came to this conclusion he mulled over the bonding of the elements for a very long time without success. He was unable to visualise this vexatious bonding no matter how hard he tried. In Kekulé's own words: ... "my mind was elsewhere. I turned the chair to the fireplace and fell half-asleep. Again the atoms gambolled in front of my eyes. Smaller groups this time kept modestly in the background. My mind's eye, trained by repeated visions of the same sort, now distinguished larger formations, of various shapes. Long chains ... everything in the movement, twisting and turning like snakes. And look: what was that? *One snake grabbed its own tail*, and mockingly the shape whirled before my eyes. I awoke as if struck by *lightning*: this time again I spent the rest of the night working out the consequences". (107)

Kekulé's exclamation, "like lightning", takes us at once to the Chinese dragon of inspiration. Of further interest is here that some sources say that Fu Hsi himself, a divine being, had a serpent's body. Without a doubt we are here in the midst of origin symbolism. We are reminded of Ouroboros, the World Serpent that encircles the globe, which, "as male serpent deity became the phallus consort of the Great Mother... in some myths she allowed him to take part in the work of creation or to fertilise her world-producing womb". (108)

Because snakes slough their skins on a regular basis it was thought that they lived forever and so became the symbol of eternal life. This is particularly the case in snakes swallowing their own tail, so forming a circle signifying never-ending existence.

The Chinese envisioned resurrection of the dead as a man splitting his old skin and coming out of it as a youth again. (Opus cit. 903) From all of this it is all too evident that we are not just in the land of myths, but also in the realm of dreams, Kekulé's dream in particular. What is of especial interest in his hypnagogic vision, reminiscent of Edison's, is that the snake as a symbol for infinite life portrays the infinite chain of Benzene molecules. It is, as the graph of the Ring, not just a chemical sign of a molecular structure, but also a modern symbol, as it were, for the ongoing processes in life: the serpent myth has been updated to a biochemistry 'myth'.

We might here also remember that Kekulé, like Stevenson, *shaped and honed, plotted and structured* his dream, but he is not saying, as Stevenson did: "*The Brownies do one-half my work for me while I am fast asleep, and in all human likelihood, do the rest for me as well, when I am wide awake and fondly suppose I do it for myself*". Such a comment can only be expected from a habitual dreamer who knows from experience that everything is a gift of the dream software. However, to his credit Kekulé did say, "let us learn to dream, gentlemen, then perhaps we shall find the truth". (109)

Over time the 8 trigrams were expanded to the 64 hexagrams. In the years that followed this inspiration, several students of the evolving book contributed to its interpretation and expansion of the commentaries. King Wen and the Prince of Chou brought the book to its present form. Confucius and his learned circle made the final and most outstanding contribution by enriching the book with further comments.

When, thanks to Richard Wilhelm's translation of the book into German, its message reached Europe. The author asked Carl Jung to pen a foreword for it. He obliged, but in order to assess its worth as an oracle, he tested its predictive capability before setting pen to paper. He was suitably impressed with the results since they seemed more than probabilities. And indeed, today we can confirm the essence of his prediction since it not only flooded the American market, as he said it would, but exceeded that prediction by eventually conquering the entire globe.

One of the quintessential comments Richard Wilhelm made in his introduction to the book was: "*Nearly all that is greatest and most significant in the three thousand years of Chinese cultural history has either taken its inspiration from this book, or had exerted an influence on the interpretation of its text. Therefore it may safely be said that the seasoned wisdom of thousands of years has gone into the making of the I Ching*". (110)

Later on he quotes something Confucius had said, standing by a river: "Everything flows on and on like a river, without pause, day and night". Those who are familiar with pre-Socratic philosophy will know that exactly the same observation was attributed to Heraclitus, and was also recorded by the mathematician Simplicius of Cilicia. It shows that in the deepest wisdom East and West concur. It demonstrates that the most fundamental truths are universal, suggesting that there is but one source for them: the transcendental and eternal 'ideas' contained in universal consciousness from which they are transmitted to us by means of the dream.

But it is also a suggestion that the number 64 too is a universal concept, one that might well be part of our physical makeup.

48. Number 64: In the Science of DNA

There is a curious parallel between the history of the I Ching and that of DNA. In both cases the origin of the number 64 goes back a considerable stretch of time before it grows from 8 *trigrams* to the number 64, in one case, and in the other, to 64 from the *triplet* code or *trinucleotide* sequence of DNA or RNA that corresponds to a specific amino acid. (111)

In both cases we have an originator of the process. The beginning of the Chinese development of the I Ching dates back about 3000 years to a legendary, indeed mythical, king in serpentine form. In the history of DNA the beginning of the quest does not start with a mythical figure, but a Swiss biochemist by the name of Friedrich Miescher, who, in 1869, isolated a new substance from the nuclei of white blood cells, which he called nuclein, or DNA in today's terminology. (112)

While the space of time between the origin and the end result of each case differs enormously, there are nevertheless parallels. Parallels, which shed a telling light on the cultural differences in which the respective developments occurred. They may seem to diverge when we focus on the way they were conceived. But if everything is dream inspired, then this difference is removed.

I am aware that this is difficult for most people to accept. While I have at least shown that in the case of the I Ching the conception of the trigrams was more than likely dream inspired because of the mythological factor, I shall now make a case for dream conception in Miescher's scenario. True, it looks as if he alone had found nuclein because of his tenacious laboratory work and perhaps also thanks to a hint here and there snatched up in professional discussions. But he also had dreams every night, and although he had not recorded one in connection with his discovery, there are other scientists who have recalled their dreams, and found that they resolved questions they harboured for some time without reaching a resolution. One of these was Kekulé, another was Otto Loewi whom we need to call up now in order to strengthen the case for the dream software.

Loewi had learnt from Galvani's experiments with frogs' legs that the transmissions of nerve impulses were of electrical nature. The frogs' legs twitched when stimulated with electrical currents. Loewi had a hunch that chemical solutions might also be involved, yet he was unable to think of an experiment to prove it. And, as with so many other discoverers and inventors, the experiment came to him in a dream. When he woke from it he scribbled a sketch of it and went back to sleep, but in the morning he was unable to decipher his notes.

Then something rather unusual happened. In his own words: "The next night, at three o'clock, the idea returned". Let's recall for a moment what IDEA means: The Goddess within. Yes, in Ramanuja's case it was literally so, for he used to pray to his personal Goddess for new mathematical ideas. Loewi didn't see it that way; he only thought that it was fortunate that the dream returned. Here we have yet another Goddess: Fortuna - few think about that when they use the term 'fortunately'. (113)

Anyway let's see what he reported: "The next night, at three o'clock, the idea returned. It was the design of an

experiment to determine whether or not the hypothesis of chemical transmission that I had uttered seventeen (!) years ago was correct. I got up immediately, went to the laboratory, and performed a single experiment on a frog heart according to the nocturnal design. By five o'clock that morning the experiment was done and the point proved." (114)

We might well wonder if he reflected on this matter a bit more and asked himself if he not also had a dream seventeen years ago to tell him that nervous impulses needed a chemical solution of one kind or other. We don't know if he did. But, judging from the general attitude among scientists that thought may not have occurred to him. Not his fault, of course; all thoughts are dream inspired.

I believe that our forebears also had dreams that dealt with the wonders of DNA. However, they were not directed to prove them experimentally, and so science cannot accept their validity for lack of tangible proof. Yet there is, in principle, the same message in Mercury's double helix of serpents, creatures that symbolise the origin and evolution of life, just as does the double helix of DNA, something that I have broached earlier on in the segment on Synchronicity. Both are message bearers that control life. However, while science sees life in terms of chemistry, mythology sees it emitting from the realm of the gods. Today we are quick to dismiss this idea without pausing to think if there might not be hidden a more scientific truth in such anthropomorphic representations of energies.

There is. This comes to light when we substitute Mount Olympus, for instance, or the Heavens, with the Cornucopia of Consciousness without which there is no world, no gods, no Heaven, no existence. Consciousness is a scientific concept that not only is within every living being's experience, but is at the same time the ground of existence.

So, consciousness has to be acknowledged as a primary fact, a primary reality, with everything else dependent on it. Put another way, we are utterly and unreservedly dependent on IT. This is precisely the point mythology makes when it proclaims Mount Olympus, or the Heavens above to be unassailable, a realm of omnipotence and omniscience.

Neither would it be irreverent if we proclaimed: "In the beginning there was Consciousness". Or better still: "In the beginning-less beginning there was Consciousness and the Dream is its Messenger".

49. The Four Wise Men

We have seen how Huxley declared animals to be automata; we also learnt how Freud insisted that we were sleepwalkers, absolutely at the mercy of the Unconscious, and how Jung experienced a great number of dreams overruling our intentions. And last, but certainly not least, how Libet's experiments proved to him unequivocally that our choices were made up to half a second before the idea of choice even entered our head, a timespan, which in a later study by Brando Keim in April 2008 was extended to seven seconds, thus pre-empting our motivation, and intentions to act, demonstrating beyond doubt that we deceive ourselves when we imagine that we are free agents with a personal opinion.

This is precisely what the myths of the Greek gods, and others from all over the world, intended to teach humanity. So really, the mythmakers the world over, the great dreamers, were very much ahead of our current scientists who are still struggling with this *experimentally proven fact*. They find it difficult to accept that whatever they discover or invent

has nothing to do with themselves apart from them being the instrument of something outside their ken. According to the myths of Mercury, for instance, it was really this deity who invented new things. This can be gathered from his life story. It is said that as soon as he left his cradle, he invented the lyre and presented it as a gift to Apollo. But he invented the flute as well, which he also gave to Apollo in exchange for the caduceus and lessons in augury.

If we stop here for a moment and reflect on the fact that Apollo was the sun god, representing light and with it intelligence and indeed, consciousness, we have at once a similar picture to what I have presented with respect to our dependence on consciousness. Mercury is in this no exception, which is revealed in his eagerness to please Apollo. But here we might object by saying that it surely must have been Zeus who embodied that quality, for the fact that he was the highest of the gods and wielded the thunderbolt and lightning seems to imply that. So it might well appear, but when we remember that he was the highest and most distant, with all the powers one can think of, he better fits Freud's Unconscious that rules us absolutely.

The goddesses of ancient Greece and Rome made it absolutely clear that man was no more than a toy in their hands. A good example are the three daughters of Zeus and Themis, Atropos, Clotho, and Lachesis, whose authority extended over everyone, from the greatest to the most humble, from the strongest to the weakest. The first spun a thread, signifying the life from birth to death, the second unravelled the thread, symbolising the unfolding of an individual's life, and the third cut the thread, signalling the end of life.

"They were resolute and blind (!) and they determined the hours of beginning and ending. They were the destiny, which constituted the history of each day". (115)

As Freud said: *'The Unconscious implies a determinism that rules both the conscious and unconscious life absolutely'*. The Moirae, the resolute and blind sisters endorse his view unreservedly. But was Freud able to submit to his own findings? Not if we can go by what he had said about 'coincidence': "Coincidences only exist in the material world: there one can choose between 'heads and tails'. But coincidence does not exist in the world of the psyche: in the dream one cannot play 'heads or tails'. It would be a game of deception since casting the dice would be directed by the Unconscious". (116)

Encountering this sudden differentiation between 'psychic determinism' and 'material determinism' compels us to ask, if this was Freud's attempt to escape the iron grip of his 'absolute' determinism? Or is it a sign that Freud failed to consider what he had said when he spoke of a determinism that supposedly ruled *both the conscious and unconscious life*? Indeed, is 'conscious life' for him, so we must wonder, not the same as living in 'the material world'? And if it is, as logic would tell us, then all of what we experience is determined by the Unconscious, not just the dream life.

If Freud had only realised that the dream was the blueprint of waking, he could never have slipped up as catastrophically as his distinction between 'psychic' and 'material determinism' reveals. Had he forgotten, so we wonder, that in his theoretical and final chapter of his psychopathology he said: "The Unconscious, for instance, evinces a *somnambulist certainty in its calculations*, which it executes without the help of consciousness, and moreover, it does it so well that a *choice of a number by chance* is impossible". (Opus cit. Page 81; my translation)

Surely the numbers chosen by the Unconscious had to appear in the material world in order to be known. It is indeed curious that Freud, who had investigated psychosomatic illnesses and also had studied hypnotism, came to make a distinction between two kinds of determinism. Clearly, his confusion had to be engineered by Mercury himself.

This brings me back to what Combs and Holland said about Hermes or Mercury. They saw him as the trickster par excellence, which he is indeed, according to the ancient Greeks. But in the case of Jung's 'synchronistic wonder', he did not conjure up the scarab at the moment Jung's patient retold her dream, but, if a role must be attributed to him in that case, his 'trick' was to blind Jung to what really had happened. And once again, this blindness was simply a lack of understanding, or in his case, rather of conviction that dreams were 'futuristic', which alone does explain the truth of that apparently acausal and yet so 'meaningful coincidence'.

With this we have spelled out the difference between Jung's failure to accept that dreams foresee the future without exception, and Freud's inability to see that the Unconscious rules both the waking and the dream life; that in fact the Unconscious directs our waking life by means of the dream software.

It would, of course, be easy to make a case that Jung, as the healer, did not want to spell out the plain truth to his patients that dreams were without exception prophetic. But since he said, "*I have therefore made it a rule to regard dreams as physiological facts*", (117) we can no longer allow him to justify his view that adverse dreams could be changed for the better. Yet, realising what catastrophe the dream of his mountain climbing colleague foreshadowed, he tired to avert it by advising him never to go climbing alone again. Jung's advice was duly ignored with fatal consequences.

Should that not have been a lesson for him about the irrevocability of the dream's plan? It was not. Even the numerous and various other substantiations of this same principle evident in a great number of observations failed to convince him that dreams were unalterable programs for waking life. Even in the face of his several admissions that "*the fate depicted in the dream ran its course*", he was compelled to cling to the notion that dreams were mere outlines of probabilities.

But, what is even more astounding than this is the fact that not even his mystical experience could persuade him that everything pre-existed in what he called eternity. He was clearly unable to accept that, which we may readily gather from his misunderstanding of the scarab incident that followed well after the mystical ecstasy. As I see it, this is again a clear case where Mercury stood in the way of enlightenment; or to put it in simpler terms: It was not in his dreams.

Although Huxley was more emphatic about humans being automatons like the rest of the fauna, he too betrayed some misgivings about it when he said, that 'humans also enjoyed an *intelligent life*'. With those words he obviously meant to intimate that there was, after all, some difference between the human automaton and that of the animals. (118)

Yet, there is none. Today, animals can no longer be excluded from the realm of self-awareness, which most definitely was the case before the revolution of the Internet. But now, with the prolific Youtube evidence of self-awareness among animals, science must drastically revise its perspective on the matter. Here too, it seems that it was difficult for

Huxley, as the exponent of epiphenomenalism, to credit animals with the same internal life we humans enjoy. Was it difficult for his ego, we wonder, to come down from the heights of the 'pinnacle of creation' to the 'lesser' life forms? This may well have played a part in his remark, but ultimately it comes down to the dream software again.

And finally, we wonder how Libet fared in the question of epiphenomenalism, in the realisation that we might well be pure automatons? We have already seen how he tried to extract himself from that demeaning fate by suggesting that we just might be able 'to veto' the decisions forced on us. As we recall, John Gray cast serious doubt on that when he said, "*it is unclear how we can even know that we have deliberately exercised this capacity. For all practical purposes, it might as well not exist*". Indeed! Libet, like Freud, Jung and Huxley reveals with his veto that he was extremely uncomfortable with the thought that he was not in some way separate from, and superior to, the 'ordinary' animals. This reminds us of the storm of protest that arose when Darwin proclaimed that we were descendants of primates. Indignant theists were up in arms, and quips and cartoons ridiculed such an outrageous suggestion by insisting that Darwin alone was an extension of the primate family.

Libet's reservations, and those of the three other 'wise men' are a perfectly natural reaction. It is typical of the ego, the little self, to regard itself as something special. Indeed, within Jewish and Christian societies it is even encouraged to think like that since it is biblically sanctioned. "And God said, 'Let us make man in our image, after our likeness, and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, *and over all the earth*, and over every creeping thing that creepeth upon the earth'" (119)

Perhaps today, in light of the indisputable evidence for the similarity of mankind and the animal kingdom, we should look to creation stories that precede the Hebrew version. I have in mind the Sumerian myth of the creation of man, to whom the biblical scribes are much indebted, as we have seen in the chapter of 'The Creation Myth'. According to the Sumerians, mankind does not enjoy the accolades of the Hebrew version; on the contrary, instead of being created to have dominion over all the earth, mankind was created to relieve the gods of their work, such as the heavy toil of digging channels for irrigation.

"When gods like men
Bore the work and suffered toil
The toil of the gods was great
The work was heavy, the distress much."
(120)

Under such circumstances it is not surprising that the ancient texts tell us that 'at some point the gods mutinied against their labour'. (Ibid) It was Anu, "the god of gods", who agreed saying: "Their labour was too great. His son Enki, or Ea, proposed to create man to bear the labour, and so, with the help of his half-sister Ninki, he did. A god was put to death, and his body and blood was mixed with clay. From that material the first human being was created, *in the likeness of the gods.*" (Ibid)

This not only describes a vastly different perception of the place of mankind, but it also, astonishingly, foreshadows what is happening today with the creation of computerised 'humans', the only difference being that they are not created for the gods, but for ourselves.

Whether or not this is cause for celebrating, as the Sumerian gods believed it was, after creating man, is questionable, but what is certain is that here again the little self is desperately asserting its superiority by elevating itself to the heights of the Sumerian gods. The ego is loath to admit that it is a mere automaton, and, in order to make its point, creates automatons in its own image, thus elevating itself to ostensible divine status. This curious tendency towards self-elevation, which must be, since all is given, built into the dream software, is so universal that we suspect there is something deep-rooted in it that warrants serious investigation, something, which we will have to address later on.

50. Newton's Prism

Earlier on I suggested that the dream can be regarded as the software in the human computer. While this might be analogous to the ancient view that dreams were messengers in the service of a divinity, it does not clarify the dream's relationship to absolute consciousness. In order to exemplify that, we need to follow Newton's discovery and demonstration of what happens when pure white light passes through a prism placed on the windowsill. It creates a rainbow in the darkened room. In this setup the white light of the sun represents pure and absolute consciousness. The prism on the sill stands for the human brain and the rainbow in the room plays the role of the world, the universe. This demonstrates that our brain is the agent that manifests absolute consciousness in terms of life on earth.

There is yet another step to show where the dream fits into this picture. This step is the realisation that unlike in Newton's prism there is a switch in the brain, a chemical switch. It is located in the pons, which I have mentioned in connection with Professor Jouvet's experiments on cats. For simplicity's sake let me just say that the pons is not the only neurology that causes chemical changes controlling sleep and dream behaviour. The main point here is that chemicals pervading the brain act as a switch initiating sleep and waking. In other words, it is the brain that regulates dreams and waking, thus switching a person's outlook either toward the external or internal world.

If nothing else, this illustrates the transformation of absolute and universal consciousness to individual or ego consciousness. It is opportune here to draw attention to the importance of the dream: it is indispensable to the continuation of life; in other words, it actually determines what will happen to us and how long we will live. Experiments with rats show this unequivocally. Researchers at 'The Sleep Research Laboratory of Chicago' found that rats deprived of sleep, making it impossible for them to dream, died within 11-32 days. "No anatomical cause of death was identified. All TSD (Total Sleep Deprivation) rats showed a debilitated appearance, lesions on their tails and paws, and weight loss in spite of increased food intake. The yoked control (TSC) rats remained healthy." (121)

Of course, it will be argued that it was the lack of sleep that killed the rats, but in light of my own studies, which clearly show that the dream anticipates the events of waking, such an argument is void. I believe this is truly a wakeup call for science to take dreams more seriously. But then again, that too is determined by the dream software, as were those sleep deprivation experiments.

51. Lucid Dreaming

The Dutch psychiatrist and author Frederik van Eden (1860-1935) is credited with having coined the term lucid dreaming. (122) "In a lucid dream, the dreamer has greater chances to exert some degree of *control* over the participation within the dream or be able to *manipulate* the imaginary experiences in the dream environment". (Ibid) Control and manipulation are keywords in the characterisation of lucid dreaming. During ordinary dreaming we are completely at the mercy of the dream. Not only are we physically paralyzed, but also fettered mentally. We are simply carried along by what is going on in the 'nocturnal theatre'. In stark contrast to such passive endurance of the dream, the lucid dream allows the dreamer considerable latitude of choice, even freedom to change the scenario and also the plot.

Essentially this same freedom of choice is very much akin to what is the case in our waking hours. But, as we have learnt from Huxley and Libet, and even Freud, freedom to choose, the ability to make decisions is illusory. So we must ask ourselves if the same sense of free will in the lucid dream is not also delusional?

We have seen how the lobotomy on frogs robbed the animals of their capacity to initiate action, and yet they were quite able to swim away once in the water, thus demonstrating that they were complete automatons. Since a lobotomy is an operation where certain parts of the prefrontal cortex (PFC) are scraped away, it is more than likely that it is the PFC that is responsible for allowing us, both in the lucid state and while awake, to fool ourselves into believing that we are in control.

Indeed, the most typical operations carried out by the prefrontal cortex area are executive functions. (123) While these appear to be thwarted during ordinary dreaming, it seems only logical to surmise that in lucid dreaming the PFC becomes active for one reason or another. The most likely circumstance is that somehow the dreamer has been approaching the waking state during which the PFC is normally fully active. Logic would tell us that lucid dreaming is a mixture of dreaming and waking. Hobson for one agrees with this inference. (Ibid)

As I see it, lucid dreaming, like any other state, is determined by precursory dreams. The freedom given to the lucid dreamer is, in essence, exactly the same freedom granted to waking persons. If it were absolute freedom, it would make nonsense of the epiphenomenal hypothesis, and indeed of my sexual verification test. Also it must not be forgotten that in this dependent existence there are no absolutes.

In 2006 it was reported that lucid dreaming therapy was successful in reducing nightmare frequency, leaving it unclear what aspects of the treatment were responsible for the success of overcoming nightmares, (124) there is really only one answer to this question: one or more precursory dreams.

For many lucid dreamers their nocturnal adventures are confirmation of their belief that they can control not just their waking existence, but also their dream life. It reinforces the chief mantra of western culture: '*Freedom of Choice*'. It prevents them from having a reality check. But then we can only presume that it is exactly what they need in their life for the time being. It is difficult to think that in view of the upward evolutionary process life would not progress towards enlightenment, however slowly.

52. Artificial Intelligence

South Korean scientists said on the 7th of January 2005 that they had developed the world's smartest robot, able to think and learn like humans. (125) Unveiling their creation, they said it was the first network-based human-like robot, smarter than ordinary robots for it was "linked with an outside computer through a high-speed wireless telecom network, and is able to exchange information with the server and respond quickly to real life situations". (Ibid) This contrasts with the usual humanoid robots like Honda's ASIMO, whose intelligence is largely due to built-in circuits.

Obviously, despite this much wider response capability that would pass the Turing Test with flying colours, it would be nothing less than naïve to credit it with consciousness. At best it could be said that it possessed 'imitation consciousness'. In fact it is no different from any other smart computer despite its humanoid form. Its abilities are utterly dependent on what has been programmed by human intelligence together with what is available to it through the network from the server, which too is programmed by human intelligence.

The BBC News Magazine of 13 September 2011 reported on the 'Last Mystery': "Those who study machine consciousness are trying to develop self-organising systems that will initiate actions and learn from their surroundings. The hope is that if we can create or *replicate consciousness in a machine we would learn just what makes consciousness possible*".

Owen Holland and his crew are currently building such a 'human machine'. (126) In his introduction to his lecture, which is most entertaining, if nothing else, he maintained that the previous attempts to come to grips with consciousness all failed. In other words, philosophy, psychoanalysis, drugs, meditation, religion, mysticism and brain scanning were all unable to bring us closer to an understanding of consciousness for the simple reason that *consciousness cannot be communicated*. Then, referring to the dictum of Nobel Laureate Richard Feynman, "what I cannot create I do not understand", he said that the only way to understand consciousness was to build a robot that was conscious. And since we were all machines, we should be able to build one that is going to be conscious.

Asking the question 'how to build one', he proceeded to say, "let's start with the body. Most humanoid robots look a bit like humans on the outside, but inside they're pure robot", after which he went on, "what happens if you build a robot that's like a human on the inside"? He then continued his lecture by showing the robot built so far, which he and his crew had constructed according to Grey's Anatomy, copying faithfully the human skeleton and muscles using appropriate materials. He then stressed how dexterous our hands were, which was especially difficult to emulate. Complicated bodies were a massive challenge, he remarked, and supported his point by saying that an octopus, which was the only invertebrate creature that enjoyed consciousness, had a complicated body.

This alone waves a red flag, signalling that Holland is not too sure what animates all the other creatures that have a less complicated body. Indeed, he seemed to intimate that the more complicated a body was, the greater was that chance that it was driven by consciousness.

Continuing, he asked the listeners to close their eyes and imagine being on a beach in the Caribbean. After that he requested eyes to be opened, saying that we all know now

that you have an inner world, where you can conjure up experiences. There's always a you in this world. And in certain states of mind, this imagined world can seem as real as the real world. But there is a twist...

"The real world is just as fake as the imagined world. And your real self is just as fake as the imagined self. They're both just *models*". The corollary of which is, so he maintained, "you're not conscious – what is conscious is your brain's model of you. And the real world you see is not real – it's your brain's model of it".

Ultimately he concluded that what had to be done in order to get at the mystery of consciousness was "to create these internal models in a robot – and we can look at them. And we can see the model of the robot looking at its model of the world, and we can see what it sees – or imagines". After this he showed the video of experiment 1: Imagination in CRONOS, executed by Hugo Gravato Marques, Rob Knight, Richard Newcombe and Owen Holland, 27-03-2008. Finally he asked: "What's the plan?" and goes on to say: "We don't think there's anything special about consciousness, so we're just going to keep adding features to this type of robot and see where we end up. Language, speech, silent speech, memory, motivations... And all the time we'll be able to peep into its inner world to see (and hear) what it's... thinking"? And finally asked when this will be a reality, he provided the following advice: "If you're under thirty, my advice is to get ready for that conscious robot you'll meet someday".

So here we have a group of no doubt very intelligent technologists who wiped in one stroke all theories and notions of consciousness in order to replace it by building a robotic copy of the human body in the hope that it will become conscious in the end through the addition of more and more technology.

Clearly, Holland and his colleagues are departing from the same mistaken premise of all the evolutionists who surmise that consciousness must have arisen from matter; that it was the result of shaking Shakespeare's box of words. Despite the fact that Holland maintained that the world out there was 'fake'; that instead its model was conscious, he nevertheless must presume that matter was a concrete reality, just as all the evolutionists do who hope to create consciousness from 'clay'.

As I have said before, consciousness could only arise from matter if it were inherent in matter. Rather it is the reverse that is true: *matter is an emanation of consciousness and not the other way around*. It is really like saying that the object, which can be seen due to the illumining torchlight, had created the issuing light; or again, that the shadow created the object that is throwing the shadow, or that the statue built the sculptor, that the painting created the artist.

53. Consciousness dethroned?

In the same BBC magazine of 13 September 2011 we read: "Consciousness may be the last remaining mystery for science, but to some extent it has been dethroned from the central role it used to occupy in the study of the mental. We are learning more and more from neuroscience and neurobiology about how much of what we do is the result of unconscious processes and mechanisms". This could be a direct or indirect reference to Libet as reported by John Grey, namely that "*work by Benjamin Libet at the University of California showed that the electrical impulse in the brain that initiates action occurs up to half a second before*

we take the decision to act. Our actions are initiated unconsciously”.

It seems to signal that Libet’s message has by now penetrated neuroscience and is working its way towards a more general acknowledgement that we are machines, as Holland, Huxley and Descartes said. But it also endorses the view that we are mere automatons with a sense of motivation that has been dictated to us by a form of consciousness of which we are not aware. The fact that it usurps the consciousness of the self demonstrates that it is of a superior kind; that it is in fact the primal force in human, as well as in animal life.

In view of this, it is quite obvious that the writer of the article in the magazine in question does not understand that ‘unconscious processes’ are nevertheless aspects of consciousness, and the more powerful ones, to boot. It lays bare again just what a misnomer the Unconscious is; that we need to rename it and establish a clear nomenclature of all terms relating to the various forms of consciousness.

The fact that consciousness is a primal force cannot be repeated enough. Contrary to Holland’s argument that nothing that has been said about consciousness over the past 2500 years was worth retaining, I assert that logic alone will get closer to the character of consciousness than what his technological Wunderkind Cronos will ever be able to achieve. Clearly, the fact that consciousness is the *sine qua non* of life, the fact that consciousness is the indispensable prerequisite for life, not a single thing that comes into existence is sufficient to place itself above consciousness, no matter how sophisticated it may be. It indubitably makes matter, and with it the so-called objective world, subservient to it. It demonstrates, like nothing else, that the search for the origin of consciousness in matter, in biological processes, is utterly in vain, exposing the building of Cronos as a massive waste of expenses and intellectual energy.

The irony of it all is, of course, that all that misguided brainpower and ingenious technology was and is just one of countless dictates by the Primal Consciousness, thus making a mockery of the individual self’s pride in its achievement and self-assured promise that one day we shall, if we are not yet thirty years of age, meet Cronos in person with the label stuck on it: ‘Consciousness inside’.

54. The Ghost in the Machine

“The ‘ghost in the machine’ is British philosopher Gilbert Ryle’s description of René Descartes’ mind-body dualism”, records a Wikipedia article, and goes on to say: “The phrase was introduced in Ryle’s book ‘The Concept of Mind (1949) to highlight the perceived absurdity of dualist systems like Descartes’, where mental activity carries on in parallel to physical action, but where their means of interaction are unknown, or at least, speculative”.

The same article of the BBC magazine of 13 September 2011 quoted earlier on notes in this respect: “These days few of us would deny our animal natures or accept that all other animals lacked consciousness. Besides, the idea of an immaterial soul makes it hard to understand how the mental world could have any effect on the physical world, and for that reason many contemporary philosophers reject mind-body dualism. How could something that had no material existence move our limbs and respond to physical inputs. Surely it is the brain that is responsible for controlling the body and so it must be the brain that gives rise to our consciousness and decision-making. And yet many of the

same thinkers would agree with Descartes that no machine could ever be conscious or have experiences like human beings”.

This conundrum will never be resolved unless science will seriously examine the power of dreams, their ability to act as a controlling piece of software. Dreams are not mere imagery, but mental energies, which pervade the physical body that is not an objective reality independent of the subject’s perspective. In fact the body and the vista of our world are the outcome of our dreams, just as the positive of the pre-digital photographic image was the result of a negative image. And, just as photography depends ultimately on the light of the sun, so do the dream and its outcome depend on Primal Consciousness.

It is as I’ve said before: Philosophers and scientists who believe in an objective world will forever bump their heads against the window of manifestation. And speaking of inversions, it is quite illustrative to regard the dream as a kind of ‘camera obscura’ working in reverse to the one the old master painters used to employ: the image of the inside world is often inversely related to that which is projected onto the outside world, or even more precisely: is projected *with* the imagery of the outside world.

Ego-transference is one such inversion or crossover. But there are also clear inversions of dream images when they project into the waking world. Whereas the dream might feature an impact on the left side of the body, in waking reality it will be the right side that is affected. Or again, if a missile in the dream flew from left to right, it will manifest in waking from right to left. Another case may show the dream entrance of a shop on the left side of the building when in reality it will turn out to be on the right side. (In ‘Pregrams of Tomorrow’ I have exemplified this in Chapter XX, ‘The Dark-room and its Equipment’) The more we encounter inversions of all types, the greater is the temptation to see our body in the dream state as ‘reverse camera obscura’ and in the waking state as a projector.

True, there is a crossover in the body from the left side of the brain to the right side of the body and vice versa. This may be part of the inversion of dream images. But this is something for neuroscience to explore. All I really want to emphasise here again is that closed-minded scientists will never find the answer to the problem of how the body is stimulated to act while they are stuck in the belief that the body and the world are solid objective realities instead of subjective experiences at the mercy of Primal Consciousness; a Consciousness moreover that is as much the source of energy as it is of awareness.

There is ample evidence for this, but science is afraid of seriously investigating it for fear of ridicule, or perhaps just plain prejudice.

55. The Near Death Experience

“We shy away from the word eternal”, so said Jung as he introduced his *mysterium coniunctionis*, and went on to say, “but I can describe the experience only as the ecstasy of a non-temporal state in which present, past, and future are one”.

Both logic and the mystical experience show that time as we experience it on earth is an illusion. The mystical experience asserts that everything is happening at once and forever; that in that realm there is neither beginning nor end. It confirms that Primal Consciousness is uninterrupted. But so is the individual consciousness of the man who is lying

unconscious on the ground. He only appears to be unconscious due to his lack of responses to the outside world.

In fact, his state is little different from a man who is asleep and therefore unaware of his bed and body, yet still able to dream and recount his nocturnal adventures when he wakes up. It hardly needs pointing out that his ability to remember his dreams is a definite sign that he was perfectly conscious in his apparently unconscious state; it is evident that he was merely oblivious to the outer world.

But what about the person whom we consider to be dead? A body, in other words, that shows no sign of breathing, whose heartbeat has stopped and whose brain no longer registers any brainwaves, one who is *brain-dead*?

Until doctor Moody's book "Life after Death" came along in 1975, the received perception of death was fairly uniform: it meant the end of existence, a break in human consciousness. Moody himself had no doubt that 'life' continued after what we term death, that consciousness was not extinguished and that the individual, although discarnate, retained its identity and lived on in a different realm.

His research was naturally heavily criticised. Some voices lamented that his methods were 'unscientific', maintaining, as did Paul Kurtz that "there is no reliable evidence that people who report such experiences have died and returned, or that consciousness exists separately from the brain or body". (127)

Supportive of such doubt, the psychologist James Alcock noted that "(Moody) appears to ignore a great deal of scientific literature dealing with *hallucinatory* experiences in general, just as he quickly glosses over the very real limitations of his research methods". (128)

The possibility that Near Death Experiences, or NDEs, were little more than *hallucinations*, were perhaps the strongest arguments against NDEs as evidence that consciousness persists beyond death. In this connection, Robert Todd Carroll writes that the NDEs "can be explained by *neurochemistry* and are the result of a dying, demented or drugged brain". (129)

But then, in 1998, a book came on the market that contained a report on an NDE that *fulfilled all the requirements of impeccable scientific observation*, procedural reporting and indubitable substantiation. In other words the report was underpinned by the fact that there were numerous professionals at the scene of the NDE to witness the case. The book in question is called, "Light and Death", by Michael Sabom, M.D. (130)

The numerous professionals present, over twenty in all, consisted of doctors, nurses and medical technicians, all of whom attended Dr. Spetzler's daring operation on a basilar artery aneurism that was inaccessible along the usual pathways of operations. (Opus cit. 35) Understandably, under such circumstances the "documentation far exceeds any recorded before and provides us with our most complete scientific glimpse yet into the near-death experience". (Opus cit. 38)

Spetzler's highly original approach, requiring the draining and cooling of the patient's blood, known as hypothermic arrest, was nicknamed '*stand still*' by the attending doctors. And rightly so, for this procedure results in a *complete shut down of all signs of life*. In brief, during such an operation the body temperature is a mere 60 degrees Fahrenheit (15.55 C) while the lungs draw no breaths, the heartbeat is flat-lined and the EEG registers no brain waves at all. In other words, as Sabom writes: "In everyday terms she would be dead".

'She' was Pam Reynolds, a woman in her thirties whose life hung on a very thin thread, who was now in a state that would be classed by any medical standards as dead. Dead not just for minutes, but for a full hour! Yet, like Lazarus, she returned to life to everyone's relief and amazement. She returned safely and well to her reheating body. But even more amazingly, the story she had to relate backed up all the essential characteristics Moody had observed in the NDEs of his interviewees.

Pam, like so many other near-death patients travelled into the 'Elysian Fields' along a well-established route reported by Moody and many other authors on NDEs. "It was like a tunnel but it wasn't a tunnel", Pam recounted... "It's a dark shaft I went through, and at the very end there was this very little tiny pinpoint of light that kept getting bigger and bigger and bigger. The light was incredibly bright, like sitting in the middle of a light bulb". (Opus cit. 44) It was there where she heard her *grandmother* calling her. Soon she began to discern different figures in the light, "and they were all covered with light, they were light and had light permeating all around them". (Opus cit. 44)

What is of even greater interest to us here is the way Pam's crossing of the 'River Styx' began: "The next thing I recall was the sound: It was a natural D. As I listened to the sound, I felt it was pulling me *out of the top of my head*. The further out of my head I got, the more clear the tone became... I remember seeing several things in the operating room when I was looking down. It was not like normal vision. It was brighter and *more focused and clearer* than normal vision". (Opus cit. 41)

With this, the view that the NDE experiences were the effects of a dying and *demented* brain as Robert Todd Carroll asserts, or mere hallucinations, as Alcock insists is clearly rebutted. So Pam's report not only backed up Moody's observations but also put to rest all the arguments about a spirit world where one's relations are encountered after death.

It also showed that the senses of our body are not a primary function, but a secondary one, one that in fact is of a lesser quality than primary sensing. This fact is supported by research undertaken by Dr. Ken Ring who "investigated 31 blind people who had near-death-experiences or out-of-body experiences. Eighty percent of these respondents claimed that *they were able to see when out of their bodies*, even those who were congenitally blind". (131) Clearly, NDEs demonstrate that *the normally functioning brain is more of a hindrance than help* when it comes to clarity and focus of sound and sight.

Pam's NDE also testified to the veracity of innumerable reports of reincarnated subjects that could recall their own funerals and could see their burial and the attending mourners.

From such evidence we must infer that contrary to Paul Kurtz's opinion NDEs support the view that *consciousness exists separately from the brain*. This is *scientific* evidence that consciousness is not generated by biology, but that it is the foundation of biology, of life and all that exists. It firmly establishes that Descartes' soul, which has mockingly been referred to, as the 'ghost in the machine', is the mediator between Primal Consciousness and the brain, while the brain itself is the transmitter of the soul's information to the physical body. Huxley's and his followers' belief that the brain might be the originator of intention, motivation and the initiator of action is thereby invalidated.

It means that all those who adhered up to 1998 to Ryle's derisive scepticism will have to think again, for it would be utterly unscientific to dismiss offhandedly the ingenious work of Dr. Spetzler and the twenty highly educated witnesses of a thoroughly scientific procedure, its observation and its recording.

Disregarding this *epoch making event* would be on a par with Freud's dismissal of the dream's futuristic capacity without testing it once, without ever consulting his patients in order to ascertain if his interpretations were correct.

56. The Dream Reviewed

In light of Spetzler's operation on Pam Reynolds the position and function of the dream becomes so much more palpable. Descartes' soul or the etheric body, as it is also called, is obviously attached in one way or another to the physical body; so thoroughly in fact that its own clarity of vision and general experiencing is obstructed considerably by the physical body's sensory system. *It would not be an exaggeration to see the body of flesh and blood as a kind of crude space suit for the etheric body.*

Pam's out of the physical body experience shows that the etheric body or the psyche is in touch with the 'spirit world', which is a vastly expanded realm of consciousness. Indeed, it looks as if it was just one step away from absolute or Primal Consciousness, the Eternal Ground of Existence, Freud's Unconscious, the realm of the Platonic and Aristotelian 'ideas', or Jung's archetypes. In such a scenario it is easy to picture the etheric body as the dreamer when the physical body is in sleeping mode. Equally as easy is it to envisage information transferring from Primal Consciousness to the psyche in form of dreams, the software that directs our automaton life and also sustains it.

If we can accept Jung's definition of the *mysterium coniunctionis*, or the ecstasy of eternal consciousness, where past, present and the future are all one, then it is perfectly plausible that dreams can be informed carriers of future developments in the individual's life. But again, it also shows that the world is not an objective fact, but the perception the individual self has of what apparently is outside its body.

With this, the ancient view that dreams are divine messages, 'sealed instructions' in fact, is reestablished. But it also explains how dreams can be informed carriers of future events and how they direct awareness in the individual's neurology.

In light of this the Sumerians, the Babylonians, the Egyptians, the Arabs, Greeks and Romans of old emerge as having had a more accurate understanding of the dream than either Freud or Jung.

Perhaps a return to the understanding of our forebears is in the offing. While the majority of researchers of the dream are still offering noticeable resistance to the dream's predictive capacity, there are at least pockets of receptivity toward this characteristic of the dream which comes to light in a number of studies that have demonstrated that there is at least *continuity* between dreaming and waking. (132)

Indeed, some researchers have uncovered a sufficient number of dreams that have proven to be 'psychic'. This has prompted them to classify such dreams as a separate and scientifically attestable category. According to the latest information we can obtain in this field they have dubbed them '*psi-dreams*'. There was in fact an on-line conference launched by IASD in September and October of 2015. It deals specifically with this category of dreams. The letter of

invitation to this conference was headed: "Leaping into the Mystery: The Psi-ence of Dreams". The letter continued as follows: "Dreams, and psi, and psi dreams, are inherently mysterious: largely unobservable except within the *experiencing mind (sic)*. *Only the boldest of scientists dare explore these hidden realms*".

Clearly, research into the predictive nature of dreams is in its infancy. But it also elicits hope that science is softening its resistance towards the view that dreams are the precursor of waking events, so indicating that the ancients could well have had a clearer view of the function of dreams than present-day science, which is still firmly rooted in the mindset of the 'Age of Enlightenment'. It is not a little ironical that the rejection of our forebears' oneirological wisdom was dismissed as superstition under the flag of 'enlightenment'!

57. Out of Body Experience

Ever since the advent of the NDE literature, the OBE or Out of Body Experience has been taken into the fold of scientific examination. While there is still a lot of debate surrounding this phenomenon, there has been instrumental experimentation in this field in America that must silence the sceptics to a large degree. Up to then they argued that the brain created the light seen by the person in OBE or NDE, thus drawing the conclusion that the sensation of floating on the ceiling and the flight towards the light was an illusion.

It was argued that this deception of light and weightlessness was the work of the brain as it shut down or was reactivated again. It is this opinion that is the real illusion and not the experience of leaving the body and going into the light, as the death and revival of Pam Reynolds' body has demonstrated beyond doubt.

Robert Monroe, a natural 'OBE traveller', has proven the existence of the subtle body or soul under far less drastic conditions and by thoroughly scientific means. Monroe was an American businessman. He was a natural OBE escapist. But before he became an expert in this mode of moving about he thought he had become epileptic because he would suffer bouts of paralysis during which his body seemed to be in the grips of violent tremors. Eventually it turned out that these episodes were the beginnings of OBEs. (133)

This was driven home to him once he found that during such fits his hand would mysteriously go through solid things like the rugs on the floor, the floor itself and eventually the walls of his house as he learnt to follow the path of regular ghosts. Because of his engineering background and broadcasting experience, Monroe found a perfectly scientific approach to OBE lift off. In his Institute of Applied Sciences he developed special earphones that brought lift-off within pushbutton ease. (Opus cit. 50)

This device feeds specific sound waves into a subject's ear, which produces brain waves of similar patterns. The patterns are, of course, of a kind that is most suited for OBE take-offs. He called this process FFR, which is short for Frequency Following Response, meaning that the brain follows the frequency of the sound waves. (Opus cit. 50)

Sometime later, Monroe improved this device by feeding sound patterns along separate channels into both ears so that both sides of the brain were perfectly synchronised. He called this Hemi-Sync. Normally, as is well known, the two hemispheres, although working together like members of an orchestra, produce different wave patterns because at any given time the two hemispheres have to perform different functions.

Monroe found that when both sides of the brain were in perfect harmony, take-off was a breeze. It was so smooth and certain that he could report in *'Far Journeys'*, published in Britain in 1986, that at the time of writing, Hemi-Sync had induced altered states of consciousness, including OBEs, in no less than 3000 subjects. This is nothing short of adequate scientific confirmation that we have an etheric body and that it can leave the physical body at any time. (Opus cit. 51)

For those who wish to explore and test this phenomenon, there are certain exercises and procedures to be followed. For subjects who are naturally predisposed towards OBEs this is fairly easy to do. Just as we can be taken into the light in the middle of a dream, we might also get into OBE mode at certain stages of our dreaming.

A typical dream scenario for take-off is where the dreamer starts to run along as fast as possible. This may then result in low flying just over the ground, possibly ending up eventually in full flight. The most likely time for this to occur is actually not during full on dreaming, but rather when dreaming and waking overlap. Such overlap happens naturally at either end of sleep. One of them occurs as we go to sleep, the other as we are about to wake up. The one at this end, meaning as we go to sleep, Monroe dubbed *'focus ten'*.

If we have never tried to catch ourselves going to sleep, we will have missed focus 10 every time we nodded off to sleep. On the other hand, if we have watched strenuously what exactly happens as we drop off, we will have dwelled at focus 10 for a second or two. If we did, we would have seen dream images lighting up before our eyes. I liken this phenomenon to going down in a dark lift towards deep sleep with neon-lit advertisements flitting by. Those dream images are called hypnagogic visions. If they manage to lead us away from waking awareness we will soon be lost in deep sleep. On the other hand, if we are able to maintain waking awareness, we are in full focus 10.

This is our platform for OBE lift-off. The proof of this is furnished by Monroe's FFR technology. When the FFR process induces focus 10, some subjects will almost immediately bounce against the ceiling and look down at their physical body. This can be a frightening experience if we haven't been properly prepared for it. If, on the other hand, we know what to expect, it will be an exhilarating discovery. Focus 10 without electronics will need a lot of practice. But if we are persistent, lift-off will occur one day. (Opus cit. 50)

Some, not all, OBE travellers will in time discover that their physical body is connected to the etheric body by means of a 'silver cord'. Like the corpus callosum, which is the nerve cable between the two halves of the brain, this silver cord serves as a communication cable. Unlike the corpus callosum, however, the silver cord is elastic and will extend untold distances, a bit like the thread the spider produces to weave its web. (Opus cit. 24-25)

One end of this cord is attached to the *forehead* of the physical body. To be quite precise, it issues from the pineal gland or the third eye. The other end is attached to the medulla oblongata of the subtle body, which is situated in the neck. The biggest obstacle to OBE in the initial stages is the fear that we will not be able to return to our body. This fear is unfounded, for while the cord remains intact we will invariably return to our housing of flesh and blood. In fact, if our physical body, which we left behind, feels uncomfortable because of hunger or bladder pressure, we will be automatically drawn back into it whether we want to or not. The question then is if that unfathomable thread will be in

danger of getting entangled or torn. The answer to that is a categorical 'no'. There is one proviso however: if we are destined to leave our body for good, then, and only then the cord will snap.

58. The Light Within

"It's a dark shaft I went through", recounted Pam, and continuing the recollection of her encounter she said, "and at the very end there was this very little tiny pinpoint of light that kept getting bigger and bigger and bigger. The light was incredibly bright, like sitting in the middle of a light bulb". (134)

A middle-aged man who had heart failure and was clinically dead remembered his experience in this way: "It was dark – you could call it a hole or a tunnel – and there was the bright light. It got brighter and brighter. And I seemed to go through it". (135)

"It was absolutely black out there and I felt like I was being drawn towards an opening like at the end of a tunnel", so recalled a woman. "I knew this because I could see a light at the end... I knew it wasn't a dream, dreams just don't happen that way". (136)

And a woman who had a viral infection in her spine described her brush with death in this way: "Then I noticed that there were three figures slightly above me. They appeared to be Indian as their skin was light brown. They were clad in some silvery, metallic looking robes with turbans of the same colour on their heads. All three had a jewel, or eye, in the middle of their foreheads, which was emitting a ray of light... Suddenly I found myself rushing back down a long, dark tunnel. I could see a light at the end and also my daughter's face peering anxiously down". (Opus cit. 84-85)

Today, forty years after Moody's book *'Life after Life'*, countless records of NDEs have heaped up in many new books. Just as there are variations in people's mental predisposition, so are there endless variations on the encounters with the light, yet all records are in accord with each other in the essential and crucial points.

There is really no reason whatsoever to doubt the thousands and thousands of NDE accounts. The only question that remains is: "Accounts of what?" Accounts of something that has been generated by a dying and demented brain, as Robert Todd Carroll asserts, or of something inherent in life, which comes to the fore under certain circumstances? In view of so many witness accounts assuring us that perception, vision, hearing and concentration were all invariably superior to the times when the brain was functioning normally, or when it was producing dreams, it seems more likely than not that the light is an inherent reality rather than a generated illusion.

It is here where I would like to offer my own experience of the light. It had nothing to do with dying, illness or drugs. In fact I have never taken any drugs in my entire life apart from antibiotics on rare occasions and an Aspro or two for a toothache or headache.

At the time of my encounter with the light I was twenty-four years of age and in perfect health. Some twelve months before the event I had emigrated from Switzerland to Australia. On the way the boat had stopped, among other ports, at Colombo in Ceylon, now Sri Lanka. As soon as I stepped off the ship a young boy approached me offering his services as my tour guide. I accepted the offer and asked to be shown the temples of the city. Without further ado we hopped into the taxi the boy had commissioned. One Bud-

dhist temple stuck in my memory despite the fact that I was somewhat disappointed with the quality of its iconography which I considered being dangerously close to kitsch. Later, after my dreams that were to initiate and end my experience of the light, I presumed that this encounter was part of the aetiology of the dreams.

In the first dream a shadowy figure led me towards the back of a temple in Colombo. When my companion opened the portal, a dimly lit room opened up. It was totally empty apart from a diminutive yogi sitting in Padmasana in the middle of the room. The moment I set eyes on him, he stretched out his arm to touch my forehead with the tip of his finger. At that instant I 'swooned'. Although having lost all awareness of my surroundings and of my body, I retained a blissful sense of self, dissolved, as it were, in an endless sea of gentle, yet radiant light. Time ceased to be; all imagery was lost. Thoughts were suspended till a new dream began. In it I found myself walking in strange robes through the thronging crowds of some kind of festivities. A small woman dressed in a colourful sari came towards me. She placed a treasure chest at my feet and opened it. Unfortunately I was unable to see inside the chest because the half-open lid obstructed my view. At that moment I woke from the second dream.

It is impossible for me to guess how long I was at-one with this light. But what I do know is that it left me with a feeling that I had been at the centre of the universe. I agree with Pam and all NDE reports that the encounter with this internal light feels more real than everyday waking experience. What is here of particular interest is that Descartes said that the soul – that ghost in the machine – resided in the pineal gland, which is also referred to as the third eye; the eye, which on the three Indians' forehead was issuing a ray of light in the NDE of the woman with the viral infection of her spine.

But Descartes never advanced a final theory of exactly how the soul employed the pineal gland in order to manipulate the body-machine. Also his knowledge of anatomy and its respective functions somehow lagged even behind Galen's (130-ca. 210 CE) and also behind Massa, who a century earlier had discovered that ventricles were filled with liquid rather than an air-like substance, as Descartes believed. (137) Nevertheless it is at least fascinating to learn that he centred on the pineal gland with respect to the linkage of body and soul.

Descartes may have instinctively grasped this, but having had no direct experience of it made it impossible for him to describe the exact relationship between the body and the soul, the precise manner in which the soul governed the body.

In chapter fifty-seven we gained more precise information about the connection and interaction of the physical body and its subtle counterpart. There we saw that one end of the silver communication cord between the body and the etheric is attached to the forehead of the physical body, or more precisely to the pineal gland behind the forehead. The other end is connected to the medulla oblongata of the subtle body or soul, as Descartes would say, which is situated in the neck.

In view of Monroe's FFR experiments published in 'Far Journeys' in 1986 it can no longer be denied that we have a subtle body that can leave its house of flesh and blood under given circumstances and will do so most definitely at the point of the physical body's death. But the same experiments also demonstrate that there is a direct line of inter-

connection which is not broken unless the etheric is not to return to the body.

We have also learnt from Monroe's many OBEs that the communication is uninterrupted no matter how far the etheric might travel and that it would be able to return if the physical body was in need of food or had to relieve its bladder, for instance.

My own pineal gland experience suggests that the light the NDE patients experience is something that is ever-present, but is mainly covered up by dreams and waking experience. According to Hinduism it is reflected Cosmic Consciousness, the substratum of all existence. (138)

Descartes' intuition was right, but his description of the working mechanism is confused. The soul or etheric pervades the entire body of flesh and blood; it is housed in it, as I have said; like an astronaut in his spacesuit, only more so, penetrating the body much as heat pervades a hot iron. During REM and NREM dreams the etheric experiences what is to come in the subsequent waking state. The etheric functions then in the same way as does the software inserted into the system of the computer, so controlling what is to be encountered in waking mode.

Clearly, the universe is a private show. It is not an illusion; it has substance just as a DVD show on the TV screen has substance. But it is not an objective reality; it is a solipsistic experience, yet it is real since it is rooted in imperishable Primal Consciousness.

59. The Rig Veda

There has always been an uninterrupted flow of Hindu wisdom toward the West that seems to date back to the late Bronze Age at least. The publication of NDEs has confirmed many aspects of Hinduism and no doubt will continue to do so. One telling example is Pam Reynolds' crossing of the 'River Styx': "The next thing I recall was the sound: It was a natural D. As I listened to the sound, I felt it was pulling me *out of the top of my head*. The further out of my head I got, the more clear the tone became... I remember seeing several things in the operating room when I was looking down. It was not like normal vision. It was brighter and *more focused and clearer* than normal vision". (139)

Pam's experience of being pulled out of the top of her head coincides with the Hindu view that it is a crucial portal in the human body. It is in fact one of the seven chakras that are distributed along the spine.

It is actually the seventh chakra or energy wheel. It is called Sahasrara. The first chakra, Muladhara, sits at the base of the spine. It is there that the upward journey of the serpent-shaped Kundalini, the latent spiritual energy, begins, ultimately affording enlightenment *in the spiritually mature* once Sahasrara is reached.

'The Tantric Way', by Mookerjee and Khanna, notes the following about Sahasrara: "It is 'the Lotus of a Thousand Petals'... it is also called *Brahmarandhra* and is the meeting place of the Kundalini Shakti with Pure Consciousness". (140)

While the members of the so-called New Age faiths and Theosophy have accepted such knowledge, it is far from being fully appreciated by western science. This is also true of the Rig Veda and the Upanishads. Western scholars have studied the Rig Veda for a considerable time, yet this has had only limited effect on western mainstream science. This is the more remarkable since the Vedas are not simply devotional prayers to various deities, which might

be considered aspects of one God, but also incorporate as much mathematical insight as transcendental wisdom. We find reference, for instance, not only to the decimal number system for integers but also infinity. In the Baudhayana Shulba Sutra (appendices to the Rig Veda) there is mention of the algorithm for circling the square needed for making the spoked wheel.

It is because of this fact and many others that it is surprising that western scholars have not devoted more of their energy to this collection of sacred verses. This is the more astonishing since in 1962 the American mathematician Sedenberg showed that “the elements of ancient geometry found in Egypt and Babylonia stem from a ritual system of the kind found in Shulba Sutras”. (141)

“The Shulba Sutras contain the algorithm for building the pyramid shaped funeral altar (smashana chit). Recall that the Egyptian pyramids are used as tombs for the dead”.

Also “the seventh mandala of the Rig Veda records the vernal equinox in Mrigashira Constellation pointing to a date around 4000 B.C., a fact noted by Jacobi and Tilak. Several Shulba Sutras maintain that a pole star is visible. Astronomy places this at a time before 4000 B.C.”. (Opus cit. Section on Astronomy)

The introduction to the Rig Veda by G. Srinivasan is a revelation when it comes to a deeper appreciation of these sacred scriptures. He begins his essay by saying that in the Rig Veda religion and science are one. (142)

Then he goes on to say: “The first ten verses of the first mandala or chapter cover the entire contents of the Rig Veda in a condensed and logical manner”. (Opus cit.) After extensive and detailed discussion of the intricacies of the Vedas he also broaches the fact that much misapprehension of the sacred texts is due to mistranslation: “Under the awesome cloak of scholarship they mutilated the Vedas using etymological technicalities as a tool beyond reproach to give new or nonsensical meanings when the subject matter proved to be beyond their power and understanding”. (Opus cit.)

After an extensive preamble, he expounds the first theorem: “It is a universal principle, laying out the logical sequence and number value of the result of this theorem. It is the first and most fundamental theorem and its principle is universally applicable without EXCEPTION”. After this he quotes the Sanskrit text and then translates it as follows: “By theoretically triggering the fundamental field of matter in space into expansion, the extraordinary output of free energy can be obtained”. (Opus cit.)

Discussing this theorem he writes: “In the Vedic treatise space is considered to be matter itself in its most fundamental form, and NOTHING or EMPTINESS does not exist in the absolute sense, as these words can be used only meaningfully in a relative sense”. (Opus cit.)

For Heraclitus this was, of course, the Logos, while for Lederman it was a *nothingness*, a *curious vacuum* containing the laws of nature, one that held potential. It is also zero (0) as the womb of Primordial Consciousness.

Finally Srinivasan presents an overview of the mathematics of the remaining eight slokas. Clearly, the study of these slokas should be of great interest to western science.

60. The Rainbow Bridge

A serious study of the Rig Veda, the Shulba Sutras and the Upanishads demonstrate that there is at least one body of wisdom in this world that combines logic with faith, mathematics with spiritual devotion or a belief in God as much as

in numbers. It further shows that it is possible for the theists and the scientists to find common ground for the unification of the two opposing camps.

In a sense it provides an opportunity to return to the original concept of ‘University’, one that combined Canon Law with Civil Law as it was practised in mediaeval times. However this would have to be done in the spirit of unification of the two fields where the search for common ground would be priority one. Since the Rig Veda is so far the only workable model for the unification of religion with science it could well serve as a useful guideline for such an undertaking.

But when we remember how much emotional weight usually hinders religious doctrine and faith on the one hand, and atheistic prejudice on the other, from opening up to other points of view, such a proposal would most likely not get off the ground. Yet certain moves in this unifying direction have, however, been made. In Jeffrey Mishlove’s interview with Karl Pribram, for instance, we read that “*the rules of quantum mechanics apply all the way through to our psychological processes, to what’s going on in the nervous system – then we have an explanation perhaps, certainly we have a parallel to the kind of experiences that people have called spiritual experiences. Because the descriptions you get with spiritual experiences seem to parallel the descriptions of quantum physics. That’s why Fritjof Capra wrote ‘The Tao of Physics’, why we had ‘The Dancing Wu Li Masters’, and all of this sort of thing that’s come along. And in fact Bohr and Heisenberg already knew; Schrödinger talked about the Upanishads, and Bohr used the yin yang as his symbol. Because the conceptions that grew out of watching the quantum level – and therefore now the neurological and psychophysical level, now that it’s a psychological level as well – seem to have a great deal in common with our spiritual experience*”. (143)

It should be added here that David Bohm “*argued that the empty space in the universe contained the whole of everything. It is the source of explicate order, the order of the physical world, and is a realm of pure information. From it, the physical, observable phenomena unfold, and again, return to it. This unfolding of the explicit order from the subtle realm of the implicate order, and the movement of all matter in terms of enfolding and unfolding is what Bohm called the Holomovement*”.

“*Bohm believed that although the universe appears to be solid, it is, in essence, a magnificent hologram. He believed in the ‘whole in every part’ idea, and just like a hologram, each part of physical reality contained information about the whole*”. (144)

61. The Projector Theory

According to classical Hindu doctrine as propounded by Vedanta and exponents like Shankaracharya and Sri Ramana, the Hrit (the ‘Heart’ on the right side of the breast) is the seat of consciousness. From there it rises along the Sushumna nadis (subtle energy pathways) and lights up the brain. But for ordinary people who have not had the mystical experience, only one tenth is illumined. It is because of this dimness, as it were, that we are not directly aware of the source of our consciousness. Yet, we acknowledge the Hrit or Heartlight unawares when we point to our chest as we respond to the question for instance: “Who, me”? (145)

The same doctrine sees the world as a projection screened by the brain. Sri Ramana Maharshi of Tiruvannamalai often compared this to the mechanics of the movie projector.

The lamp inside the projector is analogous to the source of consciousness. The *vasanas*, or the stream of thoughts is likened to the filmstrip that speeds past the back of the lens through which the pictures are projected onto the screen. Again, the stream of thoughts, or the thinking is what does the 'thinging'.

Remarkably, modern neuroscience is catching up on this ancient perception of things. Karl Pribram, for instance, a neuroscientist, in an interview held for *Omni Magazine* said: "Not only do we construct our perceptions of the world, but we also go out and construct those perceptions in the world. We make tables and bicycles and musical instruments, because we can think of them".

Unlike Sri Ramana, Pribram presumably had no direct experience of the *Hrit*. Instead, he had been studying brain functions in the course of which he came to compare what is happening in our grey matter to the operation of a holographic machine, which stores all its information on a holographic plate. The marvellous thing about such a plate is that when a laser beam lights it up, images that have been imprinted on the plate project outwards from it in three-dimensional form. And, what is even more fascinating, as we change our point of view we see the images from different perspectives. So we will not only see the image from the front, but also from the side or any other angle we wish to inspect.

This perception of how the world and its *things* in space come about is not only part of classical Hindu lore but also of mystical teaching the world over. Sufism, for instance, sums up the mechanism of world projection like this:

"The Heart (*Hrit*) of man resembles a glass lantern
in the niche of the body;

and in the Heart is a lamp which is the inmost consciousness,
lit by the luminosity of the spirit.

The light reflected by the 'glass' irradiates the 'air' inside
the 'niche'.

This 'air' signifies the carnal faculties,
while the rays that pass through it and reach the windows
represent the five senses". (146)

Although this analogy makes use of a technology far less sophisticated than either the movie projector or the holographic machine, we can nevertheless recognise the same principle at work: Projection from the *Hrit*, creating the things that are perceived by the senses. The most intriguing statement here, in context of holographic plates is, of course: "*The light reflected by the 'glass' irradiates the 'air' inside the 'niche'.*" Is this not precisely the mechanism of the holographic plate, a sheet of glass in other words, which, when lit up by a laser beam, will 'irradiate' the 'air' inside a 'niche', or, let's say, a very confined space, from where the rays that pass through the glass will reach the windows of our five senses?

More poetically, but in essence the same are the words of the Sufi mystic Mahmud Shabistari. He writes in his 'The Garden of Mystery':

"Know that the world is a mirror from head to foot,
In every atom are a hundred blazing suns.
If you cleave the heart of one drop of water,
A hundred pure oceans emerge from it ...
In the pupil of the eye is a heaven,

What though the corn grain of the Heart be small
It is a station of the Lord of both worlds to dwell therein".
(147)

This analogy of how the world comes about still contends with the most primitive technology, the mirror. Yet, remarkably, Shabistari's mirror has precisely the very quality which is most characteristic of the holographic plate. This quality is that the information stored on it is 'omnipresent'. By this is meant that when such a plate shatters to pieces, every single fragment, no matter how small or how large it may be, is able to reproduce *all* the information that was originally embedded in the unbroken plate.

This very same notion has been part of Hindu lore for millennia. This is evident from a Sutra quoted by Marilyn Ferguson when writing about 'Karl Pribram's Changing Reality':

"In the Heaven of Indra,
there is said to be a *network of pearls*
so arranged that if you look at one,
you see all others reflected in it.
In the same way,
each object in the world
is not merely itself,
but involves every other object,
and in fact,
is every other object". (148)

This bears out the quality of 'omnipresence' in the holographic plate. Why it can store such an enormous amount of information is because it is non-spatial, the quality of eternity, which, when made manifest becomes, as we have seen in Euclid's analogy, falsified. This is to say that hologram upon hologram can be superimposed on the same plate *without taking up any space at all*. If the brain functions like such a plate, then it is more than plausible that it can produce and store all the data necessary to create the entire universe and its countless things and happenings.

This seems to contradict Srinivasan's interpretation of the Rig Veda since he said, 'space was considered to be matter itself in its most fundamental form', adding that 'NOTHINGNESS AND EMPTINESS does not exist in the absolute sense, as these words can be used only meaningfully in a relative sense'.

His view appears to be more in line with that of David Bohm, the theoretical physicist, who sees the universe *itself* as a holographic plate, instead of the brain only. This has to be kept in mind when studying the Vedas and other interpretations apart from a need to examine Srinivasan's interpretation.

Pribram's view is certainly closer to that of Sri Ramana, for instance, who sees the world as a projection as we have seen. Indeed, Pribram's research suggests that the brain, rather than the universe, is such a holographic plate. When studying the mystery of memory, he, like everybody else, thought at first that the different parts of the brain stored different sorts of information. But when he removed certain brain tissue from his laboratory victims, he found that specific memories were not lost, they only became fuzzier. This explains why people with massive brain damage do not suffer the expected loss of memory, but find it to be only more nebulous.

All this collapses our traditional conception of the world like a house of cards. Thus, in 'hologrammatic' thinking, there is no need anymore for actual space and time, it's an apparent thing, a projection of information stored non-spatially. The world, the infinite universe, is not really out there, for what *appears to be out there* is clearly a projection of what is stored in the holographic matter of the brain. So let's remember: things that are apparently light-years apart are

very cozily together in that small lump of grey matter. And, since all things are contained in each part, 'all the pearls in one pearl', they are even closer together.

Such toppling of our antiquated western perceptions must rock the foundations of our science. Clearly a massive paradigm shift is under foot. East and West are moving closer together, paving the way for a new worldview and a new kind of spirituality.

But, of course, this shift is not going to be as swift for western science as it was for Sri Ramana and mystics the world over. This is because science has to piece its fragmentary discoveries and the results of tedious experiments laboriously together, while the mystic has his blindfold taken off in the twinkling of an eye. But an even more powerful brake-shoe on our vehicle of progressive thinking than such labour is the emotional investment in old ideas, or the difficulty in changing the hard disk by overriding it with new software that will lead to a view of the universe that is not really out there, but inside the head *like our dreams*.

David Bohm exemplifies this. Despite his knowledge of holographic mechanics he sees the entire universe as a holographic plate. By doing so, he is more the poet than the scientist, for this is how the Gulshani-i Raz of Shabistari has it: "*Know that the world is a mirror from head to foot*". While this is quite acceptable as a poetical simile, it will not do as a scientific analogy, for in that field we expect logic as the rule of thought. And the logic of it all is: the holographic machine projects a picture in three-D *which may seem to have a reality of its own, but has not*, since it will vanish when the laser light is switched off. And this is precisely the case with our personal holographic apparatus, the brain: when its waking mode is switched off, the world disappears. So Pribram, and not David Bohm has got it right in his "Omni" statement: "Not only do we construct our perceptions of the world, but we also go out and construct those perceptions in the world". **In short: thinking is also 'thinging'.**

Now it is difficult enough to make this paradigm shift when just contemplating a simple holographic projection, such as a copy of Venus de Milo standing in one place, so that we can admire her from all sides as we move our head. So, when we are asked to visualise the entire universe and all that takes place in it as a holographic process, our imagination is truly stretched to the limit. Bohm coined words that help us a little to cope with our task: 'Holoflux' or 'Holomovement'. As the words suggest, the images in our holographic plate are now no longer static or fixed like the copy of Venus de Milo, but are in a constant state of flux.

To ease our understanding of this, Bohm suggests that we imagine the holographic plate, which contains the universe, as a sea of light. And like the oceans of water, this sea is never still but criss-crossed and interpenetrated with rippling currents. He tells us then to see the myriads of patterns these ripples make as the forms of the things we see in the world. In short, the holographic world is not made of fixed and solid matter, but of constantly vibrating energy which we perceive as fixed and solid matter, either stationary or in motion or in decay or in growth or under construction and so on.

In light of what I have said earlier about David Bohm's perception of the cosmos, we need to make only one change to this picture of the universe in order for it to correspond with Sri Ramana Maharshi's mystical experience: It does not have to be a holographic plate or a sea of light or anything else, for it is sufficient to have the brain as that 'plate', which

then, with the help of the light from the Hrit, or the seat of Universal Consciousness, will project the universe *seemingly* outwards in all its glory and infinity.

62. The Dark Room

Unlike Sri Ramana, Karl Pribram presumably had no direct experience of the Hrit. Instead he had been studying brain functions, in the course of which he came to compare what is happening in our grey matter to the operation of a holographic machine that stores all its information on a holographic plate. As we have seen, the marvellous thing about such a plate is that when a laser beam lights it up, images that have been imprinted on the plate, project outwards from it in three-dimensional form. And, what is even more fascinating is that as we change our point of view, we see the images from different perspectives. So we will not only see the image from the front, but also from the side or any other angles we wish to inspect.

Although this speaks devastatingly against the view that the world is an objective reality, it does not explain how the Holomovement is sourced. In a way, this theory is, despite its radical change of direction towards solipsism, unable to explain the sourcing of its material of projection. So, in that respect it has made no advances over Huxley's epiphenomenalism that sees the cause of action as being *solely dependent on the molecular change in the brain*.

The crucial question here is, of course, *what it is that initiates this molecular change in the holographic brain*. The answer to this is: *the dream*. This becomes evident when we observe that **dreaming is not really a separate function from waking**. The two are as much part of each other as is breathing in and breathing out. One can't occur without the other. Like breathing, waking and dreaming constitute a complete cycle, consisting of two complementary parts.

If our brain is really the holographic imaging machine the avant guard of western science claims it to be, then the ancient belief that the outside world is a reflection of our inner state is not only a plausible idea, but also a logical corollary. In this connection it is of interest to note that in the Middle Ages the perspective of a table, for instance, had the so-called 'vanishing point' at our eyes. In short, a railway line drawn according to such a perspective would get wider towards the horizon and narrower as it approaches our person. Whatever the draughtsmen of mediaeval times may have thought about the world around them, such a perspective epitomises the holographic point of view, the **holographic perspective of the universe**.

It is perhaps opportune at this very point to note a further characteristic of the holographic plates. When we look at one of them in ordinary light, it appears to be something like a *photographic negative*, which is under-exposed. On the other hand, when a laser light is directed at the same plate, it is like gazing through *an open window*.

When I first heard of this, I instantly thought that this was an absolutely ideal analogy to the mechanics of switching from the dream state to the waking state, for the ordinary dream state at least, is often comparatively dull, so that when we wake up, it is like switching on a laser beam.

But there is something else that brings the same analogy even closer to what happens when we switch from dreaming to waking. Not only does the vista become brighter and crisper, but many items that were in the dream state oriented left to right are inverted in waking, just as it happens when we make a copy from a photographic negative. Other

things too become inverted, such as colours. True, this is not infallibly the case, but I have observed it often that the green of the dream will become red in waking and so on.

There are also inversions of sequences to be experienced. If we carefully observe what happens *last* in our dream before waking up, we will notice that it will manifest *first*. At times we can watch a whole dream sequence playing itself out in reverse order when we 'review it' in the waking state. This is particularly noticeable with the last scenes of a dream and their immediate subsequent manifestations. So there are features of the dream that correspond very closely with those of the 'photographic negative', a feature which is akin to the holographic plate.

In some ways then, **we might envisage the dream state as the nocturnal imprinting of the holograms, while waking is to be seen as the 'projection' of these images under laser light.** There is, of course, a very distinct difference between what happens during the 'projection' of our dreams into the waking world and the lighting up of a holographic plate. Whereas in the course of the latter we will see exactly the same images that have been imprinted on the plate, in the projection of the dream into waking there are numerable transformations.

Apart from the inversions just mentioned, there is the frequent and complete transference of the dream ego. By this I mean that while the dreamer has the distinct experience that he or she is driving a car, the waking ego may do no more than watch that same car being driven by someone else. Since that someone else in the dream was the dreamer, it suggests that the 'someone else out there' and the dreamer in the dream are one and the same.

This aligns perfectly with Chuang Tzu's "*Heaven, Earth and I were produced together, and all things and I are one*". (149)

But there are also other differences between the projection of the holographic images and those of the dream. While the holographic plate projects its images as they are embedded in the glass, the dream's apparently 'innocent' plots and images will transpose to explicit sexual actions, and conversely, many sexually explicit plots and images will turn out to be expressions of non-sexual love and affection. As well as that, we have seen in chapters 32 and 34 that the dream's imagery not only foreshadows sexual activity, but also indicates its time and place.

In this respect the dream is more like a computer zip program that encrypts and compresses its information to a degree that brings to mind the all-pervasive Net of Indra.

The main reason why dreams are so often misunderstood is because they are in the form of a zip program. In such a shape they often appear bizarre and confused, giving the impression of random nonsense. But all this bewildering imagery and action will unfold as perfectly sensible plots and scenarios as they are unzipped on the monitor screen of waking life.

63. The Dispatcher and the Dispatched

To our forebears interpreting dreams was dream-*divining*. To them they were messages dispatched by a *divine* power.

Freud, intent upon putting the interpretation of dreams on a scientific footing, renamed this ancient art 'dream analysis'. This conjures up notions of tedious laboratory work where various substances are carefully tested for this or that characteristic, ultimately drawing conclusions from a string of sharply discriminating probes. In such analyses the dis-

patcher is forgotten, the message is perceived as both the source and the bearer of news. While this may suit atheists and agnostics, the ignorant and transcendently indifferent, it is not at all satisfactory for those who seek to uncover ultimate causes.

In other words, although detached analysis of our dreams might reveal the *trigger* to the *molecular changes in the brain* that will lead to new waking plots and scenarios, it still leaves us wondering about the source of the messages, the programmer and dispatcher of the dream-software.

Before the advent of NDEs it would have been futile to go beyond linking up the dream's imagery with its corresponding waking events. The means to detect crucial evidence that could have pointed to a possible source of our dreams was lacking. Although Munroe's technologically induced OBEs might have substantiated the existence of an etheric body, it could not have taken us beyond the world of the living. For that it needed the NDE of Pam Reynolds, a unique case that could possibly demonstrate that there is a sphere of existence that might reveal the source of our dreams and their capacities to determine our waking life. Her adventure of literally zooming into a transcendental sphere after having left her clinically dead body opens up a radically new perspective on life and death.

The most important evidence gained in this thoroughly scientific venture is that consciousness is not extinguished when the body dies. It clearly demonstrates that consciousness is not dependent upon any kind of biological function. It makes nonsense, for instance, of Hameroff's theory of 'consciousness as quantum packages'. It shows indisputably that consciousness is not a stream; that it is not generated, but is something ubiquitous and inextinguishable and therefore the foundation of everything. In short, it deftly drives home the idea that consciousness is the *sine qua non* of existence; that it is the rock of all there is, was and will be.

This discovery, this experimentally proven evidence turns all science on its head. For one thing it blows away, once again, the perception that the world is an objective reality. It makes plain that consciousness was before the world, before the universe. It makes nonsense of the Big Bang Theory and hands the laurels to Heraclitus' 'ever living fire, kindling itself by regular measures and going out by regular measures'.

It also explains why Heraclitus said that people did not understand this. They did not and do not understand it because they believed, and still do, as exemplified by the bulk of scientists and philosophers, that the universe is an objective reality.

It also shows the futility of looking for life in matter. Consciousness itself is life, and matter is one of its emanations. The mystery of what lends the *sense of reality* to all we experience in this world is resolved.

64. Vita Somnium Breve

From this Latin saying we may gather that there must have been a considerable number of ancient Romans who believed *life was a short dream*. In other words, their fundamental perception of waking life differed little from that of a dream. This tallies with what we are given to understand today about the 'solidity' of our waking world, for instance, which at the atomic level, at any rate, is just as fluid as the fluctuating energies of the dream.

But it also tallies when we remember that the most ob-

vious difference between the waking world and the dream world is in the direction of their respective projections. While the 'waking dream' casts its holographic inscription outwards, the nocturnal dream screens it inwards.

The difference between the two diminishes even further as we probe the deeper layers of existence. We have seen that Pam Reynolds found that once her body was *brain-dead*, she could see and hear more clearly and with greater assurance than when she perceived the waking world relayed by her brain. This phenomenon has been supported by Dr. Ken Ring who, as we have seen, "investigated 31 blind people who had near-death-experiences or out-of-body experiences. Eighty per cent of these respondents claimed that *they were able to see when out of their bodies*, even those who were congenitally blind". (150) Moreover Pam Reynolds could not only perceive the waking world in that state, but also the transcendental one.

This points to the **etheric body as the primary experienter** both in the dream state and in waking. In short, *in that particular Gestalt dreaming and waking coexist as perfect twins, thus bringing them to the exact same level of reality*. There is no better proof that dreaming and waking are equivalent realities and that life is indeed a short dream.

As well as that the picture of consciousness as a stream of quantum packages becomes obsolete, as I have pointed out before. It would be more accurate to regard it as an infinite sea of unceasing energy that surrounds and penetrates us and finds focus in the Hrit much as the rays of the sun do as they are gathered up in a magnifying glass. But that picture is, of course, again a falsification of what really is. The underlying cause is dimensionless, yet gives dimension to the projection of the world.

Interestingly, this 'infinite sea of energy' that lends reality to the 'holographic' show of existence is not only the source of the nocturnal zip program, but also the screen onto which the projection of the 'Holomovement' is ultimately cast.

The deeper we look into the metaphysical processes of such a scenario, the further away we move from the matter-bound objectivist's perception of the world. The notion nurtured by the objectivists that there was an absolute beginning to creation, as proposed for instance by the Big Bang theorists, dissolves in the mists of fantasy. In its place the ancient mythologies impose their presence on us.

The heart of the myths we have examined was in every case an enduring presence that had no beginning, but was always there when a new order had to be created out of the old. This presence in the background of the round of creation and destruction can only be consciousness, absolute consciousness, which by our forebears was thought of as eternity; a state, in other words, that has neither beginning nor end, yet in its manifestation becomes falsified into what we experience as space and time. In the employ of the same language the etheric simply becomes the soul, a term so very familiar and yet so often only vaguely apprehended, or again, frequently and grossly misunderstood, or its existence flatly denied.

Yet it turns out to be the life and light of the body of flesh and blood. We have seen that not only is it the software that gives form to the body and the world, creating apparent space and time, but that it also survives the demise of the grand spectacle of waking experience.

Pam's experience and other innumerable NDEs also show that *the brain with its molecular changes is not the true initiator of actions and scenarios as Huxley surmised, but*

that it is merely a reflector relaying what is contained in the etheric. Since we also know that the Hrit is the wellspring of consciousness, channelling it along the nadis, or ethereal nerves, towards the brain, we must as well conclude that **the etheric is not the source of our dreams, but merely the messenger. Thus, the ancient notion that dreams are brought to our brain by means of an 'angel', which in translation means 'messenger', is right on the mark.**

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The true meaning of dreams

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

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

1. Introduction

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

2. The Importance of Sleep

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

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

3. What happens during Sleep

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

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

4. The Defense Mechanism Work

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

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

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

5. Rapid Eye Movement (REM) Misconception

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

6. Dreams and Age

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

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

7. Dreams and Trauma

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

8. Sedation and Dreams

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

9. Reproductive Organs and Dreams

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

10. Fight or Flight Concept

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

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

11. Dreams and Cognitive Processes

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

12. Conclusion

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

References

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