**Réponses Sophie Schwartz**

1. Plutôt qu’une définition du rêve, c’est en fait un modèle qu’a proposé Fabian Guénolé, et qui stipule que le rêve peut se décliner en 3 formes successives. Aujourd’hui, nous ne savons pas si le fait de ne pas se rappeler de ses rêves signifie que l’on ne rêvait pas avant. Au vu des études qui montrent que lorsqu’on réveille des gens à n’importe quel moment du sommeil, on obtient toujours une grande proportion de rêve, et même chez des petits rêveurs, on peut plutôt penser que tout le monde rêve tout le temps, et que seul le rappel diffère. En revanche, il est possible qu’une plus grande salience du rêve chez les grands rêveurs, peut-être promu par une plus grande activité de base dans le réseau par défaut, facilite ce processus de rappel (positive evidence = Cohen 1974 ; negative evidence = Schredl 2000 car pris en compte l’effet de la longueur du rêve).
2. This theory, proposed by Kalina Christoff who works at Vancouver University postulate that mind-wandering, dreaming, creative thought and dreaming are all part of a same family of spontaneous thought. For them, the qualitative differences between these states could be explained by the dynamics between brain networks. For example they proposed that goal-directed thought, such as doing a task, is marked by a high external constraint, which should be reflected at the neurophysiological level by a strong recruitment of attentional / executive networks and low recruitment of the default mode network. By contrast, dreaming is the complete opposite, because during sleep the influence of external constraint is very low, and as such it should be underlain by a strong recruitment of the default mode network and deactivation of the attentional / executive networks. And this pattern is in fact exactly what we observe during REM sleep, yet it does not explain the fact that REM and NREM dreaming are sometimes almost undistinguishable, and I think we need more study looking at the dynamics of brain networks during all sleep stages and on a large number of participants to support or refute this idea.

You are right to say that the quote of Schopenhauer could be related to this proposal. Indeed, we know that the default mode network is associated in mental imagery, and one could assume that the higher functional connectivity in REM sleep would make the dream imagery even more vivid than wake imagery (and this was noted by Van Gogh too). But still, and I think we need more study that does not explain the full spectrum of NREM dreaming because studies have shown that after controlling for length no differences remain between REM and NREM dream reports.

* Also consistent with the immersive spatiotemporal hallucination model of dreaming by Windt

1. You are right to say that cognitive factors could be important to explain dream recall, and possibly even dream production as was proposed by De Koninck. And on this point Domhoff postulated that dreaming is a cognitive achievement that depends upon the maturation of forebrain areas. Yet, I did not insist on this point during my thesis because there are numerous contradictory results, regarding for example the importance of visuo-spatial imagery and memory.

I think that we have to add to the model, that, in addition with age, gender and personality, there are also cognitive factors that could explain for example the salience of dream content, or even the whole structure of dream organization as Joseph De Koninck proposed.

*Argument contre: Blagrove 1996 🡪 I will argue that the lack of self-consciousness and reflexivity during dreaming causes a functional discontinuity with our active, adaptive waking though, because many types of waking thought have been shown to rely upon reflexive supervision.*

1. Caillois was a philosopher and not a scientist and he proposed that upon awakening, dream content is by default forgotten because there is no need in recalling them. The synaptic downscaling model of Giulio Tononi states that slow wave sleep is specifically associated with a synaptic downscaling, whereas the model of Crick and Mitchison states that REM sleep, is associated with such downscaling or weakening of the day experiences. This is not exactly the same idea because Caillois did not state anything about what happens during the dream and during sleep, but only what happens at the moment of awakening. I think that a more neuroscientific translation of Caillois idea is that upon awakening the brain is not by default able to encode dream content, and the only way to do that is to actively focus and try to memorize it or else it would be forgotten, because it might not be adaptive per se to remember its dream.
2. This a good and tricky question that I asked myself a lot during the writing process. Cartwright analyzed the dream reports of depressed people who were in a divorce procedure, and she asked participants to write down their dreams related to their ex-husband or wife for a long period of time and she did follow-up questionnaires about depression for one year. She found that after one year, participants who dreamed the most about their ex husband or wife were also the one whose remission from their depression was better. So she concluded that dreaming is involved in emotional regulation. But another possible interpretation is that sleep is involved in emotional regulation, and there are many evidences supporting this, and what she observed in the dreams was only the reflection of these mechanisms during sleep. And I guess it is difficult to disentangle this conceptual issue because dreaming and sleep are the two faces of the same coin and the only way would be to have access to dream reports that are not obtained from period of sleep, which is of course impossible. So if you ask me now, and maybe I should have detailed this more in my thesis, I will answer with caution that there are emotional regulation processes during sleep, and that these mechanisms are visible during dreaming.
3. According to the classic theory framed by Sigmund Freud, the basic function of dreaming is to protect sleep from disruption (Freud, 1900/1953); a quite rational hypothesis since sleep constitutes a vital need for living species (Kryger et al., 2011). This aspect of Freud’s dream model—which as a whole is considered as the initial cornerstone of psychoanalysis (Laplanche and Pontalis, 1988)—leads to two empirically testable conjectures, thus allowing its scientific examination: (1) arousal during sleep trig- gers dreaming; and (2) non-dreaming causes sleep disruption.
4. Facteurs qui influencent la continuité entre éveil et sommeil : I am referring here more broadly to the questions of what are the relationships between waking life and dream content, and that’s what we did in the behavioral study. I said discontinuity because we know also that a significant amount of the dream is absolutely not related to dream content, and to my knowledge there are not so many studies that have looked at this, and it would be interesting to re-do our protocol but inverting the questions: which part of the dreams are obviously not related to a waking life experiences that you had?