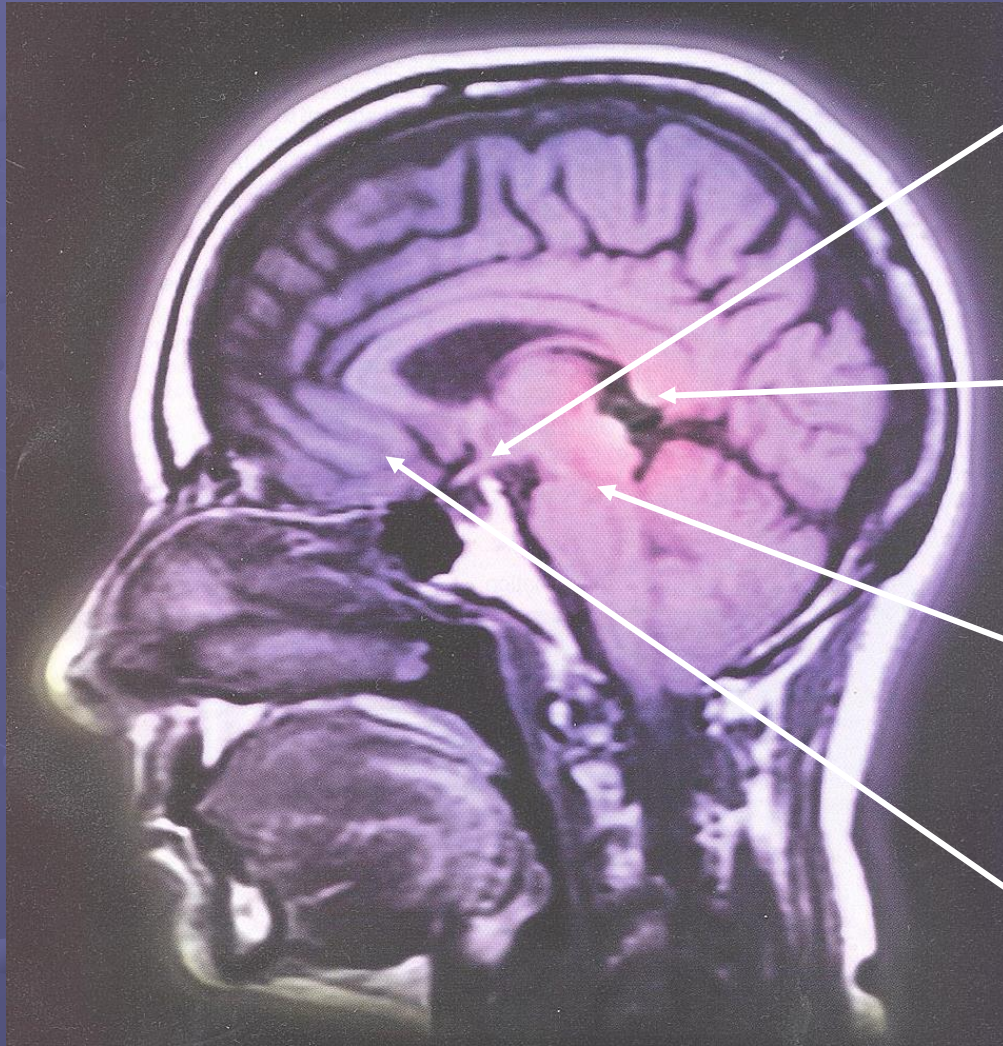


Freud`s Legacy – Sleep and Dreaming

- As you know, Freud believed that dreams were the royal road to the unconscious mind.
- However, there was little empirical research to support this idea, and later on he questioned his own assumptions about the role of dreaming within sleep.
- BUT...
- What we now know-

The Sleep-Wake Cycle



Supra-Chiasmatic
Nucleus (SCN)



Pineal Gland



Melatonin

Reticular Formation

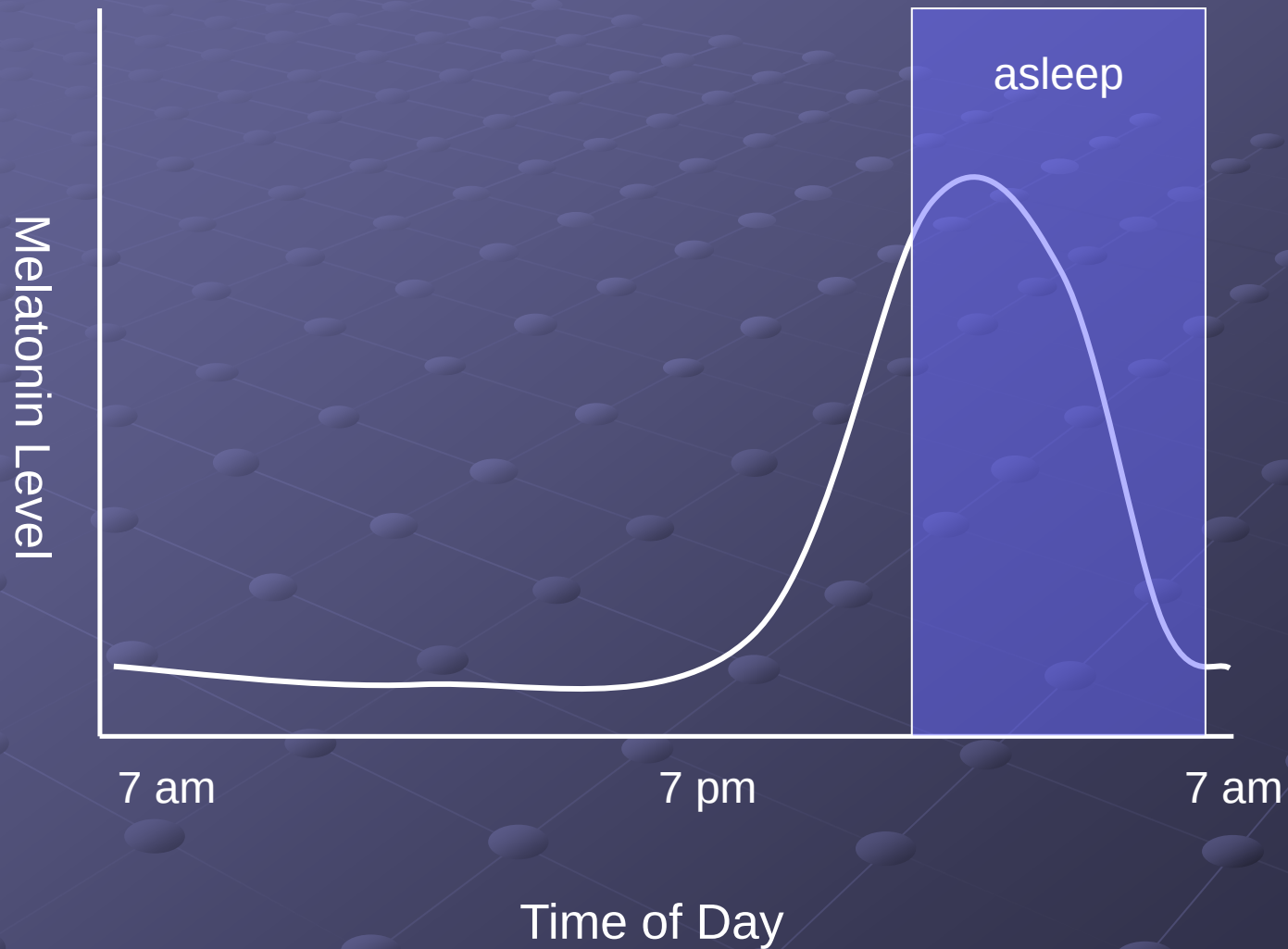


Basal Forebrain

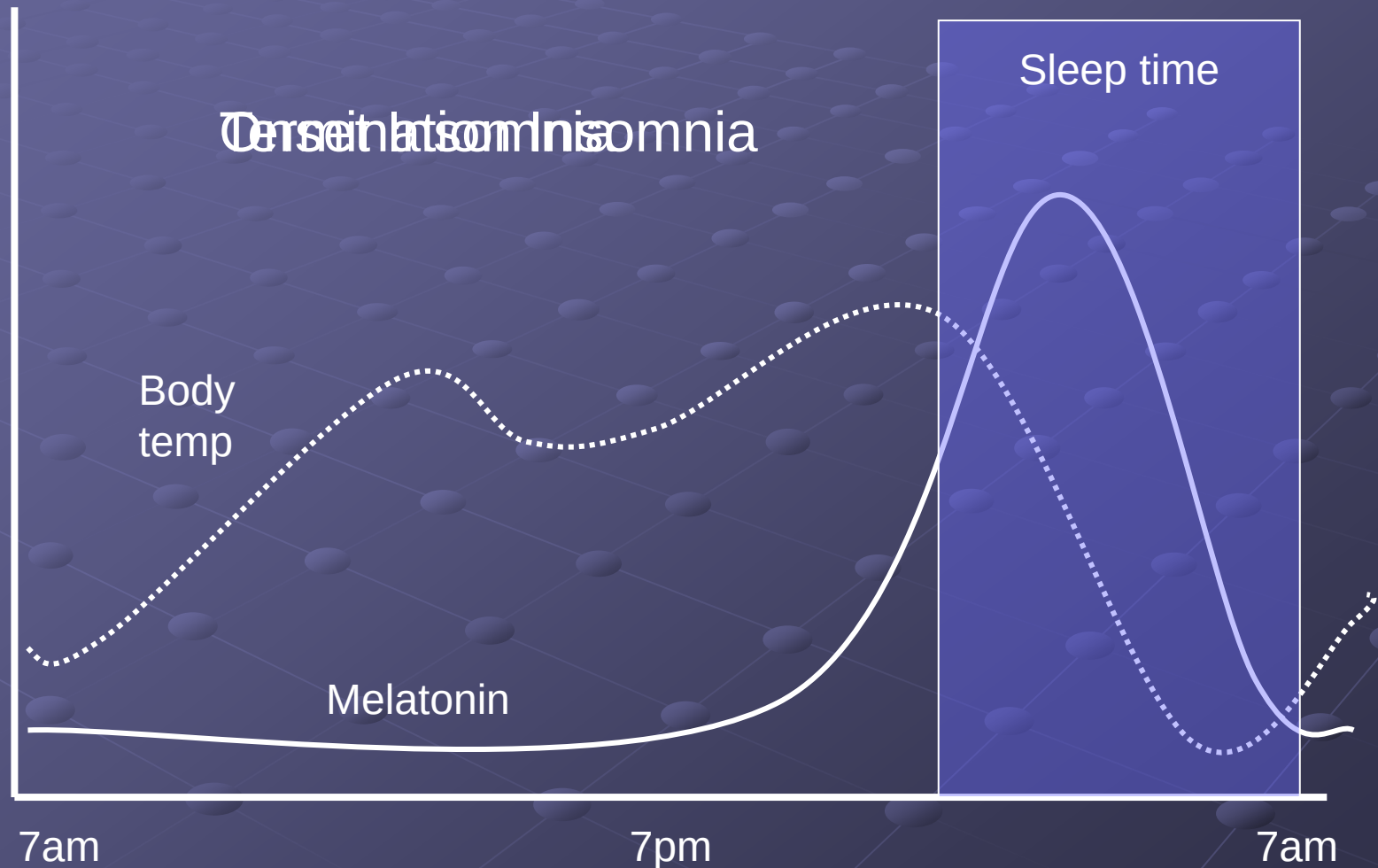
The Suprachiasmatic Nucleus

- Ralph et al. (1990)
- Showed that the SCN and no other brain structure was producing the circadian(sleep-wake) cycle
- The research was with animal studies – generalisation may be problematic, however, no reason to believe human sleep system is radically different

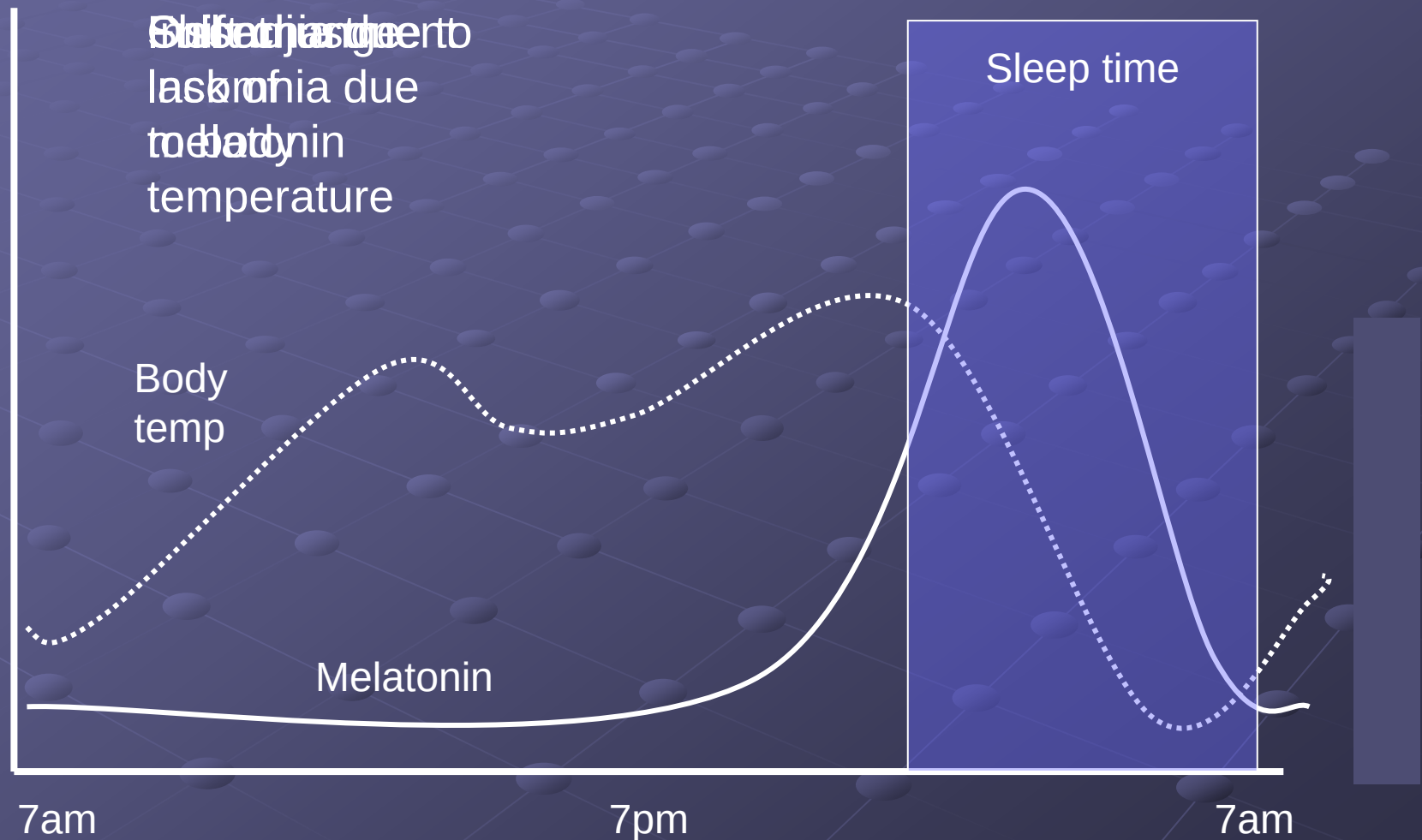
Melatonin Secretion



Disruption of Circadian Rhythms



Disruption of Circadian Rhythms



Sleep and Shift Work

● What are the effects?

- Physical health
- Psychological well-being
- Economic consequences

● What can be done?

- Shift arrangements
- Aids to adjustment

Dreaming

- Research into the nature of dreaming
 - Brain activity
 - Duration
 - Content



Dreams vs. Reality

● Empson (1983)

- 'Spectator' perspective (usually)
- Logic of waking consciousness does not apply
- Quickly forgotten

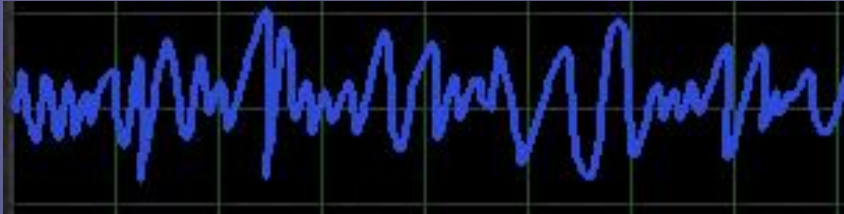
● Hobson (1995)

- Hallucinations
- Cognitive abnormalities
- Emotional intensity

Dreaming & REM Sleep

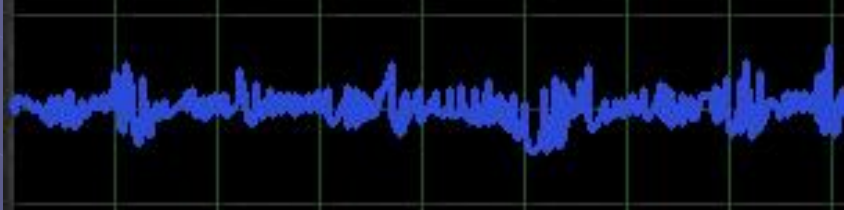
- REM sleep entered 4-5 times every night
- REM periods lengthen towards waking
- REM is characterised by:
 - Rapid, darting eye movements
 - Changes in heart rate, respiration
 - Muscular paralysis
 - Alterations in brain activity

Dreaming & REM Sleep



● Deep sleep (SWS)

- Large, slow waves
- Synchronised



● REM sleep

- Rapid
- Desynchronised
- Like waking EEG

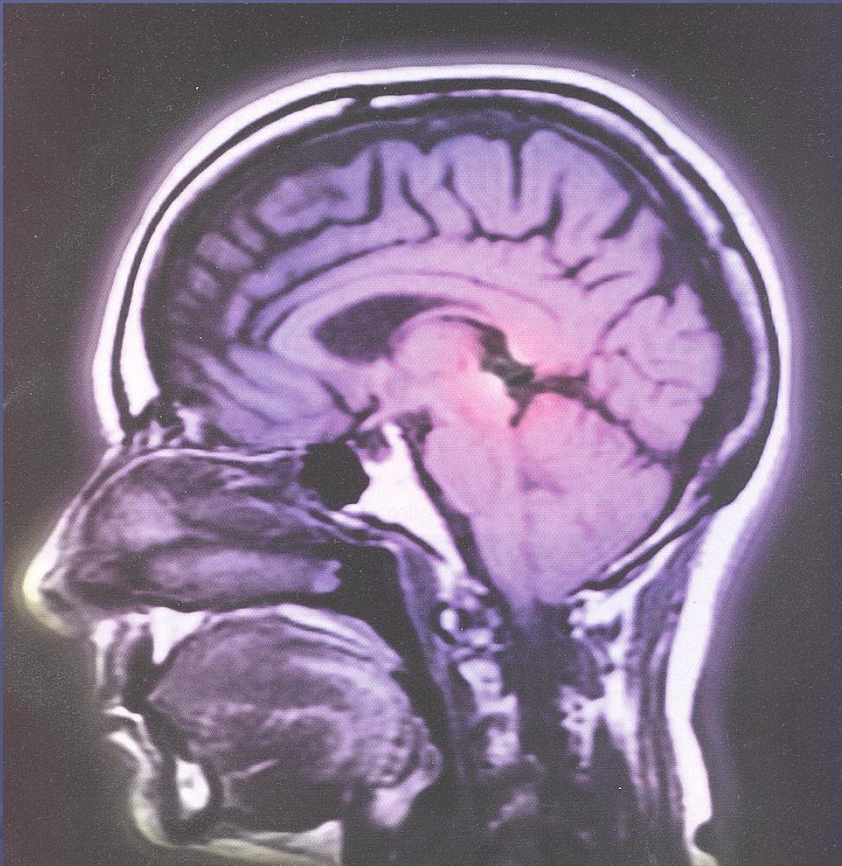
Dreaming & REM Sleep

- Dement & Kleitman (1957)
- PPs woken in either REM or NREM sleep
 - REM: reported dreaming 80% of time
 - NREM reported dreaming 15% of time
- REM clearly associated with dreams
 - But may occur at other times (sleepwalking)

Dream Duration

- Dement & Kleitman (1957)
- Relationship between REM duration and:
 - (1) estimates of dream length
 - (2) length of dream descriptions

REM Sleep & the Brain



- Activation of occipital cortex (vision)
- Spreading to thalamus, sensory & motor cortex (hearing, touch, vision)

Dream Content

● Kahn et al (2000) – people in dreams

- 50% known to sleeper
- 30% generic roles e.g. police officer
- Hardly any completely unknown

● Cartwright et al (1984)

- Relationship between life events (e.g. divorce) and dream content

Dream Content

● Dement & Kleitman (1957)

- NREM dreams more mundane & more similar to waking thoughts than REM dreams

● Antrobus (1983)

- REM dreams more likely to
- (1) have a story-like narrative;
- (2) include bizarre events
- BUT WHAT ABOUT FREUD?

Explanations of dreaming

● Psychological theories

- Ego defence (Freud)
- Problem solving (Webb & Cartwright)

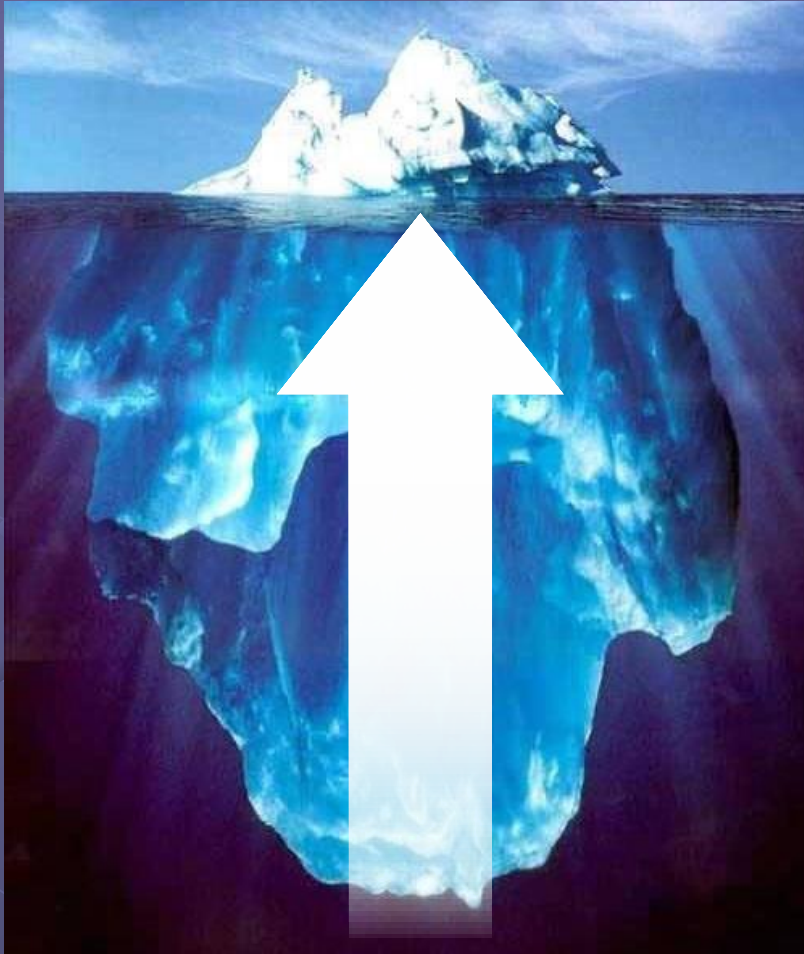
● Physiological theories

- Reverse learning (Crick & Mitchison)
- Activation synthesis (Hobson & McCarley)

Explanations of dreaming

- Psychological & physiological theories differ in terms of:
 - Emphasis on subjective vs. objective features of dreaming
 - Assumptions about meaningfulness of dream experiences

Ego defence



- Weakening of ego
- Unconscious ideas impinge on conscious
- Dream work by the ego
- Manifest & latent dream content
- Manifest – the symbolic content
- Latent – the actual content (meaning)

Ego defence - symbols



Problem solving

- Agrees with idea that subjective dream content is significant
- Disagrees with idea that meaning is hidden behind symbolism
 - Suggest direct relationship between dream content & problems from waking life
 - Dreaming allows mind to form new associations to help solve problems

Psychological theories

● Main predictions:

- Brain systems involved with emotion will be active; those involved with rationality will not
- Dreams will reflect current problems
- Dreams will provide solutions
- Dreams will be remembered

● This is now supported by neuro-imaging studies. E.g. Solms (2000).

Physiological Theories

● Activation synthesis

- Dreaming is a by-product of brain activity during REM sleep, which is carried out for brain restoration
- Parts of the brain associated with memory & emotion become activated
- The frontal cortex 'synthesizes' a story to make sense of it

Physiological theories

● Reverse learning

- During waking, brain takes in lots of info, not all of which is important
- During dreaming, such 'parasitic' info is cleared out, allowing more efficient access to important info
- 'Storage space' is freed up, like defragging a hard-drive
- Dreaming is a meaningless by-product of this process

Physiological theories

● Main predictions:

- Dreams will be meaningless & bizarre
- Dreams will be quickly forgotten
- Mammals that do not have REM sleep will have large brains (or large cortexes)

And back to Freud -

- Sleep (a series of stages of consciousness and unconsciousness) is crucial to our existence.
- Dreaming (both slow wave sleep and REM) is essential to maintaining a healthy lifestyle and serves several functions.
- The original ideas of Freud are supported by more recent neuroimaging studies and empirical evidence.