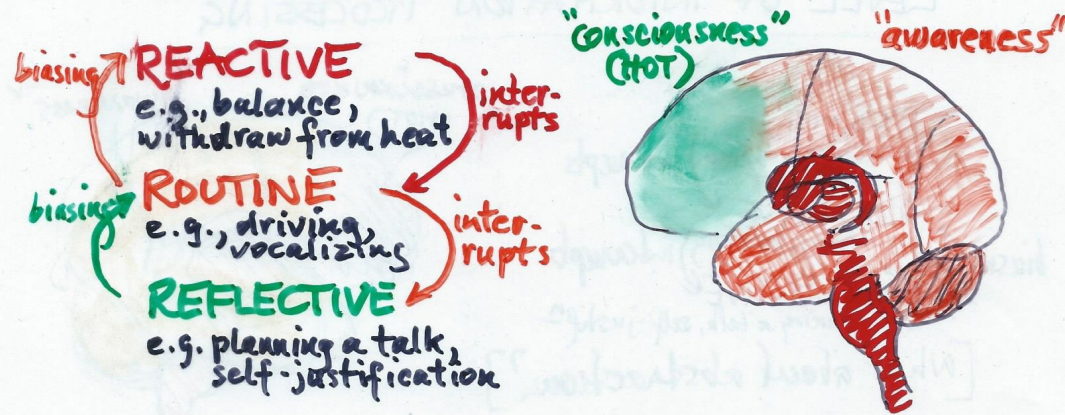
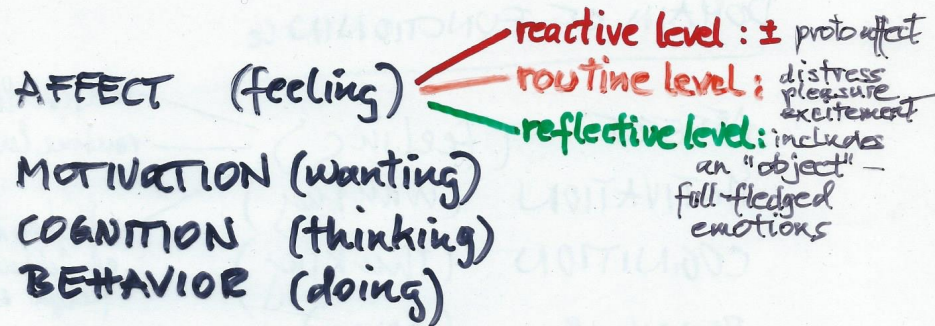


Ch.7 Ortony, Norman, & Revelle (ONR) Affect...and... Functioning

LEVEL OF INFORMATION PROCESSING



DOMAINS OF FUNCTIONING



Crocodile story: panic, evasive action may precede deliberate thought/planning

Personality: different "parameter settings for the three levels (\Rightarrow approach/avoidance, positive or negative bias in interaction)

Robots: will need affect/emotions to appear life-like and to function adaptively

Affect and Protoaffect

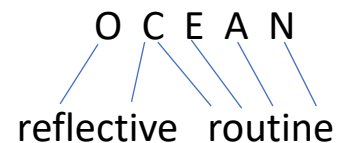
Overview of Ortony, Norman, & Revelle

(ch.7 of Fellous & Arbib)

They mention relevant brain architecture, p.177. The **reactive level** mostly involves the basal ganglia, limbic system, and brain stem/spinal cord; the **routine level** the cerebellum, sensorimotor cortex, basal ganglia, etc.; the **reflective level** depends primarily on the prefrontal cortex, as well as memory (hippocampus, temporal lobe, etc., etc.)

They suggest that in a given situation (especially unexpected) the reactive, routine, and reflective levels "kick in" and have their effect in that order (& the "crocodile story" illustrates this).

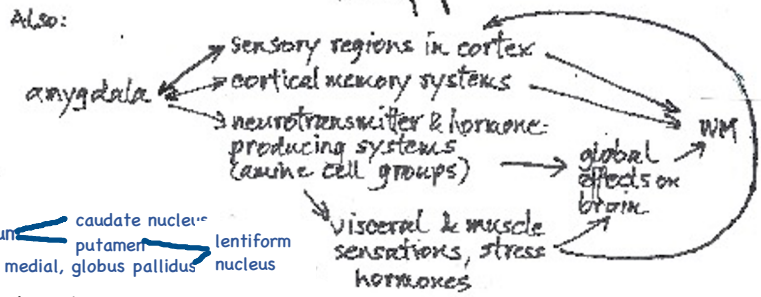
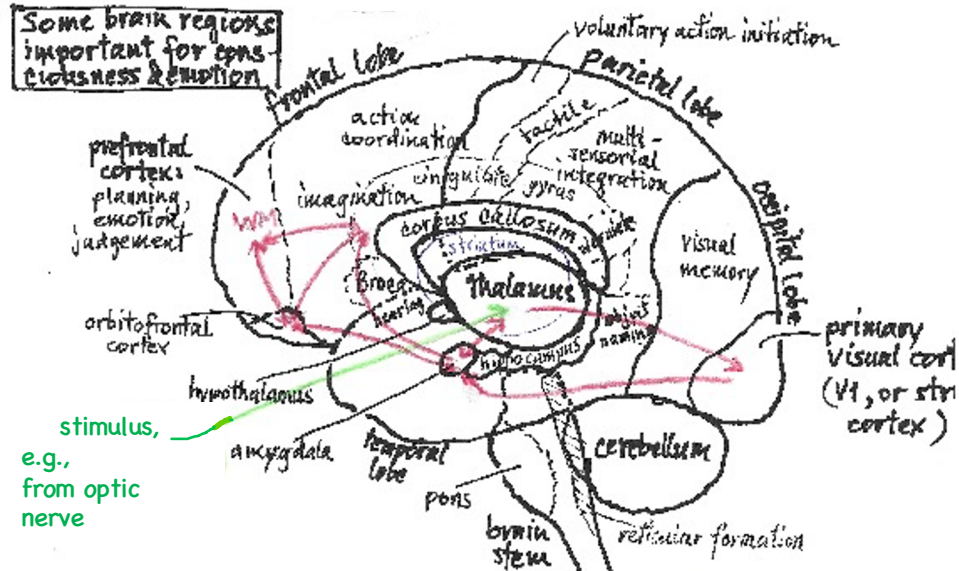
They also suggest that their distinctions are relevant to the "OCEAN" parameters of personality (openness, conscientiousness, extraversion, agreeableness, neuroticism):



openness \Leftrightarrow curiosity (p. 192)

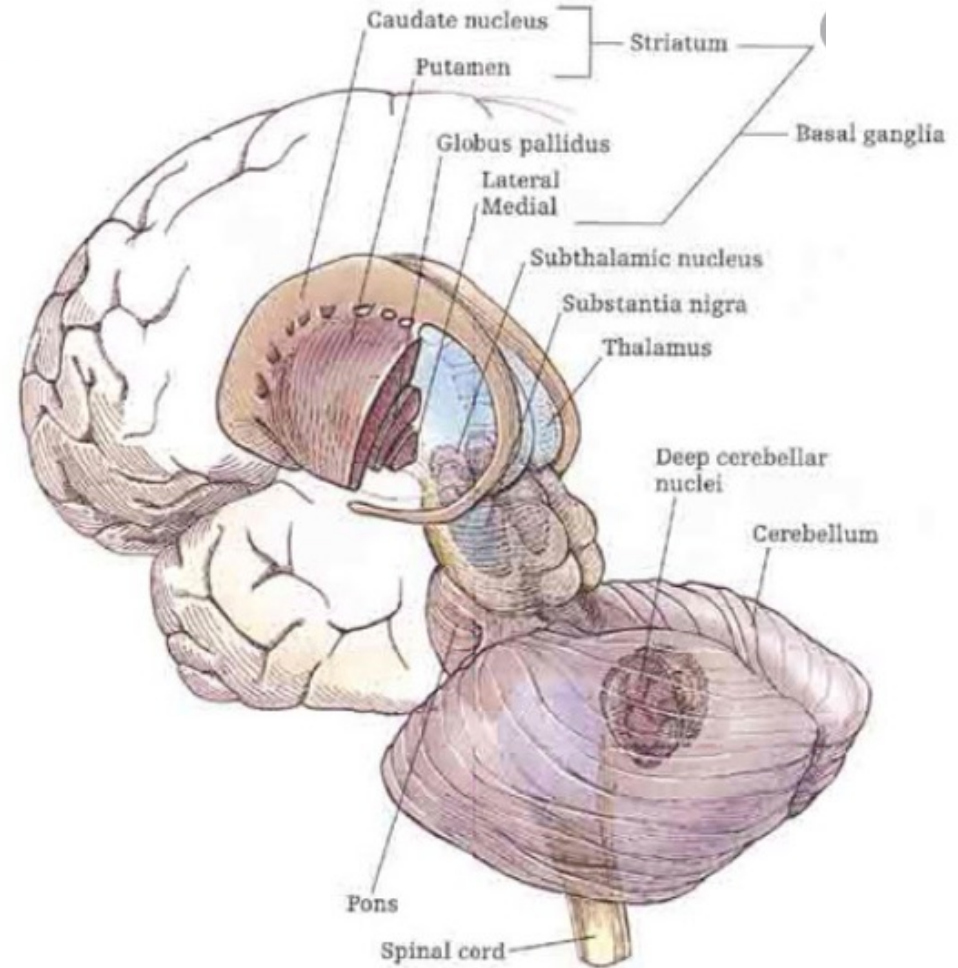
A preview of some brain diagrams we'll see again later

Processing an emotionally significant "stimulus"
 (input pathways not shown; outputs to hypothalamus, brain stem, striatum, etc., not shown, but see amygdala interactions/outputs below)

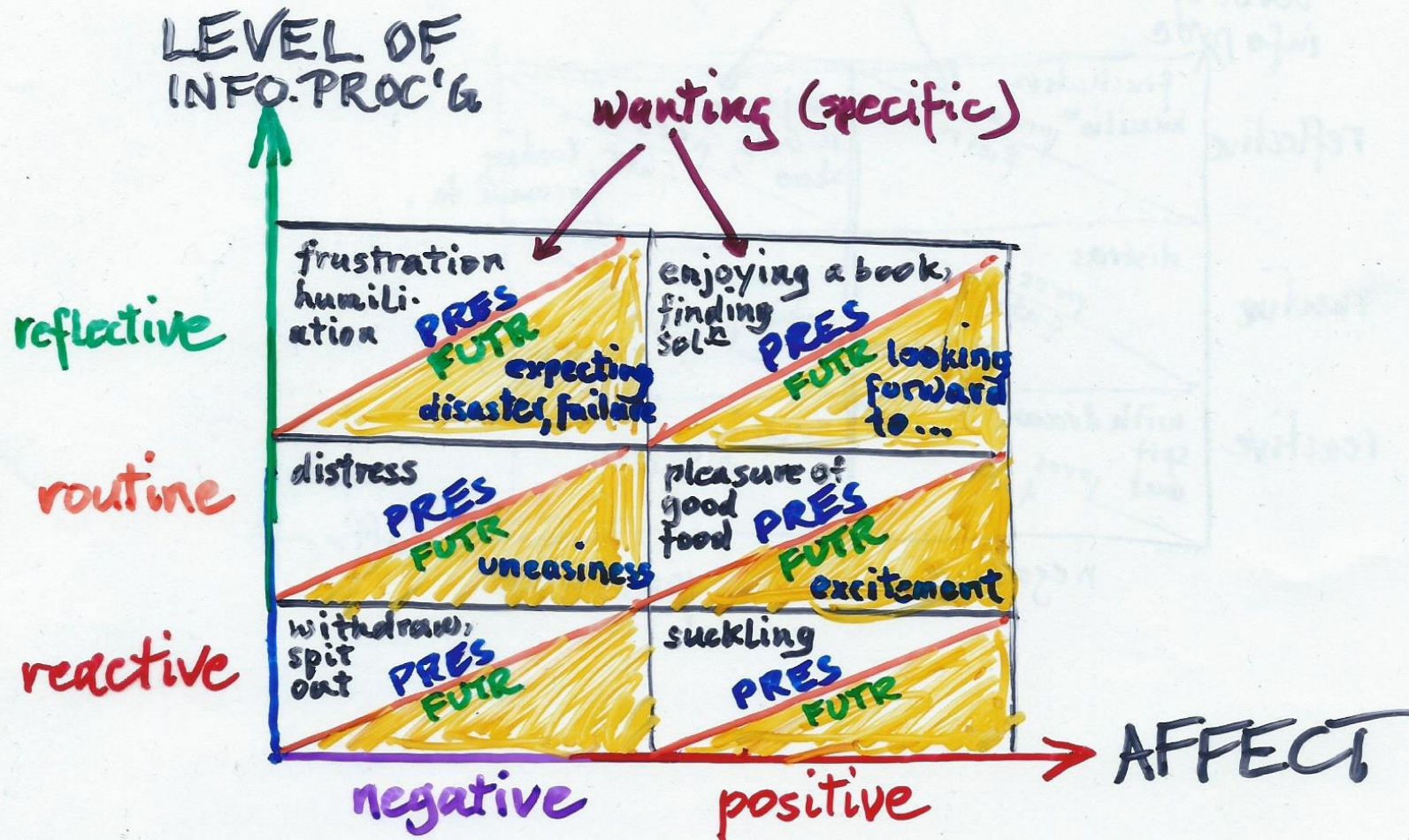


Basal ganglia:
 "outer": striatum (caudate nucleus, putamen)
 "inner": lateral medial, globus pallidus, lentiform nucleus

(part of reward system, decision making, planning)



Ch. 7, ONR : Affect in relation to level of information processing



ONR say that **affect at the reactive level** primarily distinguishes between “good” and “bad”, concerning the immediate present (not the future).

Routine-level affect involves vague emotions pertaining to the present or future.

Reflective-level emotions are “full-fledged” – they involve symbolic representations (we may say: the self-model and world model, and depend on the ToM and on generalized knowledge.

Discussion of robots: Roomba (etc.) are reactive-level, most practical AI systems are routine-level, and something like HAL of “2001” would be reflective level.

They say that **whether robots could actually have feelings** is probably an unanswerable question (p.195), but robots will need affect for learning, attention, threat recognition, etc., and they also need to recognize human emotions.