LEARNING, BIOLOGY AND COGNITIVE PROCESSES

A great deal of research has so far concentrated on arbitrarily selected reactions to convenient stimuli, in artificial laboratory situations. The laboratory approach was deliberately assumed by the researchers, convinced of the universality of the rules of behaviour which they were discovering. The traditional behaviorist theory does not accept the idea that people decide about their lives themselves; personal autonomy, internalized aims and values or activities based on reasoning have never enjoyed the deserved respect with the behaviourists. The attractive simplicity of such a view has been subject to criticism for the last 40 years, however, as psychologists were discovering certain limitations of the universality of conditioning. Some of these result from biological structure of organisms and environmental conditions; others result from the fact that learning animals can think, reason, interpret and attribute meaning and causality to stimuli and to behaviour. Therefore, conditioning is less mechanistic, and more flexible than was previously reckoned.

1. **Biological constraints on learning.**
   - Every species must form certain sets of behaviours, which let it survive; they are therefore **adaptive** (e.g. ways of building nests, development of particular sensory modalities, particular abilities to react – e.g. strength or speed, etc.). Some associations between conditioned and unconditioned stimuli, or between behaviour and its consequences, can be more difficult for certain organisms than the other, depending on the significance of these associations for survival.
   - Biological constraints on learning result from **genetic make-up** of a given species and can affect sensory, behavioral and cognitive abilities of an animal. These constraints question the assumptions of traditional behaviour analysis, which neglects natural environments and genetic make-up of species.
   - There are two branches of **research**, which point to the fact that genotypes can affect the relationship between behaviour and environment. These are: studies on species-specific behaviours and studies on taste-aversion learning.
   - **Species-specific behaviours** – Keller and Marion Breland, pigs' behaviour, instinctual drift.
   - **Taste-aversion learning** – Animals very easily for the association between disease and food. Genetically favoured, one-trial learning, learning despite long time distance between S and R. The phenomenon was discovered by John Garcia (e.g. rats easily learn to associate taste with later disease, but not taste and pain at the same time!). Even without conditioning – cautiousness towards unknown food, unlearnt unwillingness to taste new food, or even familiar food in a new environment. Practical applications – lamb-burgers, scapegoat aversion with cancer patients.

2. **Influence of cognitive processes (e.g. thinking, remembering, perceiving, using a langage) on learning.**
   - Social learning – **observational learning** – observing models, Albert Bandura's study, when are models most effective? (when his / her behaviour is rewarded, he / she is positively assessed, liked and respected, when they are similar to the observer, when their behaviour stands out, when the observer is able to imitate the behaviour). Application – therapies – cognitive behaviour modification – emphasizing thoughts and motifs + reinforcement.
   - **Rule learning** – rules are instructions about how to behave in certain situations; they are discriminating stimuli, in fact.
   - **Cognitive maps** – Tolman - internal reperesentation of the learning situation as a whole. Organisms learn the general topography of their environment, even if not reinforced. Animals searching for food will not search for it in the place where they have just found it!
   - **Insight learning** – Köhler questioned Thorndike, who claimed that all learning is abased on trial-and-error. He pointed out that many problems consist of inner relations, which sometimes need restructuring for the problem to be solved. Insight is thus defined as a sudden understanding of the relations between the elements. (:active information processing).
   - **Connectionist models of learning** (how?, unlike behavioral what? & when? Is learnt) – connections between concepts and sensations, connections can be zero, positive or negative; the simplest type of learning is association – Donald Hebb.