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Teleonomic and Teleologic Causation in Phylogeny and Ontogeny

Teleonomy is the typical causal process occurring when the organism is able to carve out environmental stimuli that are in principle noxious and a threat for its homeostasis in signals leading its own growth and development. Even if genome and environment are blind to each other such a process establishes a correlation between the two. Teleonomy does not demand goal or any active intervention of the organism as a whole. Teleonomy dominates in phylogenetic processes.

Instead, teleology is that mechanism through which a system exercises an informational control on another system in order to establish an equivalence class (of stimuli, for instance) and select some specific information (e.g. to verify whether a certain type of electron is good for energy storing, for instance) for its metabolic needs. Teleologic causality dominates at the scale of the individual organism and in ontogenetic processes like the building of an environmental niche or any other process through which a ripe organism is able to influence its own environment.

Epigenetic processes can be understood as a trade-off between teleonomy and teleology.