Achievements

It would be impossible to highlight completely even the more important achievements of Konrad Lorenz (KL). The selections of topics below is therefore, a subjective sample. You are invited to read the biographies of KL (see below) and also his original writings.

KL responded to simplistic, speculative and vitalistic ideas on behaviour at the beginning of this century. As C.O. Whitman and O. Heinroth before him, KL found that stereotyped behavioural elements ("Erbkoordinationen", "Fixed Action Patterns") make up for the behavioural flow in animals and humans. These elements are generated by motor neurons in the spinal cord. Fixed action patterns vary less within than between species and are highly heritable. These elements of behaviour may, therefore, be used for taxonomic classification the same way as anatomical characters in classical taxonomy. This is widely accepted today, but was revolutionary in the 1930ies. Together with Niko Tinbergen, he elaborated on the fixed components and taxis elements of a fixed action pattern, the egg retrieval behaviour in Greylag geese (1938, see below).

In response to Iwan Pawlow's "reflex chain theory", KL together with Erich von Holst pointed out that animals (including humans) are not only behaving in response to external stimuli, but are "spontaneously" active, meaning they respond to internal stimuli, which in sum are called "motivation". KL advocated his "psychohydraulic" model of motivation. He held, that every fixed action pattern has its own, independent drive system. If a certain action pattern would not be used for a while, it's "action-specifc energy" would build up. Thus, the intensity of a behavioural response would depend on both the strength of an external stimulus and the amount of the accumulated "action-specific energy". KL described "social imprinting" in Greylag goose hatchlings and he conducted some experiments on the stimuli involved. This work was systematically followed up by others, notably Ekkehart Hess and Patrick Bateson.

His broad and systematic knowledge of animal behaviour and his contact with the ideas of Immanuel Kant also allowed KL to provide the theoretical foundations for human ethology. In particular, he made clear, that the human brain and thus, our cognitive abilities, must have been selected for their survival value. Even though KL was group-selectionist and therefore, advocated ideas on the mechanism of evolution with which most of us would not agree today, he provided the base for the discipline of "evolutionary epistomology" ("Evolutionäre Erkenntnistheorie"), linking biology with philosophy.

In the context of his lifelong held idea (not to call it a prejudice) on the "self-domestication of man" KL advocated eugenics (his 1940 paper), as most biologist worldwide did at that time. He publicly regretted this mistake after the war.

With increasing age, KL more and more turned towards the mechanisms of social organisation. He observed social behaviour in those animals, he earlier preferred for establishing the general principles of individual behaviour, geese and perciform fishes. In contrast to his early work, hardly any of these results were published (but see Lorenz et al. 1998). KL increasingly commented on developments in human societies, he was deeply concerned about. This made him a “guru” (who was not always happy with his role). The responsible engagement of old KL for the environment is well remembered in Austria and unintentionally became one of the nuclei of the “green” movement, turning into the Green Party later.

Not all of KL concepts remained generally valid. For instance, the "psychohydraulic model of motivation" may apply to special cases, but is not a generally valid model of motivation. Even though many of the ideas of KL could not be upheld in their original form, they sparked waves of productive research. This applies to the nature-nuture debate in the 1940ie and 1950ies, for the motivation of aggression, for the function of poster colours in reef fishes, or for the mechanism of learning by imprinting, to mention only a few of these areas KL initiated or at least significantly affected.

KL was not only an eminent scientist, he was one of the greatest communicators of science ever, particularly of his discipline of Ethology. He established the science of behavioural biology and made clear, that animal psychology and human psychology are indeed, inseparable. He popularized behavioural biology worldwide, particularly in German-speaking countries.