Chewing it over

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The Natural Science of the Human Species: An Introduction to Comparative Behavioral Research — the "Russian Manuscript" (1944–1948). By Konrad Lorenz. Edited by Agnes von Cranach. Translated by Robert D. Martin. MIT Press: 1996. Pp. 337. \$35, £29.50.

THE Nobel prizewinning ethologist Konrad Lorenz wrote a 750-page manuscript while a prisoner of war in Armenia, between 1944 and 1948. It was an heroic effort. For at least part of the time, he was living in an unheated, poorly lit building (the icicles used to grow horizontally because of the wind blowing through) and his writing materials consisted largely of cut-up pieces of cement sack and potassium permanganate. He wrote with a steel-nibbed pen or home-made feather quills and his only reference work was a copy of Goethe's *Faust*. On release from prison, Lorenz persuaded the Russians to allow him to take a copy of the manuscript home with him to Austria. In his subsequent career, first in Vienna and later as director of Max Planck Institutes in North Germany and finally in Bavaria at Seewiesen, south of Munich, he used material from the "Russian manuscript" in his writings and lectures, but he did not publish it in full (in fact it was the first of what he intended as a two-volume treatise). In the early 1960s, the manuscript disappeared, and resurfaced only in 1990, after Lorenz's death, when his daughter discovered it in the library of the family home at Altenburg near Vienna. With the dedicated help of Robert D. Martin, the manuscript has now been translated into English and published.

Can a book published more than half a century after it was written be more than an historical footnote? In many ways, this volume is principally of interest for its insight into Lorenz's thinking at the time. All the main ideas in it were published subsequently in one form or another, and many of the details and the style of analysis now seem very dated.

Nevertheless, Lorenz's treatment of what he viewed as the central problem in his research career has stood the test of time. For most students of animal behaviour, Lorenz is known for three things: the development of the concept of 'imprinting', in which early experience influences later social and sexual preferences; the comprehensive "theory of instinctive behaviour"; and the use of behaviour as a tool in phylogenetic analysis. It may therefore come as a surprise that the Russian manuscript is about none of these things, although it refers to all of them. Lorenz's core theme is an evolutionary interpreta-

tion of the philosophical writings of Immanuel Kant. Perhaps because he occupied Kant's chair of psychology at Königsberg just before the Second World War, Lorenz was interested in explaining the Kantian concept of the *a priori*, the apparent built-in predispositions of the human mind that allow the individual to interpret the world outside.

Lorenz's basic question is simply this. There are real objects and events in the outside world and there are human experiences of these objects and events: how are these two connected ("the relationship between the real and the phenomenal world")? According to Kant, there were two distinct worlds: the "real world

referred to in the title (English translation: "Behind the mirror") is the human perceptual system and the "backside" is the set of evolved physiological mechanisms that enable the perceptual system accurately to anticipate and represent the outside world in a schematic way.

This evolutionary interpretation of the human perceptual system resonates well with much current thinking. Indeed, Lorenz showed remarkable foresight in anticipating the neo-Chomskian view of innate schemata for language acquisition and many other parallel ideas in what is today called 'evolutionary psychology'.

One may wonder why it took 750 (admittedly small — A5) manuscript

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outside" and the internal world guided by *a priori* structures that influence perception. He did not find any logical connection between the two. ("For Kant, there was no comprehensible, logically tangible relationship between the objective world and the intelligible world comprising only those *a priori* schemata that create images of objects in our perceptual world.") Lorenz, however, recognized that there is a connection. Where do the *a priori* schemata come from? They are the product of evolution: the brain "evolved with a structure permitting it... to construct a model-like, simplified representation of external reality... determined by... inputs from the outside world". In other words, the *a priori* are evolved representations of reality, adaptive predispositions that allow the developing human to make sense of the unending, unpredictable, diverse onslaught of stimuli from the outside world. Lorenz had, of course, developed essentially the same idea for nonhuman animals when he wrote of "innate releasing mechanisms" that allow animals to respond appropriately to key stimuli the first time they are encountered in life (the baby gull pecking at its parent's bill to elicit food regurgitation, for example).

The book *Die Rückseite des Spiegels*, published by Lorenz in 1973, covers essentially the same ground. The "mirror"

pages to develop this idea. The answer is that Lorenz covers many other topics, including an overview of his methods and results of studying animal behaviour. He is characteristically vivid in his metaphor and illustration. He demonstrates the lack of pain in insects by recalling "the grotesque sight of a grasshopper voraciously devouring its own rear end". On consciousness: "While this book is being read, the reader's pyloric reflex is alternately opening and closing the outlet from the stomach and thus delivering to the duodenum finely gauged quantities of predigested food pulp. The reader has just as little experience of this process as does an amoeba of its highly appropriate responses to a prick from a needle."

I suspect that few will wish to read the book from cover to cover, with or without their pyloric sphincter in action. But for those interested in Lorenz and his work, there are some quotable quotations and thought-provoking insights into a man whose creativity and influence on his subject area in the middle part of this century were immense. □

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