
Study Nature, Not Just Books

Nikolaas Tinbergen and His Naturalistic Life

Nikolaas Tinbergen, co-winner of the 1973 Nobel Prize in Medicine/Physiology and one of the founding fathers of ethology, is a poster child for the best that can happen when nature and nurture work in harmony. Many have argued that Tinbergen was always destined for greatness; after all, his family has produced not one, but two Nobel Laureates (himself and his elder brother Jan Tinbergen), a potentially distinguished scientist, and a Director of Energy in The Hague (South Holland). Tinbergen, however, always attributed his success to the support of his warm and loving family and the great interest in nature that was a significant part of social and cultural life in the Netherlands when he was growing up. At various stages in his life, Tinbergen received encouragement and support from his peers and teachers to pursue his scientific interests the way he wished to, and one wonders how his life may have unfolded had he not been blessed with the many opportunities provided by his well-wishers.

Nikolaas Tinbergen was born in 1907 in The Hague. His parents were schoolteachers and he had four siblings – three brothers Jan, Dik and Luuk, and a sister Jacomiena. Tinbergen's parents and his siblings were academically inclined and were formidable scholars in the arts and the sciences. Tinbergen once confessed that in his youth, he was considered “the dim one in the family”. Holland in the early twentieth century was deeply influenced by the writings of naturalists – E Heimans and J P Thijssse. This not only boosted an interest in nature among the general populace but also led to natural history lessons becoming an important part of school curriculums. Little surprise then that young Nikolaas was allowed by his family to do what he liked best, i.e., nature walks, camping out, observing and photographing animals and birds. Despite his interest in nature, Nikolaas was an indifferent student; traditional botany and zoology that emphasized taxonomy and anatomy bored him, and at the end of his school years in 1925, he did not consider biology as a career option. However, fate intervened in the form of Paul Ehrenfest – theoretical physicist and a family friend – who arranged for Nikolaas to spend a few months at the Rossitten Bird Observatory on the Baltic Sea Coast (then in East Prussia, now in Russia). Tinbergen often admitted that his experiences at Rossitten and watching the autumn bird migration were responsible for his decision to pursue biology and academia.

In 1926, Tinbergen joined the University of Leiden as a zoology student. Again, his luck with finding ‘kindred souls’ stood him in good stead. The concept of studying animal behaviour in the field was unusual back then, but Tinbergen was supported in his explorations by Jan Verwey, a biologist and later, Hildebrand Boschma, his PhD advisor. For his PhD thesis, Tinbergen



extended his field studies on the ecology of the beewolf, *Philanthus triangulum*, to understand its homing abilities and how it oriented itself during the bee hunt. In 1931, Tinbergen accepted an invitation to join a Dutch expedition to Greenland. In 1932, after receiving his doctorate (largely due to Boschma accepting a very short dissertation of 32 pages), Tinbergen married Elizabeth Rutten, and the duo left on the expedition to Greenland. In Greenland, they lived with a group of Inuits and studied the snow bunting's territorial behaviour. On his return to Holland in 1933, Tinbergen continued with his assistant position at the Zoological Laboratory in Leiden. Two years later, he was hired as lecturer in general zoology by the University, and he established a teaching program in animal behaviour that included practical sessions in the field and laboratory.

In 1936, Tinbergen met Konrad Lorenz at a conference in Leiden. This marked the beginning of a deep friendship between the two men that had a lasting impact on Tinbergen's life, both personally and professionally. Later that year, Tinbergen visited Lorenz at his home in Austria and stayed with him for over three months, discussing and conducting experiments to investigate mutually exciting aspects of animal behaviour patterns. This period of active collaboration led, among other ideas, to the now famous study of the egg-rolling behaviour of the graylag goose. However, the Second World War brought about a rupture in their association as they found themselves on the opposite sides of the global political divide. In 1942, Tinbergen was taken as a prisoner by the Nazi authorities after he protested the removal of Jewish professors from Leiden University. His experiences in the war camp left Tinbergen wary of Germany and Germans. Although he resumed his association with Lorenz after the war ended, they never regained the initial warmth of their relationship.

After the war, Tinbergen returned to his position in Leiden University and was made Professor in 1947. In 1949, Tinbergen gave up his position in Leiden to move to a less prestigious position in the University of Oxford, angering his Dutch colleagues in the process. However, Tinbergen made Oxford his new home, personally and professionally, and became a British citizen in 1955. At the University, he built a strong program of ethology, both through his own research work as well as that of his students and collaborators. Towards the end of his research career, Tinbergen withdrew from animal field studies and developed an interest in understanding human problems. He promoted the application of ethological methodologies to studying human behaviour and collaborated with his wife Elizabeth to carry out his last research project on the behaviour of autistic children.

Tinbergen received many honours for his work; these include the Swammerdam Medal, Godman Salvin Medal, honorary degrees from Edinburgh and Leicester, the Distinguished Scientific Contribution Award from the American Psychological Association, the Diploma of Honour of the Sociedad Argentina Protectora de Animales, and of course, the Nobel Prize. Apart from



his writings and lectures on ethology, Tinbergen also popularized science through his documentaries. In 1969, he was recognized for his achievements as a filmmaker, when he and Hugh Falkus were awarded the Italia Prize and the Blue Ribbon of the New York Film Festival for their film, *Signals for Survival*. Tinbergen died in his home in Oxford in 1988, after suffering a stroke.

Tinbergen, the scientist, is a remarkable figure who left behind an awe-inspiring scientific legacy. His work played a critical role in introducing a new approach to understanding animal behaviour and human evolution. His carefully thought-out field experiments (see articles by S Radhakrishna and R Gadagkar in this issue) ushered in a new era of research design for animal studies in the wild, his ideas inspired multiple generations of thinkers and scholars, and he mentored many students who went on to become highly influential animal and human behaviour scholars. But, it is Tinbergen the man, who should draw more attention from an aspiring ethologist. Tinbergen's personal qualities and the way he conducted himself embodied the values of generosity, patience, courtesy and humility. Always ready to acknowledge the contributions of other scholars and collaborators, Tinbergen was unfailingly generous when he spoke or wrote about how his peers influenced his thoughts and ideas. His students remember the spirit of teamwork that existed in the group at Oxford, and how Tinbergen always offered them the gift of his attention whenever they wanted to discuss an idea. Modest about his achievements, Tinbergen rarely spoke about the many honours he received or even his standing as a world-renowned scientist. Instead, he described his work as "no more than tentative groping attempts at seeing some sense in the variety of animal behaviour systems that fascinated, yet bewildered, us".

A little-known fact about Tinbergen is that he suffered from depression for most of his adult life. Unfortunately, during his lifetime, physicians were unable to diagnose the cause behind his depressive bouts, though later accounts speculate that a fatty-acid deficiency and/or protein intolerance may possibly have been responsible for his condition. In view of his illness, his success as a scientist appears even more commendable.

Tinbergen encouraged his students to go out into the natural world, to observe animal behaviour for themselves, and think about what the behaviour may mean. In Leiden and in Oxford, it was well-known that he far preferred the classroom of the wild to the study rooms within the universities. It is said that when Tinbergen first set up his animal behaviour teaching program in the University of Leiden, he wrote above the departmental library "Study Nature and Not Books". Tinbergen lived by the advice he promoted all his life.



Suggested Reading

- [1] H Kruuk, *Niko's Nature: The Life of Niko Tinbergen and His Science of Animal Behaviour*, OUP Oxford, 2003.
- [2] R A Hinde, Nikolaas Tinbergen, 15 April 1907 – 21 December 1988. *Biographical Memoirs of Fellows of the Royal Society*, Vol.36, pp.548–565, 1990.
- [3] S Radhakrishna, *Resonance – Journal of Science Education*, Vol.23, No.8, pp.845–851, 2018.
- [4] R Gadagkar, How to Design Experiments in Animal Behaviour: 1. How Wasps Find Their Nests, *Resonance – Journal of Science Education*, Vol.23, No.8, pp.871–884, 2018.

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Is nature the governing force behind our behaviour or is it nurture? While almost everyone agrees that it's a mixture of both, there has been no end of disagreement about which is the dominant influence. Someone who defended the data in that book but took exception to its conclusions is the American psychologist and geneticist Robert Plomin, a pioneer of what's sometimes called "heredarian" science. In his new book, *Blueprint: How DNA Makes Us Who We Are*, Plomin takes recent genetic research and draws some provocative conclusions, but they are about individuals rather than groups. "Show me a study that doesn't find genetic influence. You can't just say: 'Oh, parents resemble kids and I think it's environmental'." *The Varieties of Religious Experience: a Study in Human Nature* / William James Page 3 de 400. This web edition published by eBooks@Adelaide. Rendered into HTML by Steve Thomas. This book would never have been written had I not been honored with an appointment as Gifford Lecturer on Natural Religion at the University of Edinburgh. In casting about me for subjects of the two courses of ten lectures each for which I thus became responsible, it seemed to me that the first course might well be a descriptive one on "Man's Religious Appetites," and the second a metaphysical one on "Their Satisfaction through Philosophy." We must describe and name them just as if they occurred in non-religious men. Request PDF | On Aug 1, 2018, Sindhu Radhakrishna and others published *Study Nature, Not Just Books: Nikolaas Tinbergen and His Naturalistic Life* | Find, read and cite all the research you need on ResearchGate. In 196 pages of text, this book provides a great deal of information on the nature of Australian inland waters and their plants and animals. There is also a comprehensive list of references to further reading, covering 30 more pages, making this section larger than any of the preceding chapters. Read more. Article. *Scientific Books: The Human Nature Club; An Introduction to the Study of Mental Life*. January 1901. Edward Thorndike. The nature study movement (alternatively, Nature Study or nature-study) was a popular education movement that originated in the United States and spread throughout the English-speaking world in the late 19th and early 20th centuries. Nature study attempted to reconcile scientific investigation with spiritual, personal experiences gained from interaction with the natural world. Led by progressive educators and naturalists such as Anna Botsford Comstock, Liberty Hyde Bailey, Louis Agassiz, William Gould Nature will teach you different things depending on your goals. It can teach you how to think more clearly & scientifically, or enhance your sense of spiritual connection, or even achieve personal success. It all starts with having an attitude that aligns with your own personal interests. The ability to study a plant or a bird and later recall those observations so you can look it up in a field guide requires a level of focus that simply doesn't get nurtured in an indoor classroom. This is how nature will teach you a kind of organic scientific focus that's driven by your own developing curiosity rather than the external desire to get good grades or achieve status. No difficult techniques, just pure nature. 6. Authenticity. Authenticity is one of the big secrets to success in life.