
Dorothy Leavitt Cheney (1950–2018)*

Understanding the Lives and Minds of Primates

Dorothy Cheney was a renowned primatologist who pioneered experimental studies of communication in non-human primates in natural field settings. She was born on 24 August 1950, in Boston, Massachusetts, USA, to Sally Leavitt Cheney and Edward R. Cheney. Sally Cheney was a translator, and Edward Cheney was an officer in the U.S. Foreign Service. The family had to move every few years because of Edward Cheney's job and, therefore, Dorothy spent much of her early life abroad, in Malaysia, Holland, Nicaragua, and India. She particularly enjoyed her years in Bombay, and also her travels around India. Dorothy has said, "My parents' rather laissez-faire approach to child-rearing allowed my sister and me to travel alone around India in our teenage years. We were given complete independence, for which I've always been grateful." [1] Her sister Margaret was two years younger. She also had two brothers, Drew and Thomas.

Upon returning to Massachusetts, USA, Dorothy studied at Abbot Academy, a boarding preparatory school for women, from 1964–1968, and then joined an undergraduate programme at Wellesley College. She majored in political science and planned to study law. While at Wellesley, Dorothy met Robert M. Seyfarth, an undergraduate at Harvard, and they married in 1971. Neither was initially inclined towards science, but studying about Darwin's theory of natural selection changed their perspective. Robert Seyfarth had majored in biological anthropology and joined a PhD programme at Cambridge University in 1970, to work with the renowned animal behaviourist, Robert Hinde. Dorothy spent her junior year (1970–1971) of college at the London School of Economics and graduated from Wellesley College with a BA in 1972.

Robert Seyfarth planned to research social relationships in baboons at Mt. Zebra National Park in South Africa from 1972 and invited Dorothy to join him. She agreed, thinking fieldwork might be fun and put off law school. In her words "It was a transformative experience, and I loved it." After 18 months of challenging and enjoyable fieldwork documenting chacma baboon behaviour along with Seyfarth, she wrote to Robert Hinde asking if she could join him as a PhD student. Not having the necessary academic background, Hinde gave her a one-year trial period with an essay to write each week on animal behaviour. There was no looking back. Dorothy analysed the social relationships of juvenile and infant chacma baboons for her PhD while Robert Seyfarth focussed on adult chacma baboon behaviour. They received their PhD degrees

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from Cambridge in 1977. In the 1970s, there was initial animosity between, but eventually, a welding together of, descriptive ethology (the study of animal behaviour) and sociobiology (the study of the fitness consequences and evolution of social behaviour). Cheney and Seyfarth experienced the excitement of this period and considered the evolutionary implications of social behaviours in their work.

Cheney and Seyfarth moved to Rockefeller University, New York, to carry out postdoctoral research with Peter Marler, another excellent scientist known for his work on communication in animals. Designing clever playback experiments in the field, they showed that vervet monkeys in Amboseli National Park, Kenya, communicated specific information about different types of predators using different calls (see the General Article in this issue by Robert Seyfarth [2]), in what was thought to be similar to distinct human words. They were also able to demonstrate that individual vervets knew about the nature of other individuals' relationships, such as parent-offspring relationships or dominance ranks (see [2]). These important findings are now in textbooks of Animal Behaviour. Cheney and Seyfarth obtained a faculty position in 1981 in the Department of Anthropology, University of California, Los Angeles, and subsequently moved to the University of Pennsylvania in 1985, where Dorothy was initially in the Department of Anthropology and then at the Department of Biology until her retirement in 2016.

Long-term field studies that monitor individually identified birds and mammals can be extremely challenging to set up and sustain, although they can eventually provide a wealth of information. Cheney and Seyfarth ran such field projects almost throughout their career and took them to a new level by carrying out rigorous experimentation in field settings. They worked on the Amboseli vervet project till the late 1980s when the study population died out. In 1992, they began to study chacma baboons in Moremi Reserve in the Okavango Delta, Botswana, upon W. J. Hamilton's invitation to take over that long-term study and continued the study till 2007. They had two daughters, Caroline ("Keena") born in 1984, who has recently written about her experiences of growing up in the baboon research camp in Botswana in *Wild Life*, and Lucy born in 1986, and had to balance the challenges of raising children in the field and fieldwork itself. Working with Lynne Isbell, Joan Silk, Julia Fischer, Jacinta Beehner, Thore Bergman and others, now renowned primatologists themselves, Cheney and Seyfarth delved into questions about how vervets or baboons interacted with individuals within and between different groups, how females resolved their differences after fights, and how individuals navigated a world structured by kinship, dominance ranks, competition with other groups, infanticidal males, and predation (see [2], [3]). By tirelessly observing how individuals communicated and socialised with each other, carrying out playback experiments, and examining their physiological responses (stress levels), Cheney and Seyfarth could figure out what the monkeys knew about their world. Insights from their work on the vervets and baboons have



been described in their books *How Monkeys See the World: Inside the Mind of Another Species* and *Baboon Metaphysics: The Evolution of a Social Mind*, apart from numerous influential scientific papers.

Dorothy loved the outdoors and had a keen eye for observing behaviour. Julia Fischer writes “One of the many fond memories that I have was when she and Robert came to Senegal to watch the Guinea baboons we were studying. At that time, the baboons were not so well habituated yet, and we spent most of the time trying to capture a few of them to put radio collars on the males. And yet, despite the rather sparse contact time, Dorothy immediately spotted some of the key features that we only later were able to see in the actual observation data: the fact that the females were rather aloof and showed relatively little interest in one another, or their babies, compared to the female bonded chacma baboons. She also mused about the importance of female choice and what cues males provide as to their attractiveness for females. She was also intrigued by the friendly interactions among the males.” She was at home in the field, from carrying out meticulous experiments to driving a motorboat unfazed through the crocodile and hippo inhabited river.

Cheney, along with Seyfarth, mentored many students and postdocs, who are now acclaimed researchers themselves and share that their lives have been enriched by working with her. Dorothy was self-critical and an exemplar of very high standards of work and writing and sought the same from her students and co-workers. Gabriel Ramos-Fernandez, who was a PhD student with Dorothy and is currently at the National Autonomous University of Mexico, says “In my own role as graduate advisor, I have realized how hard it is to strike a balance between intervening in your students’ projects and allowing them to learn on their own. Dorothy was always available, but her thorough reviews of my work came only when I needed them: although always a bit scary, finding a draft paper reviewed by her in my mailbox guaranteed many nights of sleepless reviews. Her letters, carefully written from far away places in Africa, were an incredibly rich and timely source of insights and prompted me to review my thesis work exactly when I needed it most. . . . Not only was it a fun (yet hard) adventure to study under her, but I realize that she was providing me with opportunities to learn on my own while guiding me subtly but rigorously.” Shermin de Silva, also previously a graduate student with Dorothy and currently running her own long-term project on Asian elephants in Uda Walawe, Sri Lanka, says “Dorothy was a huge fan of Jane Austen and often remarked at how baboons’ social lives and dramas were not much different from that of the Victorian-era families... both she and Robert were fanatical about proper grammar and use of the English language, and Austen was of course one of the most brilliant in using language beautifully. . . . She was always somewhat apologetic before handing me back my sorry pieces of writing, insisting that she wasn’t “trying to be mean”. Thanks to her I will never ever make the mistake of mixing tenses within the same

paragraph again in my life! She didn't suffer fools gladly, as the expression goes, and could send withering criticism in an email one-liner if she was in a particularly bad mood. You had to refrain from taking this personally, especially if the Boston Red Sox had lost a game because she was a huge fan! But the great thing about this was transparency—you always knew where you stood with her. Compliments were rare, but if she respected and supported you, you knew it to be well-earned." Noted primatologist Lynne-Isbell says "Dorothy was not one for those who lack a certain amount of confidence. During my grad school days, she once said that I was unusual because, unlike many graduate students, I didn't immediately impress anyone with my intellect! With Dorothy's own brilliant intellect, sharp wit, and many accomplishments, it's true that I felt like a country bumpkin around her, but it didn't discourage her from being tremendously supportive in ways that really mattered. I will always be grateful to Dorothy for the time and energy she invested in me and my nascent career."

Apart from being a spectacular scientist who was convinced about the necessity to think about how animals dealt with challenges that they faced in their normal lives rather than in the lab, Dorothy was known for her irreverent sense of humour and was great fun to be around. William Searcy, a fellow postdoc in Peter Marler's lab had written in his remembrances of Dorothy "It's true that she was then, as later, a confirmed pessimist, continually issuing dire predictions about nearly everything, from her own job prospects, to national politics, to (perhaps most importantly) the seasonal prospects of the Boston Red Sox, but she was the most cheerful and engaging of pessimists, uttering gloomy predictions with a sparkling eye, a wicked grin, and a sideways shake of her head." [4] Jacinta Beehner writes "Even back at camp, ... we had to have our wits about us—parlour games after dinner were near-mandatory events. One favourite game was "dictionary," where one person carefully selected an obscure word from the dictionary and wrote down the given definition on a scrap of paper. Everyone else wrote down fake definitions... Much to our relief, Dorothy awarded points not for guessing the correct definition but rather for inventing the most asinine one. Indeed, a select few of these definitions remained in use, more than a decade later... Through all of these challenges, it was clear that, to Dorothy, words were the medium, and word-play was the masterpiece" [4]. Julia Fischer says "She was an amazing person and I was so honoured to work with her...She had a brilliant mind, was a terrific writer and she really loved the baboons. I kept all her emails because they were funny and sometimes also peppered with grim humour. We had great dinners together, sharing stories about baboons, broken cars, silly radio shows and the meaning of life, often ending with the finding that we had way too much wine but a great time. I miss her terribly."





**Figure 1. Dorothy Cheney in the field at Moremi Reserve.
Photo courtesy: Robert Seyfarth.**

Apart from the testimonials of her students and postdocs, which are the most important, Dorothy also received many formal honours. She was elected to the American Academy of Arts and Sciences in 1999 and to the U.S. National Academy of Science in 2015. She also received the Guggenheim Fellowship, the Distinguished Animal Behaviorist Award from the Animal Behavior Society for a lifetime contribution to research in animal behaviour, the Distinguished Primatologist Award from the American Society of Primatology, and an honorary doctorate from the University of Neuchâtel, Switzerland.

Dorothy was diagnosed with breast cancer in 2012 and died on 9 November 2018, at her home in Devon, Pennsylvania. She is dearly missed by many and is also a role-model for young scientists to look up to.

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Suggested Reading

- [1] J Viegas, Profile of Dorothy L. Cheney and Robert M. Seyfarth, *Proceedings of the National Academy of Science, USA*, Vol.115, No.15, pp.3735–3738, 2018. DOI: 10.1073/pnas.1804145115.
- [2] R Seyfarth, Dorothy Leavitt Cheney: Life and Work, *Resonance*, Vol.25, No.8, pp.1075–1082, 2020.
- [3] J Silk, *Dorothy L Cheney (1950–2018): A Biographical Memoir*, National Academy of Sciences, 2019. <http://www.nasonline.org/publications/biographical-memoirs/memoir-pdfs/cheney-dorothy.pdf>
- [4] J Beehner, T Bergman, J Fischer and J Silk, Dorothy Cheney (1950–2018), *International Journal of Primatology*, Vol.40, pp.153–155, 2019. https://static-content.springer.com/esm/art3A10.10072Fs10764-019-00077-y/MediaObjects/10764_2019_77_MOESM1_ESM.docx

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