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Obituary

Frans de Waal's lasting legacy: inspiring a new generation of animal behaviour scholars

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Abstract

The passing of Frans de Waal marked a significant loss for the field of animal behaviour and cognition. His groundbreaking scientific work transformed our understanding of animal behaviour and influenced many scholars. De Waal's popular science books reached millions, shaping public perception of animal minds and inspiring many young scientists. This memorial article reflects on de Waal's profound impact on a new generation of animal behaviour scholars and the lasting legacy he leaves in the field of animal behaviour and cognition.

1. Introduction

The passing of Frans de Waal on March 14th marked the end of an era for the field of animal cognition. His pioneering work in primate behaviour, empathy (Preston & de Waal, 2002), inequity aversion (Brosnan & de Waal, 2003), reconciliation (de Waal & van Roosmalen, 1979), and culture (Whiten et al., 2005) not only reshaped our understanding of animal behaviour but also left an indelible mark on generations of scientists. His popular science books, such as *Chimpanzee Politics* (de Waal, 1982), *Are We Smart Enough to Know How Smart Animals Are?* (de Waal, 2016), and his most recent work, *Different: Gender Through the Eyes of a Primatologist* (de Waal, 2022), have

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reached millions of people and shaped their thinking about the mental lives of animals.

Other obituaries have described the scientific legacy of de Waal's work (Brosnan, 2024; Clay, 2024; Whiten, 2024), his impact as a mentor for young scientists (Brosnan, 2024; Clay, 2024), and his importance for the journal *Behaviour* (Kret et al., 2024). In this memorial article, we reflect on the profound influence that de Waal's research and writings has had on a new generation of animal behaviour scholars. As early career researchers, we share our experiences and those of our students and peers, highlighting the myriad of ways in which Frans de Waal shaped our thinking and research on animal behaviour and cognition. Though many of us may not have had the privilege of directly working with Frans, his work has left an indelible imprint on our research and academic trajectories, inspiring us to ask bold questions that challenge conventional thinking about the inner lives of animals. In this article, we highlight how Frans de Waal — through his books and lectures, his research contributions, and the broader reach and impacts of his work — has shaped and will continue to shape the future of animal behaviour research for generations to come.

2. Books and public engagements

“Instead of making humanity the measure of all things, we need to evaluate other species by what they are. In doing so, I am sure we will discover many magic wells, including some as yet beyond our imagination”.

Are We Smart Enough to Know How Smart Animals Are? (de Waal, 2016)

Over the course of his life, Frans de Waal penned 15 books that offer a profound exploration of the behavioural, cognitive, and emotional lives of primates and other animals. In many of these books, de Waal draws from his own experience, providing a window into the ontogeny of his lifelong passion for animal behaviour. He credits writing by prominent ethologists, like Konrad Lorenz, Niko Tinbergen, and Desmond Morris for piquing his interest in animal behaviour and inspiring his research trajectory. Today, we can trace the academic origins of many young scholars to de Waal's books and public lectures. For many of us who share an interest in animal behaviour, his books inspired a fascination with the mystery of the animal

mind, fostering our curiosity about how animals think and feel and deeply influencing our own research.

Tom Roth, lecturer at Utrecht University and co-author of this piece, recalls his first introduction to de Waal's work and the profound influence it had on him: "I read *Chimpanzee Politics* as a first-year biology student, and it was an eye-opener for me because it was the first time that I encountered a scientist writing about animals having goals, emotions and thoughts. At the time, I knew I wanted to work with primates in the context of conservation, but I had never fully realized that we could also investigate the inner lives of animals".

Chimpanzee Politics, Frans de Waal's first book, is a detailed account of the power struggle of a chimpanzee colony in the Arnhem Zoo. This book was celebrated, not only for its scientific contributions to our understanding of chimpanzee social behaviour, but also for its rich behavioural descriptions that invoked the goals and emotions of colony members. "It was de Waal's description of the chimpanzee colony" says Dr Roth, "that piqued my interest in this topic and eventually stimulated me to develop a deep interest into animal cognition".

Similarly, Marcela Benítez, Assistant Professor of Anthropology at Emory and co-author of this piece, recalls the impact of reading *Are We Smart Enough to Know How Smart Animals Are?* (2016) while conducting her PhD field research on gelada monkeys. "As a young scientist, on the verge of completing my thesis and being plagued by the age-old question of 'What's next?', I took de Waal's central question, 'Are we smart enough?', as a personal challenge".

Are We Smart Enough to Know How Smart Animals Are? delves into the complexities of animal cognition, arguing that our human-centric view often underestimates the intelligence of other species. "The idea that our ability to understand the cognitive abilities of animals was limited not by their capabilities but by our own limited mindset entirely changed my thinking about the field of animal cognition and the way I approach science in general," says Dr Benítez.

Frans de Waal's perspective on animal cognition is deeply rooted in his view of animals as individuals with distinct personalities, emotions, and social lives. Unlike traditional approaches that often see animals as mere subjects for study, de Waal emphasized the individuality and agency of the animals he studied. This approach profoundly influenced Emory graduate

student Federico Sánchez Vargas, to pursue a degree in primate behaviour. “A common sentiment among scientists is that anything we achieve—any new height we reach—we do only by standing on the shoulders of giants. In my path as a budding primatologist, Frans de Waal’s life and work often served as such a platform from which I could see my own questions as meaningful and their pursuit as deeply worthwhile and achievable. From Frans, I first learned the ethos so often repeated by him that non-human primates, our evolutionary siblings, stand as a mirror aiding us in understanding ourselves. From his writing, I developed an appreciation for the deep complexity of apes and monkeys as social beings and individuals, each as unique and distinct as we are”.

De Waal’s focus on the individuality of animals provides a richer, more empathetic understanding of animal cognition and behaviour. In his writings, de Waal challenged us to reconsider how we study animals, emphasizing that they are not mere subjects or tools for human use but are sentient beings with their own personalities, emotions, and social lives. “Frans’ ability to combine rigorous scientific inquiry with a clear fondness for the emotional lives of animals will continue to inspire me throughout my academic journey,” shared Jake Brooker, a postdoctoral fellow at Durham University. De Waal’s approach fundamentally reshaped our relationship with the animals we study, fostering a deeper appreciation and ethical consideration for their complex lives.

Frans de Waal has profoundly impacted scientific writing by making complex scientific concepts accessible and engaging to a broad audience. His ability to blend rigorous research with compelling narratives and charming anecdotes has demystified the world of animal behaviour for readers of all backgrounds, from high school students to emeritus professors. For postdoctoral fellows Meg Sosnowski (UC Davis) and Evy van Berlo (University of Amsterdam), de Waal’s approach to scientific communication has profoundly influenced their own scientific writing. “Frans communicated in a way that is rare among scientists,” says Dr Sosnowski. “He did not hide behind pretentious language and gate-keeping jargon. Whatever his mode of communication, Frans shared with his audience a true respect and obvious love for the primates that he knew”. Evy van Berlo echoes this point: “Professor de Waal inspired me to translate scientific findings for the public. Every human being is naturally curious about other living beings: What are they thinking? Why do they do what they do? What do they feel? His work

provided answers to the scientific community, but also to a much broader audience, fulfilling our species' need to understand and connect with other beings”.

Frans de Waal's books not only illuminate the intricacies of animal behaviour but also highlight the historical development of the field, revealing how science is often influenced by biases and perspectives of scientists. Through his extensive body of work, de Waal critically examined how these biases have influenced research questions, methodologies, and interpretations, often underestimating the mental capacities of animals. As Frans points out in the introduction of *Are We Smart Enough*, “Yes, we are smart enough to appreciate other species, but it has required the steady hammering of our thick skulls with hundreds of facts that were initially poo-pooed by science. How and why we became less anthropocentric and prejudiced is worth reflecting on while considering all that we have learned in the meantime”.

By weaving historical context into his narratives, he showed how evolving viewpoints and methodologies have gradually led to a richer, more nuanced appreciation of the animal mind, reminding us that science is an ever-evolving discipline. “De Waal's writing highlighted something that many of us tend to forget: scientific discoveries are not made in a vacuum but are made by scientists with their own entrenched biases”. says Dr Benítez. “Frans reminds us that it is necessary to reflect on how we got here so we can better understand how to move forward”.

In his latest book *Different*, Frans de Waal extended his examination of bias to the realms of gender and sexuality, both in humans and animals. By blending scientific research with observations of primate behaviour, de Waal challenged entrenched stereotypes and societal biases, arguing that our understanding of gender is often skewed by cultural preconceptions. He highlighted how scientific studies have historically been influenced by prevailing gender norms, which can distort our interpretations of both human and animal behaviour. *Different* emphasized the need to approach gender with the same critical eye that de Waal applies to animal cognition, advocating for a perspective that acknowledges the complexity and variability of gender expressions. This work exemplified how de Waal's broader critique of scientific bias — introduced in his earlier books — applied not only to animal behaviour, but also to our understanding of human social constructs, urging readers of all kinds to reconsider and refine their assumptions in light

of a more inclusive and scientifically grounded framework. As PhD student Chloë India Wright (University of Lincoln) recalls: "I think it speaks volumes how often examples from de Waal's *Different* have been brought up in conversations about gender among my friends from outside of animal behaviour".

Frans de Waal's lectures and public talks, much like his writing, inspired a new generation of aspiring animal behaviour scientists. His presentations stood out for their use of pictures, videos, and compelling anecdotes, which effectively illustrated his broader points about animal cognition. These tangible examples made complex ideas accessible to his audience, says PhD student Zoë Goldsborough: "I learned how individual animals can shape our understanding and serve as powerful conduits for conveying complex scientific concepts to the public". Evy van Berlo was similarly inspired by one of de Waal's lectures: "During a course he taught, I was amazed at the behavioural similarities between primates and humans. Who doesn't know his famous video on inequity aversion in capuchin monkeys? It was then that I realized: *Yes! This is what I want to do in my career as well!*" Besides his talks, he also showed genuine interest in the questions of his audience. Tom Roth remembers a Q&A with de Waal during a bachelor course: "I vividly remember bringing a list of questions, and having the opportunity to ask them one by one. He took everyone's questions seriously, easy or difficult, and took the time to answer them in detail".

Many of us were drawn to animal behaviour and cognition because of Frans de Waal's popularization of the field. His ability to bridge scientific insight with accessible storytelling has fostered a fascination with animal cognition among readers worldwide, shaping the intellectual pursuits of emerging scholars who now continue to explore and expand upon his groundbreaking research. Next we delve into the profound influence of de Waal's scientific research on this new cohort, and how his pioneering studies have reshaped the landscape of animal behaviour research, paving the way for deeper insights into the complexities of animal minds.

3. Research in animal cognition

"Those who exclaim that 'animals are not people' tend to forget that, while true, it is equally true that people are animals. To minimize the complexity of animal behaviour without doing the same for human behaviour erects an artificial barrier".

The Bonobo and the Atheist (de Waal, 2013)

Apart from his public work, Frans de Waal has also had a profound influence on the fields of animal cognition and primatology. For example, his research into reconciliation (de Waal & van Roosmalen, 1979) was not only groundbreaking in itself, but also opened the door to new studies that focused on positive interactions between animals, rather than aggression. De Waal decided to shift his focus towards positive social behaviour after witnessing the outcomes of lethal aggression between chimpanzees in the Arnhem colony: “The tragic end of Luit opened my eyes to the value of peacemaking and played a major part in my decision to focus on what holds societies together” (de Waal, 2009: p. 44). This focus on the positive later also led Stephanie Preston and Frans de Waal to develop an evolutionary framework for the study of empathy (Preston & de Waal, 2002).

De Waal’s research on empathy inspired Dr Brooker, who comparatively investigates empathy in our closest relatives: “For me, his pioneering studies on primate behaviour inspired me towards my path exploring the nuances of empathy and social connections in our closest living relatives”. Brooker’s response also touches upon another important aspect of de Waal’s work, namely his popularization of bonobos. After observing zoo-housed bonobos, de Waal came to the conclusion that their behaviour differed substantially from that of chimpanzees, a recognition with deep consequences for our view of human nature (Clay, 2024). Furthermore, de Waal also explored the topic of animal culture in his scientific work (de Waal, 1999a; Whiten et al., 2005). Apart from these tangible examples, de Waal had a substantial influence on how we think about animal cognition. Two examples that have particularly influenced our own thinking are outlined below: his discussion of anthropodenial, and his emphasis on a biocentric approach to cognition.

3.1. *Anthropodenial*

Of course, when describing animal cognition and behaviour with such richness as de Waal did, the accusation of anthropomorphism is always looming. Throughout his work, however, de Waal made clear that the fear of anthropomorphism is not necessary per se: “In a Darwinian framework, there is no good reason to avoid concepts merely because they derive from the behaviour of the species to which we belong” (de Waal, 1999b:, p. 273). Moreover, he also explicitly posed the opposite question—namely, should we not be worried about underestimating the mental capacities of closely related

animals? He coined this underestimation “anthropodenial” (de Waal, 1999b), and argued that the risk of anthropodenial is probably larger than the risk of anthropomorphism when studying species that are closely related to humans.

Consequently, Frans de Waal paved the way for more direct comparisons between humans and non-human primates. Indeed, we feel that our current research would likely not have been possible without this shift in thinking. Tom Roth reflects on his PhD: “Even though my PhD topic was very different from Frans de Waal’s own work, it implicitly contains many aspects that de Waal emphasized so strongly in his own work: animals have a rich mental life, with individual preferences and emotions. That these notions may look rather self-explanatory shows how much has changed in the last decades regarding our view of animal minds. De Waal was the epitome of this change, tirelessly advocating for the acknowledgment of cognitive and emotional capacities in animals. Thinking about my own work, I now realize how much this change has shaped my own thinking about animal minds. For example, in my thesis work I directly compared humans to orang-utans, and more specifically, I investigated humans to gain insight into the cognitive processes of orang-utans”.

Frans de Waal was deeply convinced that we should emphasize similarities, rather than differences, in cognition with our closest relatives, if only because similarities are more common. As he wrote in his discussion of anthropomorphism: “Animals are made of flesh and blood, have limbic systems, and share thousands upon thousands of features with us that are absent in computers and robots. As soon as we admit that animals are not automatons, anthropomorphism carries the implication that the postulated similarities are more than skin-deep” (de Waal, 1999b: p. 270). Evy van Berlo echoes this conviction: “Professor de Waal passionately argued against human exceptionalism, instead emphasizing our many similarities with other animals. I will never forget his quote on how psychology focuses on only one species—humans—and how studying other animals gives us a more comprehensive perspective on cognition. This idea has been central to my comparative work”. This assertion, now an established idea for new generations of animal behaviour scholars, remains a testament to the legacy of Frans de Waal’s work.

3.2. A biocentric approach to cognition

Frans de Waal advocated a biocentric approach that emphasizes understanding cognitive abilities within their evolutionary and environmental contexts.

In his writing and research, de Waal challenged conventional thinking in the field of animal cognition, advocating for an appreciation of species-specific cognitive strategies shaped by ecological and social environments. Pushing back on a purely behaviourist approach, which primarily focused on controlled laboratory experiments and the conditioning of observable behaviours, de Waal emphasized the importance of observing animals in their natural world. As he wrote, “Whether we are studying hand anatomy, trunk multifunctionality, face perception, or greeting rituals, we need to familiarize ourselves with all facets of the animal and its natural history before trying to figure out its mental level” (de Waal, 2016: pp. 21–22).

De Waal critiqued behaviourism’s reductionist view of animal behaviour, which often overlooked the cognitive processes and evolutionary contexts that shape those behaviours. He integrated ethological frameworks into his research, highlighting how behaviours observed in animals have adaptive significance and are shaped by natural selection. This perspective challenged behaviourism’s tendency to view animal behaviour as mechanistic responses to stimuli, advocating instead for a comparative psychology that appreciates the diversity of cognitive abilities across species. By bridging ethological insights with psychological perspectives, de Waal’s work broadened the scope of animal cognition research, encouraging a deeper understanding of the complexities of animal minds beyond traditional behaviourist frameworks.

Marcela Benítez reflects on de Waal’s impact: “In my academic upbringing, I was taught that cognition could only be studied in the laboratory, while understanding primate behaviour required conducting observations in the wild. I felt that I had to choose between these two divergent academic paths—psychology for studying cognitive mechanisms and anthropology for the function of behaviour. Frans not only pushed back on this narrative, he argued that in order to study the cognitive abilities of animals, we need to have a detailed understanding of how they actually behave”. Inspired by de Waal’s philosophy, Dr Benítez’s lab at Emory University hopes to continue his legacy by taking experimental designs into the wild. Dr Benítez’s goal is to understand not what capuchin monkeys can do, but what they actually do when faced with social and ecological challenges, on their own terms in their own world. “As an assistant professor at Emory, I continue to walk in Frans de Waal’s footsteps. He was one of the main reasons I was drawn to Emory

and his impact on the academic growth of primatology at Emory is evident in the vibrant community of primatologists that call Atlanta home”.

While Dr Benítez did not work directly with de Waal, her postdoctoral fellowship with Dr Sarah Brosnan, a former student and collaborator of de Waal, deeply influenced her approach. Together, they explored issues of cooperation and decision-making in capuchin monkeys, echoing de Waal's call to study animals in their social world. Meg Sosnowski, also mentored by Sarah Brosnan, reflects on de Waal's philosophy permeating through the Brosnan lab: “My experience of Frans was framed in the context of my own mentee relationship with Sarah, one which was a mirror of her own with Frans. Frans' approach to the science of behaviour and his philosophy regarding the study of animals was endemic in the work that we did in Sarah's lab. We learned to apply strict scientific rigor to our data collection while still considering that animals might have mental experiences difficult to capture through ethograms and cognitive testing. We probed our own assumptions about why animals behaved as they did, and why they often surprised us with the connections that could be drawn between their social experiences and our own. We learned that through simply watching the animals, we could pick up on new ideas and new lines of work”.

De Waal's legacy is evident in the work of scholars he has inspired, who continue to push the boundaries of our understanding of animal minds. De Waal's anthropodenial perspective challenged us to reconsider the cognitive and emotional capacities of animals, advocating for a more inclusive view that emphasizes similarities over differences. His biocentric approach, which integrates ethological insights with psychological perspectives, has encouraged researchers to study animals within their natural contexts, and broadened the scope of animal cognition research. His scientific contributions remind us that understanding animal cognition requires a compassionate, nuanced approach that considers the evolutionary and ecological contexts of each species, ultimately enriching our own understanding of the natural world.

4. Conclusion

Frans de Waal's writing and research has undeniably left a lasting impact on the next generation of animal behaviour scholars. His pioneering research has served as the theoretical foundation to our research questions and his

elegant experiments have changed the way we study the minds of animals. “Without Professor de Waal’s pioneering work, I would not be able to ask the questions I now research,” says Evy van Berlo, “I am forever grateful for his significant contributions to our field, his impact on my career, and his inspiration to reflect on the inner lives of other animals”. De Waal’s work encourages us to view animals as sentient beings with unique personalities and emotional lives, challenging traditional ideas and fostering a more empathetic approach to the study of animal behaviour. “His work gave us intellectual permission to view animals as having complex emotional and cognitive lives similar to our own such that it has rarely felt incongruous or challenging for me to do so,” says Chloë India Wright.

As we reflect on de Waal’s impact, we are reminded that our quest to understand animal behaviour is not just about gaining knowledge but also about cultivating a deeper appreciation for the rich, complex lives of the creatures with whom we share our world. “His message to interweave scientific rigor with a compassionate understanding and respect for his study species represents a long-lasting legacy that I, along with many emerging primatologists, am committed to upholding” shares Emory PhD student Nicole Furgala. The young scholars and researchers he has inspired are committed to carrying forward his ethos of combining scientific excellence with compassion and respect for the subjects of their studies. “Though the loss of Frans in the scientific community is great, I am certain he lives on in the minds of the many young scientists who like me have been inspired by him to carry on work in animal behaviour and cognition,” reflects Federico Sánchez Vargas. The young scholars who shared their thoughts in this article, along with many other emerging animal behaviour scholars, will continue to further explore the cognitive capacities of animals, honouring Frans de Waal’s legacy through their ongoing research.

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