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doi:10.1017/bjt.2017.10

# Wildlife agencies: practice, intentionality and history in twentieth-century animal field studies

AMANDA REES\*

**Abstract.** This paper explores the ways in which scientists have managed the concept of animal ‘agency’ in twentieth-century field-based studies of animal behaviour. Using a range of popular accounts published between 1868 and 2012, it provides the intellectual and historical context for the sharp increase in field studies of animals – and their popularizations – that took place from the late 1960s on. It argues that the vivid depiction of animal characters and personalities, with individual and community histories intertwined, is firmly grounded in the methodologies adopted for field studies of animal behaviour. It suggests that intellectual interest in animal agency not only itself needs to be historically situated, but also close historiographical attention needs to be paid to the public deployment of the concept for intellectual, political and moral reasons. It concludes that – as far as field studies of animal behaviour are concerned – animals are not just the subjects of research, but can often be treated as active collaborators in the research process.

Many farmers and hunters, [Niko Tinbergen] claimed, were better zoologists than the armchair professionals who never got their hands dirty or their boots muddy<sup>1</sup>

Although animal studies have long since entered the academic mainstream, there has recently been a surge of interest in a specific conceptual and methodological question: the extent to which animals can be considered as historical ‘agents’.<sup>2</sup> These historiographical discussions of animal ‘agency’ have tended to range between three closely connected elements – the extent to which animals can be said to have a history that is clearly distinguishable from the human writing it; the question whether animals can be considered capable of self-awareness or in possession of memories, intentions and motivations; and the difficulty of going beyond ‘resistance’ when seeking examples of

\* Department of Sociology, University of York, UK. Email: [amanda.rees@york.ac.uk](mailto:amanda.rees@york.ac.uk).

I gratefully acknowledge the comments of two anonymous reviewers, which did a great deal to help me clarify some key issues within this paper.

1 Desmond Morris, *Animal Days*, London: Jonathan Cape, 1979, p. 68.

2 Harriet Ritvo, ‘Animal planet’, *Environmental History* (2004) 9, pp. 204–220; see also Ritvo, ‘History and animal studies’, *Society and Animals* (2002) 10, pp. 403–406. On agency see Susan Nance (ed.) *The Historical Animal*, New York: Syracuse University Press, 2015; Kaori Nagai *et al.* (eds.), *Cosmopolitan Animals*, London: Palgrave Macmillan, 2015; Linda Kalof and Georgina Montgomery (eds.), *Making Animal Meaning*, East Lansing: Michigan University Press, 2011; Dorothee Brantz (ed.), *Beastly Natures: Animals, Humans, and the Study of History*, Charlottesville: University of Virginia Press, 2010. Also see the theme issue of *History and Theory*, *Does History Need Animals?* (2013) 52(4), pp. 1–167.

animal agency.<sup>3</sup> In fact, discussions of agency have often dealt primarily with the evidence left in texts, words, and tools that trace the historical unwillingness of individual members of domestic species – and the collective intractability of vermin species – to submit to human authority.<sup>4</sup> It is harder to see non-human agency when animals are behaving in accordance with human intent, although some researchers have tried: conflict is easier to spot than is the relationship of mutual accommodation on which cooperation depends.<sup>5</sup> Researchers have also questioned whether animals can ‘have’ histories – here usually construed as a series of past events of which an individual is aware and which can influence future activities.<sup>6</sup> Again, leaving aside the question of what a lion biography would smell like, human writers have wrestled with the question whether an animal history can be anything other than an account, produced by and for humans, of human interactions with that animal. Underpinning all of this is the history of comparative psychology and animal behaviour in the late nineteenth and the twentieth centuries, where imputing agency and intention to animal activity is often treated as synonymous with inappropriate and lazy anthropomorphism, and associated with amateur, sentimental ‘natural history’.<sup>7</sup>

However, there is another story to be told about the history of animal-behaviour studies, one that can be both read in the writings of the scientists themselves and charted in scientific practice. By the mid-twentieth century, something of a revolution was under way in the way in which animal behaviour was both examined and understood by scientists. Rather than studying behaviour in the laboratory or within captive colonies, increasingly researchers were travelling to the field, both at home and abroad, in order to watch what animals did when their activities were not constrained or controlled by human interference. While these studies were rooted in older patterns of

3 Chris Pearson, ‘Beyond “resistance”: rethinking nonhuman agency for a “more-than-human” world’, *European Review of History* (2015) 22, pp. 709–725; Etienne Benson, ‘Animal writes: historiography, disciplinarity and the animal trace’, in Kalof and Montgomery, op. cit. (2), pp. 3–16.

4 Lisa Cox, ‘Finding animals in history: veterinary artifacts and the use of material history’, in Nance, op. cit. (2), pp. 99–117; Kalof and Montgomery, op. cit. (2); Peter Edwards, ‘Nature bridled: the treatment and training of horses in early modern England’, in Brantz, op. cit. (2), pp. 155–175; Virginia Anderson, *Creatures of Empire: How Domestic Animals Transformed Early America*, Oxford: Oxford University Press, 2004.

5 Chris Pearson, ‘Between instinct and intelligence: harnessing police dog agency in early twentieth-century Paris’, *Comparative Studies in Society and History* (2016) 58, pp. 463–490; John Knight (ed.), *Animals in Person*, Oxford: Berg, 2005; Arnold Arluke and Clinton R. Sanders, *Regarding Animals*, Philadelphia: Temple University Press, 1996; Jocelyne Porcher and Tiphaine Schmitt, ‘Dairy cows: workers in the shadows?’, *Society and Animals* (2012) 20, pp. 39–60.

6 Dorothee Brantz, ‘Introduction’, in Brantz, op. cit. (2) pp. 1–11; Erica Fudge, ‘A left-handed blow: writing the history of animals’, in Nigel Rothfels (ed.), *Representing Animals*, Bloomington: Indiana University Press, 2002, pp. 3–18.

7 J.S. Kennedy, *The New Anthropomorphism*, Cambridge: Cambridge University Press, 1992; Karen Jones, ‘Writing the wolf: canine tales and North American environmental literary tradition’, *Environment and History* (2011) 17, pp. 201–228; Lorraine Daston and Gregg Mitman, *Thinking with Animals: New Perspectives on Anthropomorphism*, New York: Columbia University Press, 2005; Richard Burkhardt, *Patterns of Behaviour: Konrad Lorenz, Niko Tinbergen and the Founding of Ethology*, Chicago: The University of Chicago Press, 2005; Barbara Smuts, ‘Encounters with animal minds’, *Journal of Consciousness Studies* (2001) 8, pp. 293–309; Donald Griffin, *Animal Minds: Beyond Cognition to Consciousness*, Chicago: The University of Chicago Press, 2001.

orientation to the natural world, they also required practitioners to develop new methodologies and conceptual schemes to achieve their aims. Their aim was to record 'natural' behaviour, not just in order to study it for its own sake, but also in the spirit of learning something about complex social behaviour that might be applied to the understanding of human communities. Explicitly, they were trying to write about what animals did to and with each other in the absence of human interference. As many of these studies – particularly in East Africa and North America – became long-term, continuing over years, then decades, they also began to write about how these animal actions were conditioned by past events, both ecological and social. They wrote about individual animals, with distinctive personalities, tragic pasts and unexpected futures. They recorded the impact that animals had on the research process itself: sometimes maddeningly disruptive, sometimes surprisingly cooperative – and sometimes approaching what researchers treated as near-collaboration. They described and discussed self-directed and goal-oriented animal activity, based on the memories of past interactions with specific individuals – including specific humans – and places. Although they did not use the category 'agency', their focus is precisely on the kinds of action that historians have sought in their consideration of that concept. In the accounts produced by this new wave of fieldworkers, what this paper identifies as animal agency was treated both as a key focus for, and as a critical element in support of, research.<sup>8</sup>

However, it also needs to be noted that these books were also tinged with a sense of growing political urgency, as the twentieth century progressed and the consequences of human impact on local and global ecosystems became clearer. Earlier accounts, for example, might end with the addresses of bird clubs, journals and observatories, to enable the reader to participate directly in the study of animal behaviour. Later writers were much more likely to conclude with the addresses of conservation charities, and particular campaigns, in the hope that the reader would write letters and cheques to enable others to act in their name.<sup>9</sup> Explicitly, these books were written – at least in part – in the hope of enlisting wider publics as crucial allies in support of conservation. Produced with that particular purpose in mind, it could be argued that the intensely engaging animal characters which populate these volumes were produced for precisely that political end. Their portrayal of the powerful sense of intersubjectivity between observer and observed enables their audience to identify not only with the text's author, but also with the charismatic megafauna they describe. These animals, it might be said, were objects of scientific research deliberately presented to the wider publics as willing and able to seek social agency for themselves in a way that elided the distance between the best interests of the animals and the research project. After all, as with other attempts to read animals into history, whether in the thirteenth or the twentieth century, the only access historians have to these animals is the accounts – textual and

8 For a further discussion of the concept of agency and its epistemological uses see Rees, 'Animal agents?', this issue.

9 Niko Tinbergen, *Bird Life*, London: Oxford University Press, 1954; Gregg Mitman, 'Pachyderm politics: the media of science, politics and conservation', in Daston and Mitman, *op. cit.* (7), pp. 175–195.

digital – produced by human beings for human purposes.<sup>10</sup> Is apparent agency, then, less a veridical reflection of life in the field and more the product of the writers' desire to forge a connection between audience and animal actors to increase political support for conservation projects?

This paper will show that this is not the case, although it will also stress that there are political consequences to animal agency which require very careful historiographical attention. Intersubjectivity in these texts is rooted instead in the development of field-based scientific methodologies – in particular, in the significance of the identification of the individual, the importance of considering individual actions in the context of the recorded history of a site or a community, and the practical constraints of observing free-living wild animals. It will look at a series of texts – the earliest published in 1868, the latest in 2012 – which focus primarily on work carried out in the territories of East Africa, Britain and North America, as well as the seas around them.<sup>11</sup> It will situate them in the emerging fields of behavioural ecology and ethology, showing how concerns about the 'scientific' status of the animal observer coloured debates from the outset. It will consider the ways in which the question of anthropomorphism was discussed and dealt with in these texts, before discussing the efforts made by researchers to develop reliable strategies and methodologies for observing animal behaviour in the field, methodologies that would minimize unnecessary intervention in the lives of their subjects as well as any inadvertent anthropomorphic assumptions. Earlier discussions of who was 'qualified' to speak for animals had tended to turn on the contrast between 'intimate' knowledge of *an* animal, and 'expert' knowledge of *animals*. This paper will show how, over time, intimacy grew out of detachment in fieldwork, producing the conditions under which fieldworkers could find themselves writing the history of individual animals within their communities, animals which were portrayed as knowledgeable and active agents within their local environment.<sup>12</sup> Sometimes showing them as collaborators, sometimes as recalcitrant troublemakers whose activities needed careful management: in either case, these field scientists rarely recorded doubts that they were interacting with active, intentional, non-human minds.

### Origins of animal field research

Strategies for studying animal behaviour began to shift substantially around the middle of the twentieth century as a result of a number of factors. A new science – ethology – was encouraging its European practitioners to get out into the field and to watch

10 Dolly Jørgenson, 'Running amok? Urban swine management in late mediaeval England', *Agricultural History* (2013) 87, pp. 429–451.

11 It will not, however, deal with work on primates. See Amanda Rees, 'Reflections on the field: primatology, popular science and personhood', *Social Studies of Science* (2007) 37, pp. 881–907.

12 Jean-Baptiste Gouyon, 'From Kearton to Attenborough: fashioning the telenaturalist's identity' (2011) 49, pp. 25–60; Georgina Montgomery, *Primates in the Real World: Escaping Primate Folklore and Creating Primate Science*, Virginia: University of Virginia Press, 2015.

animal behaviour as it occurred in the environment to which it was adapted.<sup>13</sup> At the same time, in the United States a new profession was developing – that of wildlife management, which cohered around the notion that landscapes and their inhabitants could be actively ‘managed’ for the benefit of humanity.<sup>14</sup> These processes created new experts, scientific or otherwise, within a cultural context where many different groups – hunters, farmers, readers, amateur naturalists, schoolchildren, tourists – were, for a variety of different motives, deeply interested in animal behaviour. Wild animals, as both conceptual and embodied creatures, had been for some time central to a nexus of evolving scientific, economic, pragmatic, moral and educational interests. These developments took place, however, within an academic context that apparently privileged detached objectivity and the capacity to make generalizations over intimate, sympathetic knowledge of particular places or individuals. In particular, from the late 1890s onwards, Morgan’s canon had made it axiomatic that animal behaviour must be interpreted parsimoniously if it was to be scientific.<sup>15</sup> It seemed possible that while people, lay and expert alike, shared interests in animals, they were increasingly likely to employ different approaches to the interpretation of animal behaviour.

For example, see the conflict surrounding the question of ‘nature fakery’ in late nineteenth-century North America. At that time, the natural-history books written by people like Ernest Thompson Seton and William Joseph Long, among others, enjoyed enormous popularity. They combined detailed descriptions of animal action with an assessment of the internal states – motive, emotion, intent – and often attributed significant capacity for both reasoning and learning to their animals.<sup>16</sup> Concerned that the public was being exposed to fiction paraded as fact, John Burroughs, friend and adviser to President Theodore Roosevelt, began to attack their interpretations in the pages of the *Atlantic Monthly*: Long responded vigorously. The debate between the two men demonstrated a fundamental difference in the way they understood both animals and science. For example, when challenged to provide proof that the events he narrated had actually occurred, Long insisted that that he only described events he had seen himself, or for which he had trustworthy testimony, acerbically noting that he was ‘accustomed to be believed when I speak’.<sup>17</sup> He distinguished between scientists and naturalists – those who noted patterns of animal *populations* before shooting the desired number of specimens to quantify these distributions, and the naturalists who observed *individual* animals as they lived their lives: ‘the difference’, he said, ‘between

13 Burkhardt, op. cit. (7); Hans Kruuk, *Niko’s Nature: A Life of Niko Tinbergen and His Science of Animal Behaviour*, Oxford: Oxford University Press, 2003; Peter Klopfer, *Politics and People in Ethology*, Lewisburg: Bucknell University Press, 1999; John Durant, ‘The making of ethology: the Association for the Study of Animal Behaviour, 1936–1986’, *Animal Behaviour* (1986) 34, pp. 1601–1616; Donald Dewsbury (ed.), *Studying Animal Behaviour: Autobiographies of the Founders*, Chicago: The University of Chicago Press, 1985; W.H. Thorpe, *The Origins and Rise of Ethology*, London: Heinemann Educational Books, 1979; W.H. Thorpe, ‘Editorial’, *British Journal of Animal Behaviour* (1953) 1, p. 34.

14 Anon., ‘Notes’, *Journal of Wildlife Management* (1937) 1, pp. 45–47.

15 Gregory Radick, ‘Morgan’s canon, Garner’s phonograph and the evolutionary origins of language and reason’, *British Journal for the History of Science* (2000) 33, pp. 3–23.

16 Ralph Lutz, *Nature Fakers: Wildlife, Science and Sentiment*, Colorado: Fulcrum Publishing, 1990.

17 William J. Long, ‘Science, nature and criticism’, *Science* (1904) 19, pp. 760–767, 763.

Nature and Science is the difference between a man who loves animals and so understands them, and the man who studies Zoology'.<sup>18</sup> Clearly, objective, detached zoologists, interested in establishing general laws of nature, were presented as a very different breed to those naturalists whose understanding of nature grew out of their care for and interest in individual animal life.<sup>19</sup> But as the twentieth century progressed, while this distinction between expert/theoretical/rational and lay/practical/emotional knowledge of animals retained its rhetorical resonance, in practice it was to become harder to maintain.

Although the Second World War put a substantial brake on developments for both ethology and wildlife management, the post-war period saw them established on increasingly secure institutional foundations on both sides of the Atlantic, although leaders in both continued to fret about the appropriate definition of professional expertise.<sup>20</sup> While European ethologists worried about whether to admit veterinarians to their societies, or whether they should accept money from supporters of blood sports, North American wildlife specialists found that their conclusions were directly challenged by hunters and farmers – as Justin Leonard, writing in 1949, concluded, there 'is perhaps no other field of human endeavour where the lay public so freely arrogates to itself the privilege of passing judgements on accomplishments as in the field of wildlife conservation'.<sup>21</sup> Fundamentally, large wild mammals still existed in economically significant numbers in North America, and many hunters and farmers considered themselves far more expert in their knowledge of the animals they lived alongside than specialists with university training. But wildlife specialists were also cautious about the basis of their own expertise. Even as they acknowledged that their 'profession began with the job of producing something to shoot', they agreed with Aldo Leopold's argument that they were 'not scientists', because of their habit of 'professing loyalty to and affection for, a thing: wildlife'.<sup>22</sup> Their attachment and commitment to wildlife potentially debarred them from scientific status.

Their work and publications still, however, fed into the culture of growing scientific interest in animals in North America, where by the 1940s, as in Europe, a number of institutional foci for the study of animal behaviour under naturalistic conditions had been established. In 1948 – the same year in which Niko Tinbergen founded the key journal *Behaviour* – a conference organized by J.P. Scott and sponsored by the New York Zoological Society was held. This focused on 'Methodology and Technique' in the field study of animals, and emphasized the conceptual and methodological problems of actually doing science in the uncontrolled field environment,

18 William J. Long, 'The modern school of nature-study and its critics', *North American Review* (1903) 176, pp. 688–698, 689.

19 See also Jones, *op. cit.* (7).

20 Durant, *op. cit.* (13); William B. Davis, 'What is a wildlife specialist?', *Journal of Wildlife Management* (1938) 2, pp. 272–273; anon., 'The Wildlife Society', *Journal of Wildlife Management* (1939) 3, pp. 147–168.

21 Justin W. Leonard, 'Research man vs. administrator', *Journal of Wildlife Management* (1949) 13, pp. 237–244, 241.

22 Aldo Leopold, 'The state of the profession', *Journal of Wildlife Management* (1940) 4, pp. 343–346, 343, 346.

particularly when the focus was on social interaction and behaviour. While Scott argued, in a nod to earlier debates, that they had ‘passed beyond the stage of the early systematic naturalists who often observed an animal’s behaviour, shot the animal so it would not get away, and then speculated on what it would have done if it had not been shot’, others continued to warn the fieldworker against the anecdotal, storytelling habit.<sup>23</sup> Particularly problematic were situations where ‘a single outstanding case, considered representative and strikingly convincing in itself, is recounted to “prove the point”’.<sup>24</sup> Scientific accounts of animal behaviour, it seemed, needed to embrace detachment and to avoid the singular. On the other side of the Atlantic, however, scholars such as Tinbergen and David Lack were actively participating in, and even promoting, a different kind of storytelling. This was an approach that accepted the significance of affect in animal fieldwork and – crucially – acknowledged the role that individual animals could play in advancing a more generalized understanding of behaviour. Recognizing the role of emotion and individual agency in the study of behaviour did not necessarily mean embracing sentimentality: instead, it could provide the basis for a much more nuanced understanding of behaviour.

For example, in 1943, David Lack published *The Life of the Robin*.<sup>25</sup> At that point employed by day as a south Devon schoolmaster, he devoted his free time to trapping, ringing, observing and experimenting with the local robin population. In contrast to his later focus on population-level studies, his account – directed at the non-scientific bird lover – focused on the activities and cognitive abilities of individuals. His delight in birdwatching is evident throughout, as, for example, in his description of the ‘many pleasures’ of early morning observations, when ‘birds live much more intensely’.<sup>26</sup> A few years later, Tinbergen was even more explicit in his description of *The Herring Gull’s World*, discussing the ‘intense delight the field study of birds has given one’ and his desire to make it possible for others to ‘share the joy’.<sup>27</sup> This was a theme that Tinbergen was to return to again and again in his public writings: his immense, almost guilty, pleasure in watching the birds, alongside his determination – more, his sense of obligation – to communicate both knowledge and wonder as widely as possible. Both men – part of a long tradition of European popular ornithology – believed that they had a public responsibility to share the results of their work with the wider public. Both books used accounts of the behaviour of individuals to illustrate the broader points that they wanted to make about both animal behaviour and the process of field observations.

But even as they invited their audiences to enter with them into a bird’s world, they were also careful both to note the differences between human and non-human behaviour and to recognize the consequences of marking that difference. In this, they were part of a

23 J.P. Scott, ‘The social behaviour of dogs and wolves’, *Annals of the New York Academy of Sciences* (1950) 51, pp. 1009–1021, 1009.

24 T.C. Scheirla, ‘The relationship between observation and experimentation in the field study of behaviour’, *Annals of the New York Academy of Sciences* (1950) 51, pp. 1022–1044, 1036.

25 David Lack, *The Life of the Robin*, London: Penguin, 1943.

26 Lack, op. cit. (25), p. 45

27 Niko Tinbergen, *The Herring Gull’s World: A Study of the Social Behaviour of Birds*, London: Collins, 1953.

broader, longer trajectory of writing about animals. The ‘nature fakers’ notwithstanding, earlier observers of wild animal life had been deeply aware of the potential problems that both teleology and parsimony could cause for the interpretation of animal behaviour. Several decades before Lloyd Morgan laid down the canon that was to become the fundamental tenet of parsimony, another Morgan – Lewis – made observations of wild Michigan beavers which included a lengthy discussion of prejudice and the analysis of animal metaphysics. He criticized in particular the use of the term ‘instinct’, which he argued was a means ‘to explain, or rather to leave unexplained, certain mental phenomena exhibited equally by mankind and the inferior animals’: it had been introduced solely in order to accentuate the difference between human and non-human mental processes.<sup>28</sup> The Scottish biologist J. Arthur Thompson, in the 1923 edition of his *The Study of Animal Life* (first published in 1892) made a similar point when he warned that animal observers should avoid the extremes of both Montaigne and Descartes, neither reading ‘the man into the beast without critical hesitation’ nor giving ‘a false simplicity to the facts’.<sup>29</sup> Charles Sheldon, while collecting mammal specimens in Alaska for the US Biological Survey, scoffed at the notion that individual sheep acted as sentinels while others grazed, calling it ‘a delusion – an erroneous interpretation of the facts due to incomplete or faulty observations’, but at the same time noted the significance of the ‘collective spirit’ of ewe bands, which are ‘usually guided by one or more experienced leaders’.<sup>30</sup> Three points emerge from these earlier accounts. The first is their fear that the need to assert human cognitive superiority – human exceptionalism, in the language used by historians discussing animal agency – is distorting the understanding of animal mentality.<sup>31</sup> Assuming continuity or similarity is, however, also regarded with deep ambiguity. Both these points sit alongside an abiding perception that the animals under observation are acting with intent and with a degree of awareness of their own history.

One of the best examples of this nuanced approach can be seen in the work of Frank Fraser Darling, the Scottish naturalist–philosopher who studied the red deer of Wester Ross in the early 1930s, before going on to do extensive work on the wildlife of the island of Rona.<sup>32</sup> Specifically, Darling criticized Lloyd Morgan’s parsimony, arguing that there was ‘no need to set up artificial standards of simplicity’, particularly when the ‘great bulk of papers on animal behaviour lift the organism from its normal environment and place it in a set of artificial conditions, [which] often results in findings which are not valid for interpretation of representational behaviour’.<sup>33</sup> Summing up his position, he asked,

28 Lewis H. Morgan, *The American Beaver*, New York: Dover Publications, 1986, pp. 248–249.

29 John Arthur Thompson, *The Study of Animal Life*, London: John Murray and Sons, 1923, pp. 158–159.

30 Charles Sheldon, *The Wilderness of Denali: Explorations of a Naturalist–Hunter in Northern Alaska*, New York: Charles Scribner and Sons, 1930, pp. 58–59.

31 See in particular Brett L. Walker, ‘Animals and the intimacy of history’, *History and Theory* (2013) 52(4), pp. 45–67; Susan Pearson, ‘Speaking bodies, speaking minds: animals, language, history’, *History and Theory* (2013) 52(4), pp. 91–108.

32 Frank Fraser Darling, *A Herd of Red Deer: A Study in Animal Behaviour*, Oxford: Oxford University Press, 1937; Darling, *A Naturalist on Rona: Essays of a Biologist in Isolation*, Oxford: Oxford University Press, 1939.

33 Darling, *A Herd of Red Deer*, op. cit. (32), pp. 201, 199.



Who are the people with whom the higher animals are most serene and who achieve the most success in their management and training? Not those who look upon them as automata, but those who treat them as likeable children of our own kind.<sup>34</sup>

Teleology was dangerous, but anthropomorphism could be overdone, particularly where ‘instinct’ was again used as a catch-all category for behaviour that looked too sophisticated. David Lack agreed, arguing that words initially used as analogies had become default explanations: instinct, he suggested, not only had no standard definition, but also had become reified as the definitive account of non-human behavioural complexity. One should, he suggested, be wary of attributing emotions to a bird ‘because a man feels emotions under similar circumstances’, just as one should avoid making assumptions about a bird’s state of mind – but since ‘in many cases the bird’s emotional state provides the essential clue to the interpretation of its behaviour’, to ignore the subjective element is to ignore a vital aspect of the animal under observation.<sup>35</sup> Lack’s conclusion was to call for further observation and experiment in the hope that this would lead to a terminology ‘whose concepts would be clearly defined on the basis of observed facts’.<sup>36</sup>

It was at such a process, for example, that Tinbergen aimed in the context of his discussion of the relationship between rigidity and flexibility in bird behaviour in his popular works, in the context of the experimental work in relation to the concept of ‘instinct’ that he and Lorenz were developing.<sup>37</sup> What Lack, Tinbergen and Lorenz had added to the popular discussions of animal behaviour was the awareness of the possibility that animal mentalities should be conceptualized as neither *similar to*, nor *less than*, human minds: instead, they were *different* – and different animals possessed minds of different kinds. They also, however, focused on the more practical aspects that needed to be taken into account when considering the relationship between teleology and parsimony in understanding animal behaviour – developments that related directly to the evolution of methodologies for studying behaviour in the field as well as to the development of the theoretical understanding of animal behaviour.

### Distinguishing animal actions

Tinbergen’s intellectual autobiography, *Curious Naturalists*, published in 1958, began with his investigation of the bee hunters of Hulshorst sands. His equipment consisted of field glasses, a chair and some notebooks and, critically, some enamel paint. As he recalled,

Whenever I saw a wasp at work at a burrow, I caught it and, after a short unequal struggle, adorned its back with one or two coloured dots ... and released it ... It was remarkable how this simple trick of marking my wasps changed my whole attitude to them. From members of the species *Philanthus triangulum*, they were transformed into personal acquaintances, whose lives from that very moment became affairs of the most personal interest and concern to me.<sup>38</sup>

34 Darling, *A Herd of Red Deer*, op. cit. (32), p. 202.

35 Lack, op. cit. (25), pp. 187–188.

36 Lack, op. cit. (25), p. 190.

37 Tinbergen, op. cit. (27); Niko Tinbergen, *Curious Naturalists*, Harmondsworth: Penguin, 1958.

38 Tinbergen, op. cit. (37), p. 22.

Describing the behaviour of a particular animal in detail had been one of the problems with the work of the ‘nature fakers’ – such practices tended towards the presentation of anecdote as data. However, identifying individuals was swiftly to become a critically important activity for the animal observers of the later twentieth century. As David Lack had pointed out in relation to his robins, putting rings on the birds was essential if he was to be able to ‘fit a particular piece of behaviour to the previous and subsequent behaviour of the individual bird concerned’, also and incidentally providing ‘the bird-watcher with a great deal of pleasure ... [enabling] the observer to know his [*sic*] birds individually in a way which is otherwise impossible’.<sup>39</sup> Individual identification enabled one to record individual history – as well as intensifying one’s own enjoyment of observation.

Increasingly, it became accepted that the crucial first step in any field study of animal behaviour was to learn to recognize individual animals.<sup>40</sup> Sometimes, this was done on the basis of naturally occurring physical characteristics, as with Adolph Murie’s study of Mount McKinley’s wolves in the early 1940s. In the 1950s, Tinbergen tried to link individual appearance to physical and social location, writing of the ‘thrill ... when we find that one gull with a conspicuous dark ring around the eye is back at the same hilltop where he was yesterday! And how lucky that his neighbour has a brown patch on his tail’.<sup>41</sup> His student, Esther Cullen, when studying kittiwakes, used the ‘pattern of the black dots on the wing tips’ as ‘identity cards’ for ‘those birds she had become personally acquainted with’.<sup>42</sup> The theme of ID cards was taken up by later writers, especially those working in East Africa from the late 1960s. Jane van Lawick Goodall and Hugo van Lawick’s study of hyenas in the Ngorongoro Crater in Tanzania used the pattern of their spots, checked against photographs in their hyena recognition book.<sup>43</sup> Iain Douglas-Hamilton, surprised at the ‘degree to which individual elephants varied in appearance’, also used photo ID.<sup>44</sup> Cynthia Moss’s study in Amboseli took photographs of the elephant’s full and side faces with particular attention to the patterns found on the ears.<sup>45</sup> George Schaller’s study of the Serengeti’s lions relied in part on individual physical difference, but it was Brian Bertram who took individual identification to the next level, as he established the life history records of the Serengeti’s prides which continue to this day.<sup>46</sup> Using naturally occurring distinctions (injuries to the tail, eyes, ears and teeth in particular), along with the distribution of whisker spots, he created individual identity cards, based on a cartoon lion face in which key identifying characteristics

39 Lack, *op. cit.* (25), p. 25.

40 Amanda Rees, ‘A place that answers questions: primatological field sites and the making of authentic observations’, *Studies in History and Philosophy of Science C* (2006) 37, pp. 311–233; Rees, *op. cit.* (11); Thierry Hoquet, ‘Animal individuals: a plea for a nominalistic turn in animal studies?’, *History and Theory* (2013) 52(4), pp. 68–90.

41 Tinbergen, *op. cit.* (27), p. 48.

42 Tinbergen, *op. cit.* (37), p. 238

43 Jane van Lawick-Goodall and Hugo van Lawick, *Innocent Killers*, London: Collins, 1970.

44 Iain Douglas-Hamilton and Oria Douglas-Hamilton, *Among the Elephants*, London: Collins, 1975.

45 Cynthia Moss, *Elephant Memories: Thirteen Years in the Life of an Elephant Family*, Chicago: The University of Chicago Press, 1988.

46 George Schaller, *Golden Shadows, Flying Hooves*, London: Collins, 1974; Brian Bertram, *Pride of Lions*, London: Dent and Sons, 1978.

could be mapped. ‘Practice helped’, he remembered; ‘a lion observer learns what features are worth looking at in detail and begins to recognise and remember these features’.<sup>47</sup> Similarly, field studies of marine mammals relied on natural appearances to identify individual cetaceans: during roughly the same period, Roger Payne, Bernd Wursig and Melanie Wursig photographed dolphins off Argentina’s Patagonia coast, while Michael Biggs, working on Vancouver Island, recorded killer whales by fin shape and scars and other marks.<sup>48</sup>

Using ordinary appearance was sometimes not enough. Both George Schaller and Hans Kruuk cut notches in the ears of some of the lions and hyenas they studied, as well as pioneering the use of radio collars on the big cats, a methodological strategy continued by Brian Bertram.<sup>49</sup> Collaring and tagging animals had a history in the Serengeti – the father-and-son team Bernhard and Michael Grzimek had studied ways of identifying individual zebra and wildebeest in their efforts to census the Serengeti migration. Initially, they had decided that dyeing zebras was the best solution, but, as it transpired,

There was a surprise in store for us. Steam and heat are required to dye a woman’s hair permanently. Mere washing, painting or powdering is not enough. We consulted the greatest experts in the dye industry, but they could not give us any advice on how to give a zebra a cold-hair tinting. Horse hair is very short and there was no question of steaming a zebra, even had we possessed a mobile hairdressing salon.<sup>50</sup>

They fell back on eartags and collars, and discovered that – unlike ringing birds – tagging a large mammal, whether ungulate or carnivore, was fraught with difficulty. But radio collaring, whether of lion, zebra, grizzly bear, fox, tiger or elephant, was nevertheless accomplished, with varying results. Other forms of monitoring animals were far less tangible – and often combined with radio tracking to identify particular individuals. George Schaller was able to identify at least one individual tiger through his characteristic footmarks.<sup>51</sup> David Macdonald, having radio-collared several foxes, tracked and recorded their nocturnal locations, then reconstructed their activities in daylight with the help of the physical traces (feathers, fur, scat) they had left on the landscape. Those who followed marine mammals found themselves tracking activity through sound rather than sight: Hal Whitehead described the difficulties – and the delights – of using hydrophones to follow sperm whales in their deep dives, and using clicks of different types to distinguish classes of animals, if not individuals. It was, he remembered, obvious when an adult male approaches, since ‘his slow click was lower and more intense than the clicks of the females. After the long suspenseful pause, it drove through the hydrophone like a slammed jailhouse door’.<sup>52</sup>

47 Bertram, *op. cit.* (46), p. 31.

48 Kenneth S. Norris, ‘Looking at wild dolphin schools’, in Karen Pryor and Kenneth S. Norris (eds.) *Dolphin Societies: Discoveries and Puzzles*, Berkeley: University of California Press, pp. 293–304.

49 George Schaller, *The Serengeti Lion*, Chicago: The University of Chicago Press, 1972; Hans Kruuk, *The Spotted Hyena: A Study of Predation and Social Behaviour*, Chicago: The University of Chicago Press, 1972.

50 Bernhard Grzimek and Michael Grzimek, *Serengeti Shall Not Die*, London: Hamish Hamilton, 1960, p. 147.

51 George Schaller, *The Deer and the Tiger*, Chicago: The University of Chicago Press, 1967.

52 Hal Whitehead, *Voyage to the Whales*, White River Junction: Chelsea Green Publishing, 1990, p. 160.

Having identified individuals, the question of how to refer to them arose. Naming was a process fraught with meaning for some observers, while for others it was more commonplace. Goodall, for example, stated simply, 'we always named animals that we were watching once it was certain that we knew them'.<sup>53</sup> Schaller, on the other hand, felt that 'the naming of a wild animal should not be done casually, for a name colours one's thinking about it forever afterwards. To burden an animal with a cute or inappropriate name merely for effect, as is sometimes done, reveals a condescending attitude and lack of feeling I find annoying'.<sup>54</sup> His successor, Bertram, preferred to use codes, since even apparently neutral names might have 'connotations which might bias what I recorded or observed'.<sup>55</sup> Craig Packer, who leads the current study of the Serengeti lions, uses the initials of the pride names (who are in turn named after geographical locations) to identify the lionesses and cubs that belong to it, reserving the use of proper names to nomad males – such as the trio called John, Maynard and Smith.<sup>56</sup> An animal's individual history, however, can intersect with its name in more ways than one: Schaller's account of his work in China's Wolong Natural Reserve is centred around one panda, Zhen-Zhen, who 'became more memorable than any other'.<sup>57</sup> But on his return to Wolong some time later, he realized that the new female in camp, Bei-Bei, aggressive, ready to attack, and shortly to be shipped off to captivity at a research centre, is actually Zhen, a 'bitter end' for an animal 'who had achieved world renown only to end her days under the anonymity of an alias'.<sup>58</sup> The names attached to animals by field scientists were not necessarily permanent.

But this was unusual. For field scientists, the point of identifying individuals was, as Lack pointed out in 1943, to enable the observer to link present behaviour with past and future – or in other words, to write the animals' life histories. As observers became increasingly familiar with their research subjects, they found ID cards and photographs less necessary for identification. Instead, it was the animal's behaviour and social context that enabled researchers to recognize, rather than identify, individuals. As Moss put it, 'once I got to know an elephant, I was not using any one of these characteristics in my initial, immediate recognition of the elephant': instead, it was 'a bit like recognising a human friend who is walking away from you on the other side of the street'.<sup>59</sup> And as Lack had argued in 1943, as individuals became known, behaviourally and socially, so their current behaviour could be put in past context – sometimes again by making use of unusual tracking strategies. For example, Packer's project solicited tourists for any lion photographs taken in the Ngorongoro Crater in the 1960s, in the hope of being able to use them to reconstruct lion family trees. Bertram, whose lion study included observations of the other big cats in the Serengeti, found that leopard spots were so distinctive that he

53 Van Lawick-Goodall and Van Lawick, *op. cit.* (43), p. 29. Also see the discussions in Rees, *op. cit.* (11); and Mitman, *op. cit.* (9).

54 Schaller, *op. cit.* (46), p. 45.

55 Bertram, *op. cit.* (46), p. 32.

56 Craig Packer, *Into Africa*, Chicago: The University of Chicago Press, 1994, p. 33.

57 George Schaller, *The Last Panda*, Chicago: The University of Chicago Press, 1993, p. 55.

58 Schaller, *op. cit.* (57), p. 157.

59 Moss, *op. cit.* (45), p. 30.

could ‘use photographs taken by other people to identify individual leopards’, often being able to recognize his animals in ‘postcards, magazine articles and airline or safari firm advertisements’, and thus building a retrospective history.<sup>60</sup> Tim Caro, who took over the cheetah observations from George and Lory Frome (who had inherited this project from Bertram), adopted a similar strategy to link his observations firmly with those of his predecessors.<sup>61</sup> More and more, researchers were beginning to write animal biographies, since it was only in the context of those individual histories that the proximate and adaptive explanations for behaviour could be developed. Animals, identified as individuals, were becoming characters.

### Animal personalities

In his autobiography, George Schaller describes his life’s work as that of observing ‘the rich and complex life of another species and [writing] its biography’.<sup>62</sup> Recalling John Emlen’s invitation to come and watch gorillas in 1959, he is emphatic: he did not want to glimpse them, but to achieve rapport, to recognize them as neighbours and to gossip over their activities. Over and over again, these authors compare watching their animals to a soap opera, a novel, a saga, with all the connotations of compulsive viewing, an addiction rooted in the knowledge both of what had happened, and of what should happen next. David Macdonald likened his reconstructions of nocturnal vulpine activities to ‘reading the morning newspaper of events trodden in the mud’: it ‘was exciting and the biggest thrill of all was to guess what the fox would do next’.<sup>63</sup> The language that these authors use to describe what they are doing is telling: while they are obviously using metaphors, they are also clearly metaphors that are grounded in the lived reality of field observations made over – in some cases – several decades. Packer, for example, returning to the Serengeti after a break, found, to his surprise, that one of the Loliondo females was now in company with MS18, a male of a different pack: ‘Finding these two by themselves leaves me feeling out of touch with the local soap opera’.<sup>64</sup> The longer studies continue, the more researchers make use of such metaphors: Packer describes the long-term records of the Gombe research project as the ‘chimpanzee equivalent of *War and Peace*, the baboon equivalent of the *Domesday book*’.<sup>65</sup> For the scientists, these records provide the context within which to understand animal behaviour – again, as Packer points out,

If I had arrived for the first time today, I would have come out here and found a single female lion sitting under a bush. Pretty boring. But instead, I saw SBG and all her tragic history. These animals are interesting to us precisely because we know so much about their background.<sup>66</sup>

60 Bertram, op. cit. (46), p. 143

61 Tim Caro, *Cheetahs of the Serengeti Plains: Group Living in an Asocial Species*, Chicago: The University of Chicago Press, 1994.

62 George Schaller, *Tibet Wild*, Chicago: The University of Chicago Press, 2012, p. 100.

63 David Macdonald, *Running with the Fox*, London: Unwin Hyman, 1989.

64 Packer, op. cit. (56), p. 37.

65 Packer, op. cit. (56), p. 143.

66 Packer, op. cit. (56), p. 101.

In other words, knowing the history of the animals under observation is both scientifically and emotionally important: knowing genealogical relationships, for example, is essential for testing sociobiological and ecological hypotheses, but knowing you're watching a mother and a son adds another interpretive and emotional layer to the encounter. Again, there are direct parallels with David Lack's initial conclusions on the consequences of ringing robins.

But critically, these accounts also wonder whether these histories are apparent to the animals themselves, and to what extent memories of the past might condition present behaviour. Observing inter-group relationships between different wild dog packs and hyena clans, Goodall suggested that the differences could be understood with reference to the histories of the animals concerned – had present packs split from one bigger pack at some point in the past? Did a hyena move from den to den because 'an individual arrives there with whom it does not "get on", or in order to be with a friend in a different den?'<sup>67</sup> Schaller was clear that the 'behaviour of lions is shaped not only by immediate circumstances but also by the past, by friendly or hostile meetings certain individuals may once have had'.<sup>68</sup> This, he notes, may make it difficult for ignorant observers to interpret some interactions, as in the case of a male that he had tagged early in his study, who had been responsible for the death of a cub in the Masai pride. Two years later, having matured from an adolescent to an adult, the male returned to the pride and was met with hostility. For Schaller, it was only the tags that made recognition possible, but he wondered if the females 'recognised in him a figure from their past, a figure tragically linked to their pride history'.<sup>69</sup> David Macdonald's early efforts to observe foxes was a frustrating exercise in the effort to observe 'potentially revealing vignettes' in their entirety.<sup>70</sup> This meant that he was initially left to speculate on the nature of vulpine social relationships: groups, he felt, were based on genetic relationships, but he also saw strangers trying to enter them. On what basis were they accepted or rejected? Crucially, in order to understand behaviour, he needed to know the history of the interactions he observed.

Whether observing individuals within groups or watching solitary animals, researchers showed animals acting with motivation and intent: whether or not they were consciously aware of their history, their histories had shaped their characters and present interactions.<sup>71</sup> The accounts of elephant observers rival those of primatologists in their documentation of the different personalities of their subjects: Iain Douglas-Hamilton charted the characters of Boadicea, Virgo, the Torone sisters, N'Dume and Slender Tusks, while Cynthia Moss described Tuskless, Slit Ear, Agatha and Tallulah. Animals were consistently portrayed as knowledgeable social actors, working within social hierarchies that persisted and found expression even in the physical absence of key

67 Van Lawick-Goodall and Van Lawick, *op. cit.* (43), p. 178.

68 Schaller, *op. cit.* (46), p. 99.

69 Schaller, *op. cit.* (46), p. 102. Current lion researchers would probably instead point to the relationship between incoming male lions and cub fatalities, however. See Amanda Rees, *The Infanticide Controversy: Primatology and the Art of Field Science*, Chicago: The University of Chicago Press, 2009.

70 Macdonald, *op. cit.* (63), p. 49.

71 Sheldon, *op. cit.* (30); Schaller, *op. cit.* (51).

members, and contributing to the continuation of community behavioural traditions. So, for example, Frank Fraser Darling argued against culling older, less productive, stock, since the ‘leading hinds carry the tradition of what might be called groundsmanship, and their skill and knowledge must be maintained in the stock if the forest is to be run effectively’.<sup>72</sup> Cynthia Moss argued that elephant matriarchs played a similar role. More bloodily, Iain Douglas-Hamilton cited the belief that when ‘cropping’ elephants, it was necessary to eliminate elephant family units in their entirety, because if ‘no survivors were ever left [then] the bad news never spread from one group to the next’.<sup>73</sup>

The role of learning and the existence of ‘traditions’ within groups were discussed in relation to food in particular. So, for example, while observers had previously noted that individual predators selected particular victims, rather than killing at random, Kruuk and Bertram took this further, suggesting that animals chose to target particular species of prey. Kruuk noted that hyenas hunted different prey in different-sized groups, making it possible to predict in advance which species they would attack – which ‘means that hyenas set out to hunt a certain kind of prey to the exclusion of others’, even if other prey is more abundant.<sup>74</sup> Bertram ‘found what looked like specialisation in different prides’, since one took buffalo much more often than the others, ‘possibly because the lions in that pride had learnt a specialised technique for dealing with these powerful and dangerous animals’.<sup>75</sup> Other food traditions were less admired: learning to scavenge from camps and garbage dumps was treated as particularly problematic, with observers comparing the habit to ‘panhandling’, depending on ‘handouts’ or a ‘dole’, which meant that the animals ‘suffered physically, and from the human standpoint, esthetically’.<sup>76</sup> Their willingness to enter and exploit the human world potentially contaminated their pure wild status.

### Animal worlds

Despite the regretful distaste attached to these animals, their crossing from the wilderness to civilization finds its ironic parallel in the powerfully expressed desire by many of these writers to do the opposite. Consistently, their hope is to experience the world as their animals do. Fraser Darling, for example, told his readers that they must find a way mentally to

become *intimate* with the animal. As I read Jennings’s *Behaviour of the Lower Organisms*, I feel that he has achieved that state with his *Paramoecium*, a much more difficult task than I have

72 Darling, *A Herd of Red Deer*, op. cit. (32), p. 83.

73 Douglas-Hamilton and Douglas-Hamilton, op. cit. (44), p. 54.

74 Kruuk, op. cit. (49), p. 201.

75 Bertram, op. cit. (46), p. 136.

76 Schaller, op. cit. (57), p. 159; Moss, op. cit. (45), pp. 80–81; Adolph Murie, *A Naturalist in Alaska*, New York: Devin-Adair Co, 1961, p. 163. See also Durward Allen, *Wolves of Mimong: Isle Royale’s Wild Community*, Ann Arbor: University of Michigan Press, 1979. See also Etienne Benson, ‘The urbanization of the eastern gray squirrel in the United States’, *Journal of American History* (2013) 100, pp. 691–710; and Walker, op. cit. (31).

had in living near to an animal which exhibits emotions which, I must conclude, are not far removed from my own.<sup>77</sup>

Eliot Howard spoke of his desire to understand ‘the nature of a bird’s world’, attempting to ‘picture what the cock sees’.<sup>78</sup> Eugenie Clark tried to figure out what it would be like to navigate the world through fish senses.<sup>79</sup> Paul Errington tried catching quail by hand to understand more about how redtail hawks might hunt them.<sup>80</sup> Olaus Murie described a good field study as one which meant ‘living with the animals, trying to think as they do, establishing an intimate relationship with the creatures that reveals their motivation in all that they do’.<sup>81</sup> Tinbergen’s book titles – *A Herring-Gull’s World*, *The Animal in Its World* – reveal a similar orientation, and later writers were equally explicit about the importance of learning to see the world through canine, leonine, delphine, ursid or vulpine eyes. Schaller, for example, argued,

Such immersion into another species helps one to enter its world; the animals become sentient presences rather than just creatures to peruse from the perspective of our intellect. If I interrupted my routine to take the family to Nairobi, climb Mt Kilimanjaro ... the spell was broken. It then took me days to find my way back to the world of the lion.<sup>82</sup>

Hal Whitehead spoke of trying to visualize underwater events as he sat with the hydrophone ‘on deck, under a sky almost as deep black as the whale’s world below’, and feeling as if the ship was ‘an extension of my body. The sails are my clumsy flukes, the rudder becomes coarse flippers, as I join the whales in their wanderings’.<sup>83</sup> Later, he literally enters the whale’s world as he swims with them, feeling their ‘clicks thud through my body’.<sup>84</sup>

Obviously, however, entering the animal’s world means more than simply entering its element – and a measure of the importance attached to seeing through animal eyes by these scientists can be found in the variety of theoretical and instrumental strategies they found to do so. In the first instance, of course, the very metaphor of ‘seeing’ itself illustrates one key problem: for humans and other primates, but not for most other mammals, sight is the dominant sense. Although, as Darling realized, when his attempt to track deer while suffering from a heavy head cold was unsuccessful, even largely unused senses can be sharpened by use. He did, however, take with him to the field instruments such as a hydrograph, a thermograph and a barograph, in order to be able to record minute-by-minute changes in the weather and relate them to the behaviour of the deer, since when humidity is high and variable, there is ‘constant olfactory stimulation which renders the deer more perturbable’.<sup>85</sup> Hydrophones could be used to

77 Darling, *A Herd of Red Deer*, op. cit. (32), p. 26, original emphasis.

78 Eliot Howard, *The Nature of a Bird’s World*, Cambridge: Cambridge University Press, 1935, pp. vii, 28.

79 Eugenie Clark, *Lady with a Spear*, London: Scientific Book Club, 1955.

80 Paul Errington, *Of Predation and Life*, Ames: Iowa State University Press, 1967.

81 Olaus Murie, ‘Foreword’, in Murie op. cit. (76), pp. v–vi, vi.

82 Schaller, op. cit. (46) p. 90.

83 Whitehead, op. cit. (52), p. 124.

84 Whitehead, op. cit. (52), p. 145.

85 Darling, *A Herd of Red Deer*, op. cit. (32), p. 117.



track whales, but they could only tell the observer where and (sometimes) who the whale was, not what it was doing. Kenneth Norris and Karen Pryor sought out other ways of entering into the dolphin's world, famously constructing the Semi-Submersible-Seasick-Machine (SSSM), in order

to introduce the observer to the world of the dolphin ... We need to see other dolphins as a dolphin sees them. Travelling dolphins in a school look primarily sideways at each other for the signs and signals of their visual communication; we understand them only if we look sideways too, not down from above.<sup>86</sup>

The SSSM, taking the observer just below the ocean surface, enabled them to achieve a very limited sense of participant observation, despite the unfamiliar element and the profound physiological discomfort that often accompanied its use.

On land, however, radio tracking was the main technological means by which the researcher could both follow and visualize the animal in its world, although it had some important limitations.<sup>87</sup> For David Macdonald, during the days spent reconstructing the night's fox tracking, 'a network of previously invisible tracks and trails was unveiled ... until each nook and cranny on the farm took on vulpine significance in my mind's eye': he accepted that he could never actually see the world as does the fox, but 'trying to do so certainly changed my perception of the countryside'.<sup>88</sup> George Schaller, trying to understand Zhen's life, realized that in order to do so, 'I would need to transform myself into a panda' – but given that they are so rarely seen, this would have to be through the medium of a radio collar.<sup>89</sup> This also was unsatisfactory, since telemetry 'turns animals into abstractions, mere points on a map [revealing] little about them as living beings with daily problems and aspirations'.<sup>90</sup> To solve the problem, Schaller decided to physically trail a radio-collared animal, 'but stay one day behind to avoid disturbing his routine': tracking at the animal's speed, albeit twenty-four hours later, enabled Schaller to develop 'at least a more perceptive mind', and to 'appreciate even more the uniqueness of his world'.<sup>91</sup> The desire to experience the animal's world was always paired with the awareness of limitation.

Those who adopted a more consciously manipulative approach to animal observation developed an even more cautious picture. David Lack's most important piece of equipment when investigating the robin's viewpoint was a very shop-soiled stuffed robin, which he bought for a shilling and presented to robins of different sexes and at different stages of the year to see how they responded. In the first instance, it demonstrated again the wide variety of individual temperaments that exist among robins, and since the stuffed figure itself never varied, this test could, he argued, be used to accurately measure variation in robin temperament. However, one day, 'an exceptionally violent

<sup>86</sup> Norris, *op. cit.* (48), p. 12.

<sup>87</sup> See Etienne Benson, *Wired Wilderness: Technologies of Tracking and the Making of Modern Wildlife*, Baltimore: Johns Hopkins University Press, 2010.

<sup>88</sup> Macdonald, *op. cit.* (63), pp. 25, 37.

<sup>89</sup> Schaller, *op. cit.* (57), p. 79.

<sup>90</sup> Schaller, *op. cit.* (57), p. 99.

<sup>91</sup> Schaller, *op. cit.* (57), p. 101.

hen robin attacked the specimen so strongly that she removed his head. For a moment, the bird seemed rather startled, but then continued to attack the headless specimen as violently as before'.<sup>92</sup> This prompted him to try to discover just how much of the 'rival' needed to be there to provoke an attack – and he found that while they would not attack a complete specimen with a brown breast, merely a tuft of red feathers would produce a reaction – even, in one case, a continued attack on the empty air after he had taken the feathers away. He concluded that because what the robin does usually seems to make sense to us,

We tend to think that, clothed in a robin's body but retaining a human mind, we should do much the same things in much the same way, and therefore, for much the same reasons. We tend to assume that the world that the robin sees is much like the world which we see. Suitable experiments show how false this impression is. Even the empty air can contain a rival to be destroyed.<sup>93</sup>

Tinbergen's experiments reached similar conclusions. The desire of researchers to enter the animal's world should not be taken to imply the elision of difference – quite the opposite. But it should indicate just how seriously researchers took the conscious – even if alien – perception, intention and agency of the subjects they were observing

### Researching animals

This agency is perhaps most apparent in the impact that the animals had on the actual course of research itself – because another key theme that emerges from these texts is the extent to which individual animal actions both hindered and helped the efforts of field scientists to understand animal behaviour. As one might expect, some of these accounts are examples of animals exploiting a new resource – as in the case of the fox who followed Francis Ratcliffe to scavenge some of his samples – or of animals simply avoiding or frightened by human contact – as with David Macdonald's Oxford foxes, or the Grzimeks' encounters with stampeding wildebeest and zebra.<sup>94</sup> Other accounts, however, were more intriguing. Both Lack and Schaller, for example, had problems with animals who kept returning to the traps. Zhen-Zhen the panda was caught repeatedly, and Lack found,

There was one bird which kept coming in [to the trap]. It was let out seven times one day and eight times the next. Towards the end, as soon as let out, it would sit about waiting for one to move off and then would promptly go in again. It proved such a nuisance that the trap ... had to be shifted. The reason for this behaviour is obscure, particularly since the robin did not feed when inside the trap, but simply perched on a bar and waited for release.<sup>95</sup>

In some cases, the social structure of particular species – the fact that one sex or the other shifts group at maturity, for example – influenced which animals could be observed. In

<sup>92</sup> Lack, op. cit. (25), p. 156.

<sup>93</sup> Lack, op. cit. (25), p. 161.

<sup>94</sup> Francis Ratcliffe, *Flying Fox and Drifting Sand: The Adventures of a Biologist in Australia*, Sydney: Angus and Robertson, 1938; Macdonald, op. cit. (63); Grzimek and Grzimek, op. cit. (50)

<sup>95</sup> Lack, op. cit. (25), p. 24.

others, the relationships that existed within that social structure had a similar impact, as Iain Douglas-Hamilton found when trying to radio-track elephants. Tagging an individual meant anaesthetizing them: possible when it came to solitary adult males, but much more difficult for groups of adult females and their offspring, who would vigorously protect each other. Douglas-Hamilton realized that to get a collar on a member of a cow-calf group, he needed to target an individual ‘held in generally low esteem by other members of the group, and whom they, hopefully, would not defend when it came to the crucial moment’.<sup>96</sup> In still other examples, the personalities of both individual animals and researchers had a negative impact on the work: Cynthia Moss, for example, remembered telling herself – in the context of dealing with adult males – that ‘you can’t let this elephant intimidate you. You have to show him you are dominant’.<sup>97</sup> Karen Pryor made a point of asking prospective assistants about previous exposure to large animals, since ‘some previous personal experience of the sight of large teeth’ was advisable. A naive expert ‘was apt to flinch involuntarily ... and to flinch often enough and clearly enough to encourage bullying behaviour from the animal’.<sup>98</sup>

Much more common, however, were examples of animal actions supporting research, or even making it possible. Researchers used animal actions to orient themselves to the landscape (both social and ecological) and to identify key factors within the landscape. Darling used the deer as knowledgeable guides to the mountains, arguing that ‘any man who is not a mountaineer ... should trust the deer paths rather than his own judgement’.<sup>99</sup> Whether in the Serengeti or in North America, researchers consistently used other animals to identify the locations of their study subjects. Schaller was explicit in stating that when ‘looking for predators, I soon learned to rely on the assistance of other animals’: watching for the reactions of giraffes and vultures enabled him to pinpoint the hard-to-see lion.<sup>100</sup>

In some cases, researchers directly tried to actively engage other animals in the research process. Sometimes this fell flat, as with Tinbergen’s efforts to investigate gull anti-predator defence by using a colleague’s dog: unfortunately, the animal simply urinated on the nests, which meant ‘the end of Joey’s scientific career and also of our tests on scent’.<sup>101</sup> Carrion crows, on the other hand, proved to be far more effective field technicians.<sup>102</sup>

Individual animals had key roles to play in other studies. Oria Douglas-Hamilton gave particular credit to one elephant, Virgo, both for her role as gatekeeper – easing the new researcher through her ‘period of anxiety’ at the onset of her study – and for her cooperation in the novel food-study experiments they were conducting.<sup>103</sup> It was, in fact, their

96 Douglas-Hamilton and Douglas-Hamilton, op. cit. (44), p. 126.

97 Moss, op. cit. (45), p. 107.

98 Karen Pryor, *Lads before the Wind: Adventures in Porpoise Training*, New York: Harper and Row, 1975, pp. 51–52

99 Darling, *A Herd of Red Deer*, op. cit. (32), p. 62. See Rees, op. cit. (11).

100 Schaller, op. cit. (46) p. 17. Also see Bertram, op. cit. (46), p. 26; Caro, op. cit. (61), p. 50; Murie, op. cit. (76), p. 198.

101 Tinbergen, op. cit. (37), pp. 198–199.

102 Tinbergen, op. cit. (37), p. 215.

103 Douglas-Hamilton and Douglas-Hamilton, op. cit. (44), p. 161.

hope that Virgo would allow them to approach her on foot, even take her into the centre of the elephant group, since 'Iain's wildest dream was to be able to ride on Virgo one day and move with Boa's family, making quiet observations from her back'.<sup>104</sup> David Macdonald similarly planned to overcome wild suspicions:

Then came the idea of a spy in the opposition's camp: I would hand-rear a fox cub, win its trust, accustom it to as natural a life as possible in my company, and then go with it into the world of its wild cousins.<sup>105</sup>

Despite the seeming irreconcilability of naturalness and tameness, his 'hare-brained' scheme worked, and with Niff he developed 'a thrilling, professional relationship, with her the active partner and I the passive onlooker ... a privilege granted on vulpine terms, not imposed by human ones. She was but the first of more than twenty hand-reared foxes that would become my fondest teachers'.<sup>106</sup> From Niff and her offspring, 'groomed for lives as biologist's narks', he learned the 'mores of fox society', and his 'expertise as tracker blossomed as Niff showed [him] each trick of her trade'.<sup>107</sup> Their relationship enabled him to conduct naturalistic experiments on scent marking, despite the fact that limited human senses rendered him unable to read the 'correspondence': crucially, however, Niff seemed more expert witness than research subject.<sup>108</sup>

In the delphine world, animals had an even greater collaborative role to play. Konrad Lorenz described Karen Pryor as an ethologist who used behaviourist conditioning not to study learning, but 'as a tool to gain knowledge about the animal as a whole'.<sup>109</sup> Working at Sea Life Park, the oceanarium that she and her husband had set up in Hawaii, intended to combine and support scientific research with entertainment, she discovered that successful dolphin work depended on the development of a relationship of mutual accommodation. Ignoring animal agency quickly led to a situation where porpoises were successfully training 'their trainers to give them fish for nothing', or subtly decoying them into dangerous situations.<sup>110</sup> Working partly with the US Navy, Norris and Pryor studied the sensory and physiological capacities of dolphins – considering the problem of echolocation, or trying to understand both how fast they could swim and how they could swim so fast, for example. But – as with Niff – dolphins were not just resources to be studied: their study required their active collaboration. Only with an actively cooperating subject could researchers realistically test how fast dolphins could swim, how deep they could dive, whether they would accept delayed rewards in the form of 'tokens' they could later swap for fish, and if they could reliably be used to communicate between divers in the deeps and ships on the surface – or, indeed, to search for lost items, such as hydrogen bombs. In other words, they needed 'an

104 Douglas-Hamilton and Douglas-Hamilton, *op. cit.* (44), p. 175.

105 Macdonald, *op. cit.* (63), p. 55.

106 Macdonald, *op. cit.* (63), p. 57.

107 Macdonald, *op. cit.* (63), pp. 211, 61.

108 Macdonald, *op. cit.* (63), pp. 127–130, 127.

109 Konrad Lorenz, 'Foreword', in Pryor, *op. cit.* (98), p. viii.

110 Pryor, *op. cit.* (98), p. 4. Kenneth Norris, *The Porpoise Watcher*, London: Murray, 1974, pp. 104–105.

animal that could be reliably released, free and unencumbered, into the open sea, asked to do a variety of scientific tasks and then brought back into captivity'.<sup>111</sup> Pryor, Norris and their dolphins managed to achieve at least the first part of this, with the caveat that 'porpoises, being curious, have an annoying way of sticking their noses between your face and your work all the time'.<sup>112</sup> But for each study, what they found was that dolphins cooperated only as long or as far as they wanted to. In open-ocean work they were, after all, free to leave, and sometimes did. For example, after completing more than three hundred dives, Kai had had enough, and swam off: 'no-one was upset [since] Kai had earned his freedom'.<sup>113</sup> No one could tell if dolphins were actually trying their hardest, either – the Navy thought that they had established a maximum depth for their test dolphin, Tuffy – but then 'one day he broke off from diving to a 125-foot target to go down to 200 feet to hobnob with a scuba diver working on the bottom'.<sup>114</sup>

Pryor's pride, though, lay in the dolphin that she trained to be creative – a project which, in a sense, grew out of the lack of human inventiveness. Coming up with new things to show the Sea Life audience was hard – so the trainers decided to put on a performance that would showcase the first steps in porpoise training – 'reinforcing some spontaneous action until the animal began repeating it on purpose'.<sup>115</sup> When Malia the dolphin learnt the criterion that 'only actions which have not been previously reinforced are reinforceable', she began to offer novelty as standard – and it proved possible to inculcate a similar approach in another dolphin, Hua, the results of which were eventually published in the peer-reviewed literature. Drawing a distinction between what could appear in the popular and expert media, Pryor further noted that the Navy went on to make a film of the events, giving it a 'downright poetical ending, speculating about the possibilities of man–porpoise interaction in which the porpoise was an equal, an initiator, not just an obedient subject'.<sup>116</sup>

## Conclusion

Historically, and for many scientists, discussions of animal motives, histories, intents and personalities could only be had in the popular accounts of working with animals, not in the peer-reviewed literature: only thus could the accusation of anthropomorphism be avoided. But the fact that these accounts were produced for a lay audience does not negate their historical significance, nor does it inevitably imply inaccuracies or inventions – and it does have potential consequences for the historian's understanding of animal agency. As this paper has shown, the recognition, and the significance, of animal individuality are rooted in the demands of field-based methodology, not in the requirements of a good story – although it is also clear that it is the fascinated pleasure in following

111 Norris, *op. cit.* (110), p. 138.

112 Pryor, *op. cit.* (98), p. 268.

113 Pryor, *op. cit.* (98), p. 203.

114 Pryor, *op. cit.* (98), p. 205.

115 Pryor, *op. cit.* (98), p. 234.

116 Pryor, *op. cit.* (98), p. 247.

animal activities that keeps scientists coming back to the field, even under conditions of extreme physical and emotional stress and distress. The key strategies of individual recognition, long-term record keeping and daily follows have created a situation in which researchers can legitimately describe themselves as writing animal biographies, their individual histories and personalities, revealed consistently within interacting communities with their own traditions. Significantly, as far as animal agency is concerned, these histories reflect what animals do, not what humans want them to do: even where animals are trained or tamed, the degree of cooperation is still determined by the animal. And in most of the cases discussed here, researchers have actively avoided direct manipulation in favour of observational recording, with consistent reflexive attention to the probability and influence of bias and presumption.<sup>117</sup> Here, what we have is a situation where scientists are actually studying animal agents, and animal agents are making such studies possible: where the desire to enter the animal's world is balanced by the recognition that this world is qualitatively, not just quantitatively, distinct from the human. This recognition needs to be reflected in historiographical discussions of agency: the fact that animal agency differs from human agency should not be grounds for dismissing its relevance.

Crucially, however, it also needs to be borne in mind that as the study of animal behaviour has a history, so does the interest in animal agency. Increasingly, fields like evolutionary and environmental history, as well as the more specific topics of deep or big history, are drawing on the concepts and discoveries of the natural sciences in order to present a fuller, more nuanced account of past events. While there is great potential in this strategy, it is also dangerous, particularly if these ideas and information are adopted without a clear sense of how they themselves came to be: treating the results of the natural sciences as unproblematic additions to the study of history can potentially produce histories that are both teleological and ahistorical – as any historian of science knows. This paper has tried to place the lessons historians might learn about animal agency from animal behaviour in the context of one particular reading of that field's history. But along with the interest in animal agency, the 'animal turn' itself must also be located in time and space – as the product of a post-colonial democratization of the discipline's subjects, the result of the rise of Western secularism or one of the intellectual consequences of living in the Anthropocene?<sup>118</sup>

Whatever the conclusion, the contextualization is important because the study of animal agency has serious potential implications for (some) humans. In the context of the understanding of wild animal behaviour, for example, the relationship between the agency of wild animals and that of the humans who occupy the same geographical spaces needs critical consideration. Understandably, the focus of these accounts examined here is on the research subjects. But very often, their agency, their subjectivity, is emphasized at the expense of local human beings, who are shown either as individual bureaucrats or as poachers who endanger the research project directly, or as a

117 Jeanne Altmann 'Observational study of behaviour: sampling methods', *Behaviour* (1974) 49, pp. 227–267.

118 Sandra Swart, 'But where's the bloody horse? Textuality and corporeality in the "animal turn"', *Journal of Literary Studies* (2007) 23, pp. 271–292; Aaron Skabelund, 'Animals and imperialism: recent historiographical trends', *History Compass* (2013) 11, pp. 801–807.

looming mass of farmers or migrants who pose a more inchoate threat. Those of us who are interested in understanding animal agency – the capacity of animals to act as historical agents – need urgently to consider it in relation to the historiography of environmental agency, the philosophical practices of the history of science, and the epistemology of post-colonialism. Power, and the way in which its political and economic possession finds its cultural expression, are ultimately at the heart of all debates about the human–animal relation: as historians, we should resist attributing agency to animals if that entails removing it from humans less privileged than the writer – and the readers? – of this account.