Chapter 5:
COLLECTING

The aim of the evolutionary biology study that forms the topic of this book is to collect data on the behaviour of the Siberian jays in their natural habitat in Sweden. Based on the raw data collected, new scientific knowledge can be produced through analysis, modelling, and interpretation. The biologists in this field study – Kate, Julian, Camille, and Marine – underwent a situated enskillment facilitated by their more experienced peers, primarily Michael. This involved learning how the field is structured into study areas and bird territories, how to navigate these territories, register new birds by catching, ringing, and measuring them, and how fieldwork is organised in the study. They learnt how to distribute tasks between team members and how to plan field days. They understood how to organise the data and materials, including blood samples that must be stored in the freezer, or feathers taken from the birds that must be glued into a book. Tasks also include backing up the films on hard drives and ensuring the cameras are always ready for the field days, with a fully charged battery and an SH chip with sufficient capacity. More informally, the biologists learnt how to handle their equipment during data collection. The enskillment was not only fact-based, but a bodily and sensory process of learning how things are done in this study, which I have conceptualised as situated enskillment.

In the following section, I focus on the practices of data collection themselves as they are performed in the individual bird territories. This discussion and analysis will provide insight into how sensory skills, subject knowledge, and visual framing are entangled in data collection and how they form an apparatus of knowledge production. For visual framing, I refer to the technologies that support the practices of observations, such as handwritten behavioural observation protocols and the use of cameras and binoculars.

Based on the data I collected during fieldwork, I begin by introducing the practices of approaching (5.1) that are necessary for data collection, such as attracting birds and identifying them, and setting up the behavioural observation. I focus on how the biologists observe the birds that are then finally turned into recordings, based on different modes of observation and situated mediations. Thus, I focus on the role of visual technologies that guide, frame, and support the observations, which I refer to as situated practices of an apparatus of knowledge production. Following Barad's account, apparatuses are not understood as:

> mere instruments or devices that can be deployed as neutral probes of the natural world, or determining structures of a social nature, but neither are they merely laboratory instruments of social forces that function in a performative mode. [...] apparatuses are specific material reconfigurations of the world [...].[1]

Practices, technologies, and bodies converge to produce knowledge. Therefore, I describe the specific observational settings (5.2) the biologists create as part of their data collection: the technologies involved, settings created, and what can be observed and how. I specifically attend to how observation tools are entangled with the practices and biologists. I focus on the practices of sensory alignment (5.3) with which the biologists engage and are imperative for working with the birds. Focusing on the senses allows me to shift the perspective from a subject–object dichot-

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Barad, *Meeting the Universe Halfway*, 142.

omy (i.e. between the biologists and the jays) towards a sensory alignment between the birds and the biologists. While this divide suggests that the birds and biologists never engage with one another during data collection, the sensory alignment (e.g. the biologists who imitate the birds to attract them) indicates that this separation is not that clear. This means that scientific facts are not only developed by observing a *natural* event (in the case of biology), even though they usually only become visible through scientific output. This highlights the practices the biologists engage with to create settings in which they can make these observations. In these practices, the biologists do not remain *neutral* observers but must engage with activities and behaviours in such a way that they can work with the birds, for example, when attracting them. Thus, observing birds, as performed here, is less about working *on* them and more about working *with* them, namely by means of 'mimetic empathy' and adopting a 'double perspective', as Rane Willerslev[2] suggests. This is especially manifested through sensory alignment, as I discuss in the following section.

Having outlined these concepts, I continue by addressing the different human and non-human regimes and modes of observation that are present in the field. Based on the analysis of these modes of observation, I develop situated mediations (5.4) to describe the entanglement of discourse, technologies, and observations. These concepts thus bring together Grasseni's skilled visions and mediations, Haraway's situated knowledges, and Ludwik Fleck's rather historical account on thought styles and thought collectives, all of which contribute to my conceptualisation. I conclude this chapter by speculatively bringing together the biologists' behaviour observations and my ethnographic participant observation into participant behaviour obser-

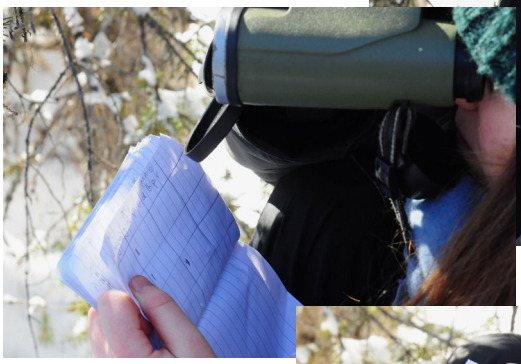
2
Rane Willerslev, 'Not Animal, Not Not-Animal: Hunting, Imitation and Empathetic Knowledge among the Siberian Yukaghirs', *The Journal of the Royal Anthropological Institute* 10, no. 3 (2004): 629–52.

vations (5.5) to question the subject–object relationships created based on these two methods. This further helps address the hard–soft divide between evolutionary biology and my study.

This analysis lays the foundation for Chapter 6 where I analyse how the resulting recordings of the birds are transformed into datasets throughout the practices of fieldwork.

43 a, b, c

43 d, e, f, g, h, i



43 j, k, l, m, n, o

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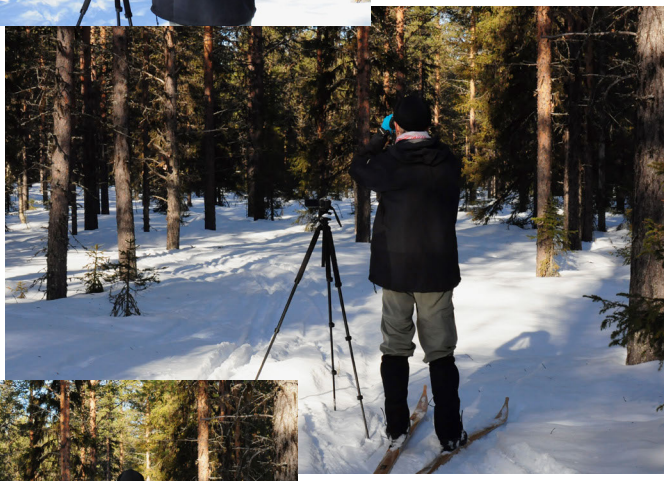
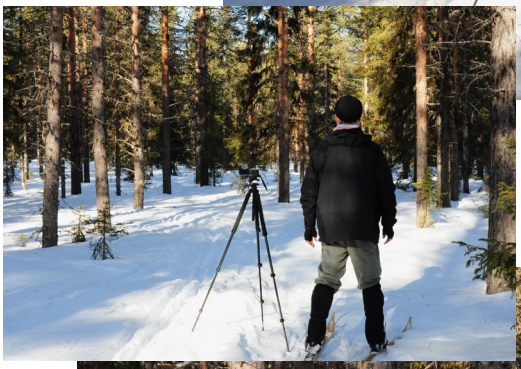
45 a, b

46 a, b, c, d





46 e, f, g, h

46 i, j

Figure 43 a–o:
Sequence of Kate identifying Siberian jays through binoculars, comparing the IDs with the field lists and territory maps in her notebook, and starting to conduct a behaviour observation protocol. Arvidsjaur, 2015.

Figure 44:
Marine during observation, looking through binoculars and holding her field notebook and pencil in one hand. Arvidsjaur, 2020.

Figure 45 a, b:
Camille and Michael observing Siberian jays through binoculars together during the first days of situated enskillment. Arvidsjaur, 2020.

Figure 46 a–j:
Sequence of Michael observing the Siberian jays with his bare eyes, extended through binoculars, field notebook, and based on video recording with the camera installed a few metres in front of him. Arvidsjaur, 2015.

5.1. Approaching

After successfully navigating towards the bird territories, the biologists manufacture a scenario to achieve their research objectives: They motivate all birds that live in the territory to come to where they have set up the equipment and feeder. Even though the practices differ slightly depending on which biologist I accompany, the overall routine for attracting the birds and setting up these observations can be described as follows.

After skiing in somewhat direct lines for approximately 20 minutes, occasionally taking a sharp turn, we arrive at the bird territories. In these moments, I can often hear my heartbeat, as the thick layer of snow absorbs all other sounds. Usually, this silence does not last long, as it is interrupted by Michael calling for the birds. With his index and middle finger pressed against his lips, he sucks air through his mouth, producing a sound like the high-pitched twittering noises of the birds' offspring. He mixes these calls with the twittering of adult birds, thereby offering a variety of calls. He simultaneously moves through the territory, making his presence known to the birds.

Then, everything is silent once more. Looking at the sky, at times through binoculars, I wait for a few seconds until the silence is broken by more calls for the birds, to which I occasionally contribute. However, imitating Michael's calls requires practice and attentive listening to the birds. I usually stop after a few attempts because I feel as though I am disrupting his calls rather than helping.

Each of the biologists' calling methods are different. Camille becomes so silent after calling the birds that, if I am not looking directly at her, I hardly notice her presence; Julian's approach is rather noisy and lively, and he frequently moves around, but he does not seem to imitate the birds nor hide; and Marine, Kate, and I occasionally use our SOS whistle on our backpacks. Despite these different

methods, at some point, each of the biologists manages to attract the birds and, in contrast with what I had thought at the outset, the birds are not repelled by their presence; instead, they appear to be quite curious about the biologists.

Camille and I stand a few metres apart in the picturesque, monochrome winter landscape, and I observe her as she attempts to attract the birds. After a few minutes, the sounds of the forest begin to change. We hear wings flapping and notice sudden movements at the tops of the trees and small, dark shadows flying close to the white ground. What had been a calm and silent scene instantly transforms into a space brimming with life. Birds are flying back and forth between the fat and the tops of the trees, rushing to the ground to pick up a piece of food they just dropped, and then flying off again, only to return a few seconds later. Some appear to bump into one another while chirping excitedly. While this event does not have a pattern that I can recognise, Michael will often comment on it eagerly and occasionally respond to the jays' calls.

Once the birds are present, I become more active too. This interaction between the biologists and the birds provides valuable data, and I start documenting it. Not only do the birds fill the space with life before my eyes, so do the biologists. Thus, my research setting and observations become denser. Once Michael, Camille, Marine, Julian, or Kate, depending on who I accompany for the day, start observing the birds, I move away so that I can observe the events occurring in the boreal forests of Arvidsjaur. Occasionally, I attempt to hide behind a tree and silently observe the biologists and birds. I take out my camera, pencil, and notebook, and start observing and documenting the aspects that seem interesting to me, such as how data are collected and how the observational practices of the biologists are performed. I document their ways of studying the birds: their routines, gestures, and movements.

When I accompany Marine on one of the first days of the study, while we are standing in what I consider to be one of the most beautiful study areas – a wild valley next to a large, frozen river in *Reivo* – during a brief pause between calling the birds and waiting for them, she comments, 'You know, the birds do not appear because they think that the imitated calls are actually other birds, but because they know that it means food. They got used to it. They are intelligent birds'. She adds that she is, therefore, not entirely certain if it matters *how* one makes the calls, but that Michael is definitely more successful at it. Whether this is attributable to his particularly loud calls, his experience and implicit knowledge of how to attract the birds, or because the birds know him, she is also not certain.

In spring, after a long, cold winter, and just before mating season, the birds welcome additional food. According to Michael, they are usually desperate for it. If, despite that, the birds do not come, he believes it is because they are too far away and cannot hear us. Alternatively, depending on the territory, he speculates that some birds may be more shy or scared than others, or that they may not have noticed that the biologists have returned. This often applies to younger groups and birds that are not yet familiar with them.

The birds are more used to people in *Managed* and *Fat Road* than in the natural, protected area of *Reivo*. For this reason, Michael is always prepared to attract birds, or rather, in his words, is 'highly opportunistic' when it comes to 'getting birds'. He usually has some sausage in his pockets, which is easier to rip into small pieces than the feeder, and he believes this is the birds' 'favourite dish'.

Occasionally, Michael is also happy to attract birds that pass by when we are moving through the study site, to briefly get a glimpse of whether they are ringed or not, and, if so, identify their ID colour combinations or make sure that someone from the team will return to register them in the

next few days. In this case, he writes down approximately where he saw them so that he, or another team member, could return another day to catch and ring them, thus turning them into sample birds for his study. This was the case in *Glottje* at the beginning of the 2020 season with Marine and Camille (cf. Chapter 4: 4.3.2).

The sausage is also used if birds appear unexpectedly or before anything has been set up. In this case, it works as a kind of placeholder for the fat, which is the actual feeder. In these situations, with a strong and determined gesture, Michael starts throwing the sausage into the air to maintain the birds' interest and make sure they remember that the biologists' calls mean food, as Marine had explained.

During the initial days of observation, it is particularly important that the biologists call the birds at the right time: not too early, so that they do not appear in the wrong location when we are still walking towards the centre of their territory, but also not too late, so that we need to wait a long time for them to appear. This seems to be a fine balance that differs with each biologist I accompany.

This moment of the birds' arrival is often a relief, because it means that waiting in the cold was worth it. In contrast, it can also be frustrating for me because it means that we will stay for at least 30 minutes longer to conduct the behavioural observations. There were many occasions when I was standing in the snow, unable to feel my feet and breathing into my gloves to keep my hands warm. In these instances, I gave up on more birds appearing and often even hoped that they would not appear so that we could return to the car and end the field day sooner. Days such as these often result in less detailed entries in my notebook because it was too cold to remove my notebook, take off my gloves, and start writing – or even worse, take photographs. However, the biologists, particularly Michael, are usually not bothered by the cold and continue calling the birds until they arrive.

The biologists seldom appear to give up so that they can move on and warm up by skiing again. When the weather is overcast, or later in the day, it can be difficult to attract birds, and the process becomes less predictable. Then, the protocol of waiting for approximately 15 minutes for the birds to appear, which no one seems to adhere to anyway, is suspended; and, occasionally, we wait in the cold for almost an hour, using as many tools as we can to call the birds. Sometimes this is successful and other times it is not. In these moments, the biologists' determination to collect data is the main priority, and it becomes clear that they are willing to do almost anything to achieve this.

On the first days of the season, the birds can be hard to attract when they are not yet used to our presence and have not realised that biologists with food are around. This data collection in the field typically involves several stages, where the biologists return to the territories at least twice per season. Thus, the first stage is to visit all territories once to mark their presence and prepare the birds for the following weeks. This means piquing the birds' interest by putting up fat, even if no birds appeared after calling for them, so that 'the birds know we have been here'. Although behavioural observation protocols may not be possible in a particular territory, the biologists have at least left behind a trace that the birds will eventually encounter, possibly piquing their interest and increasing the likelihood of them appearing when the biologists return. Indeed, this approach is often successful, and when we return, the birds appear more quickly; occasionally, they even seem to be waiting for us.

Identifying

As soon as the birds start arriving, they must be identified by their IDs. Identification is important not only to keep track of the birds and collect data consistently but also

to ensure that the correct birds appear; in other words, to verify that these are not birds from nearby territories. This occurs occasionally and usually causes a fight, as described earlier (cf. p. 124), leaving the biologists to abort their behavioural observation protocol and return another day, or wait until the birds have calmed down.

For the identification, the biologists shift their attention to examining the birds' IDs through their binoculars (Figure 43). Michael grabs his binoculars, which hang around his neck and across his chest on a strap that resembles that of a purse. One arm goes through the loop of the strap, after which he takes the binoculars into both hands and studies the birds. An Excel sheet lists all the birds from the previous season and is glued into the back of his field notebook, helping him to know which colour rings to expect.

Often, after briefly checking the Excel list, Michael seems to remember the IDs by heart, whereas less experienced biologists take longer to identify the birds. Once he can confirm that he has seen a particular bird, he checks off the relevant ID on the list. This means that the bird has survived the previous season and continues providing data to the dataset. The most basic step of data collection is checking which birds are still there and in which territories they live; this helps to provide an overview of the study, particularly at the start of the field season.

The biologists switch between looking through the binoculars, checking their notebooks, and squinting to see better in the bright light. Their main goal is to get a glimpse of the IDs. The Excel list indicates the colour and numerical code of the rings, which are arranged according to the birds' individual territories. The order of the territories in this list is based on their geographical locations and how the biologists would usually move from one territory to the next. Territories that are geographically close tend to appear consecutively on the list. In addition to this list,

the biologists have a small map glued into their notebooks on which the individual bird territories are marked with boxes where the names of the territories and the individual birds appear. While the Excel sheets are digital, the maps are both handwritten and digital because the birds' information is usually completed manually.

The biologists continue this process until they have seen all four rings of each bird (Figure 44). However, because the birds have more feathers in winter, it can be difficult to see the rings, especially when they are sitting on tree branches and their legs are covered. Michael, who in general talks and interacts most with the birds, would then encourage them by saying: 'Come on', 'Show your legs', followed by 'Not friendly' or 'Unhappy' as an interpretation of the birds' twittering. He sometimes addresses the birds with direct questions, such as 'Who are you?', while Marine usually expresses a deep sigh if she cannot see the colour IDs, and Camille calmly whistles to the birds.

Occasionally, the birds lose a ring or the colours of their rings have faded in the sun, making the process of identification more difficult. In this case, it helps to know how the colours change over time. Experienced biologists are aware that red-scale colours can be particularly difficult to work with, as pink, red, and orange become more difficult to distinguish as the rings age. If a ring is missing, they mark this on their Excel sheet with a hashtag and attempt to catch the bird again to fix it, if there is time.

Young biologists can take a long time to discern the IDs if they are not yet used to the process. During the first few days, whenever Michael and the assistants are together, they stand close to one another and look through their binoculars (Figure 45). Once the birds arrive, they start reading their colour codes out loud. All three biologists, Michael, Marine, and Camille, then confirm the colours they have identified, and, if necessary, they correct one another. When the assistants are uncertain if a ring is orange or

faded red, Michael usually confirms the correct colour and comments on why it is difficult to discern and how the colours tend to change. Occasionally, though, he too struggles and must guess. Through this process, the novices exercise their visual skills to identify the colours correctly and identify the birds. This process also helps them get used to the overall referential system of the Excel sheet, territory names, and the rings, as well as working in the cold and snowy conditions of Arvidsjaur.

All the biologists I accompany during fieldwork appear to pay close attention to precise identification. They are aware that, without this, the data they collect is worthless because it cannot be related to specific birds and thus merged with the overall data plot that forms the basis for further analysis. Often, when I was satisfied with my observations, they would return and double-check that the colours were correctly identified. It is imperative that the biologists know which birds interacted and how, and not merely the fact that two birds interacted. Only through codifying their research object by means of the IDs can the biologists extract and document the information they need to conduct their research. The life data of the birds, such as their age, sex, family relationship, and status are essential to draw conclusions about their social behaviour.

Setting Up

While attracting and identifying the birds, the biologists also install the feeder, and as the birds eat, they reveal their social dynamics to the biologists. For this, the biologists do not select any tree but rather a *good* tree: one that is not too exposed so that the birds fear an attack by a predator, such as a raven or an owl, but also sufficiently open so that it is easy to observe them with no bushes or trees impairing

the view. Ideally, the tree does not have too many branches to obscure the view, but enough so that several birds can perch on them and eat.

When Michael puts up the bait, he moves to the tree or bush that he has chosen, drawing a straight line in the snow with his skis. Occasionally, he rips off some branches to create a good feeding situation for the birds and the observations he plans to make, and then attaches the feeder with a wire onto his chosen spot. The team started using wire in 2019. Before that time, they would impale the fat on a spiky branch of a tree and, as a result, the fat often fell off during the behavioural observation. If Michael (or whoever I accompany) expects more than three birds to arrive (because that is what is indicated in the Excel list or recalled), he puts up two pieces so that all the birds can eat at the same time.

I noticed few branches for the birds to sit on the chosen tree, as I accompanied Marine one day. It is difficult to discern whether the jays dismiss one another, or if they simply fly away because they cannot find a place to land. Subsequently, the observations are ambiguous, and the data are not robust, as they were collected in a situation where Marine had to consistently consider additional reasons for the birds' behaviour. This observation illustrates that it matters how the experimental setting is curated. To collect valuable, robust data, the feeders must be installed in a particular way, something the biologists must learn through practice, as it is not formally taught. This is the case for the entire set-up for the behavioural observation. As far as I have observed, this information is not written down anywhere but passed on through peer-to-peer learning during collective fieldwork, which only occurs during the first few days. More likely, this knowledge is gained through trial, error, and readjustment, once the biologists notice that they cannot see the birds or that the birds are struggling to perch and eat, as was the case when I accompanied Marine.

During my second field season, Marine occasionally asked for my opinion because she assumed that I have more experience with these details, as I had joined the study before her. In other cases, when the biologists were working alone without anyone to ask, they would mention the problem in the evenings or during the drive home after a field day. Lastly, setting up depends greatly on the individual biologist's judgement of what is best for the quality of the observations and videos; for this, it is necessary to know how the data will be processed and what will be analysed. During her first behavioural observation, Marine shared that she struggled to understand what exactly to describe in the protocol and what constituted certain behaviour. She continued that she found it difficult to collect data without knowing what will be analysed.

During these set-ups, I assist in different ways depending on the biologist I am with. I usually let Michael do most of the work because he knows best and is nimble with his material, and thus the process is faster if I do not intervene. In some ways, I almost do not dare intervene. However, when I am working with others, my role changes and I help to attract the birds, put up the feeder, or, as with Marine, advise the novice biologists on certain aspects.

Camille and Marine seem to appreciate this division of labour, as it allows them to check their notebooks, identify which birds to expect, study the birds that are already present, and prepare for the observations. I take one or two pieces of fat, pick a good tree, and confirm with my interlocutors if they agree with my choice. I attach the feeder to the tree using wire, threading it through two holes I made in the centre this morning. It is usually quite difficult to attach the bait firmly, especially with thick gloves. For this reason, Michael wears fingerless gloves under bigger gloves to enable easier working. Camille, in contrast, wears thick gloves that provide additional heating. She seems even happier than the others if she does not have to take them

off and allows me to do the job. However, at the end of a field day, my gloves, which I also only take off when I must, contain a greasy film of pork fat that becomes thicker over the course of the study.

As a final step in the behavioural observation set-up, the biologists, occasionally with my help, install a camera for additional recording of the event and then position themselves (Figure 46). They stand approximately two metres behind the camera, which is attached to a tripod in the snow in the same direction as their view. The camera positioning is done in such a way that they can still monitor the small screen of the camera and control the frame to see what is recorded, making sure the camera does not move, which occasionally happens if one leg of the tripod suddenly digs itself deeper into the snow. Michael also uses the time indication on the camera to see when the 15 minutes of observation are over, mentioning it occasionally on the video recording, especially at the end.

With his set-up, Michael creates a diagonal line through the forest, connecting the birds, video camera, himself, and me, at the end of the line behind him. Occasionally, I stand beside Michael, while at other times, I hide behind a tree or stand between the birds, the camera, and Michael to observe his activities. Once all the birds have arrived and the feeder and camera have been installed, Michael draws several lines in his notebook, creating the chart for the behavioural observation protocol. Standing behind him, I can hear the sound of his pencil on his notebook as he draws his lines with certainty and determination. He does this deftly, never entirely losing sight of the birds. His focus generally remains on the birds.

Before Michael starts his formal observation, he flips between the page at the back of the notebook where the Excel sheet is glued and the page where he will document the birds' behaviour during feeding to make sure he writes down the IDs correctly. Thus, he ensures that the data he will

collect will be stable and referable, and simultaneously mobile, owing to the nature of the data carrier, the notebook; thereby creating continuity. In the columns of the behavioural observation protocol, he notes the IDs of the individual birds that are present. Each column represents one bird. Thereafter, he presses the record button on the video camera and starts his behavioural observation during 15 minutes of feeding.

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Figure 47:
Screenshot of a notebook excerpt taken while browsing through a PDF file with my data. It shows a behavioural observation protocol with colour coding in territory *Impossible* and *Fyra* in 2016. Zurich, 2021.

Figure 48:
Hand-made wooden feeder to train Siberian jays for an experiment, one stuffed with food and covered by lichen. Wood, drill, fire. Arvidsjaur, 2015.

Figure 49:
Independent observer: installed video camera recording a fixed frame at which it is targeted for the next 15 minutes. Arvidsjaur, 2015.