Fibre Formations

Wool as an anthropological site

Capelan Köhler, Annika

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Wool as an anthropological site

Annika Capelán Köhler

LUND
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Cover by Carlos Capelán

Faculty of the Social Sciences
Department of Social Anthropology

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To EvaMari and Lennart Köhler
To Lena Carlsen in memoriam

Content

Preface with Acknowledgements

"To understand art", I wrote in one early fieldnote, "we seem to need to consider everything *but* art".

It all began with a wish to study visual art through anthropology. I had come to see both visual art and anthropology as ways of knowing the world and of adding knowledge to it. I framed my study as an attempt to work "from within" both anthropology and art to grasp what was mutual and specific to these practices. It had become clear to me already before setting up the study that artistic practices and anthropological inquiries were often triggered by the needs to find ways of working things (concerns and conundrums) through – to "figure things out"[1]. I was interested in how the noticeably entangled subject matters that I had observed within both practices took shape and formed capacities, critiques, commitments and challenges, and how these in turn could tease out a refreshed understanding of the values and scope of such activities today.

I knew from the outset that the potential of an engagement 'from within' would require a different posture than the ones suggested by many anthropological art studies (Becker 1982; Morphy and Perkins 2009; Schneider and Wright 2006; 2013). The same goes for artists and other professionals working with art who would adapt anthropological ideas and methods (Baumgarten and Coles 2000; Foster 1995). Such work, in one way or another, tended to start out with a pre-arranged proposition based on categorical difference: art and anthropology as two related but separate domains that may momentarily be connected, yet remain categorically outside each other (Clifford 2008; Marcus and Myers 1995). I therefore soon realised that ideas of inter-disciplinarity and cross-disciplinarity did not quite fit as a driving model for what I had set out to explore. To

1 I borrow this expression from artist and anthropologist Jenn Law (2015).

reconcile that which in its doing, thinking and making was already in touch, seemed like a superfluous effort[2].

The insights I had gained from fieldwork pointed in a different direction. In retrospective it is clear that certain moments, events, encounters, observations and conceptualizations during that process where decisive for how the analysis took certain turns, rather than others, and how it ended up going down the paths it did.

I had encountered challenges familiar to many ethnographers, particularly those who work with institutions and with highly articulated, well versed informants with strong professional roles trained to have explicit agendas (Bourgouin 2007; Rabinow 1996; 2009; Riles 2000; 2010). The people I worked with were public figures and included museum directors and staff, gallerists, curators, artists, art critics, collectors, dealers and educators. Their work was always collaborative (Becker 1982; Papastergiadis 2011) and their professional roles where never fixed. Collectors could, for instance, also be artists; artists would curate and educate; dealers would be critics, and gallerists would have private collections, etc. Some would have a parallel profession that was not automatically associated with artistic practice.

These were busy people. They were under extreme pressure many times, but not on any occasion was an interview or chat with me rejected. They would always make time for my questions. As though possessed with timeless patience, they would always give some response to my unceasing inquiries. The curiosity was mutual.

It had become clear to me from the way they spoke about their job and the way they handled their tasks, that for them, there were always associations and relations that stretched the activities beyond a limited art world, and also beyond the art work. Neither art nor anthropology is ever done in isolation. Again, "to understand art we seem to need to consider everything *but* art".

2 This was not to deny that 'art' and 'anthropology' have different methods and outcomes, work in different environments, generate different communities, along specific conventions, and indeed do not have identical histories. But whereas 'art' is frequently bracketed out as a self-evident category – hosting legitimate exceptions to other rules – or as a set aside, strictly bounded 'world' with a proper protected logic, the activities I had observed were never isolated introversions nor solely self-referential autonomies. Artistic practices did not occur within any one closed system, and would frequently become intimate with anthropological subject matters.

What went on seemed to be an inversion of Joseph Alsop's system of by-products of the art work (Alsop 1982). Alsop included in his model of the system, art collecting, the art market and art history as the primary interdependent by-products to the artwork. What I perceived during early fieldwork was, instead, that the work of art (be it material or non-material) had in much become a by-product that would sometimes – and not always – accompany these other activities. The scope and limits of what was referred to as the Art System or Art as a Western category, has been investigated, challenged, and changing in practice (Clifford 2008; Marcus and Myers 1995).

To make public – as when the artist hands over her or his work by sharing it with an audience – was certainly part of the activities. Studio visits as well as inaugurations were formalized rites of passage between the positions of artworks as private individual process to artworks belonging to a public collective. Yet, to produce in order to exhibit did not come about without disturbances, and never happened in straight lines (from private to public)[3]. Nor was it always the aim of the activities.

I spent time in studios, exhibitions spaces and collections. Yet, the activities continuously extended themselves beyond these places, beyond the inaugurations as well as beyond any local and regional boundaries, into what were often referred to by the people I spoke to as a "global system" or a "global network". The activities included keeping track of information that shaped this seemingly limitless network. This entailed that people participated in, visited or had all the information about biennials and art fairs – whether in Basel, Guatemala, Istanbul, Kwangju, Madrid, Miami, São Paulo or Venice. This global aspect of the activities was confirmed by the mobility and multiple locations of my contacts and informants. They were located in Argentina, Australia, Chile, China, Costa Rica, Cuba, Germany, Great Britain, Greece, Guatemala, New Zealand, Norway, Paraguay, Spain, South Africa, Sweden, Thailand, the United States and Uruguay.

The sense of limitlessness of the activities I was engaged with, added up with the depth of anthropological inquires and the wideness of my personal curiosity. Together this formed a fruitfully complex world that saw no

3 The 'gallery space' has since long been assumed as a contested institution (Godfrey 1998; O'Doherty 1999).

advantages in efforts to distil a simplified thesis. Slowly, these difficulties were overcome.

Simultaneous observations had brought into view some additional aspects of these activities. Trivial and banal activities – not necessarily gloomy, but definitely non-glamorous or simply dull – were all part of what was going on. In the exhibition spaces as well as in the artist's studios, intense and productive activities coexisted with extended waiting hours (days and weeks) between decisions. Moreover, there were artworks that had been destroyed by staff or by rushed customs controllers, or that had disintegrated in other ways. There were always some dust-collecting pieces sitting around without being mentioned let alone shown.

In short, events and activities that went on side by side with those that focused on making artworks public, defined the undertakings as less elitist and flashy, more mundane and, if you will, middle-class (Ellis-Petersen 2015; Gosden 2015)[4]. I could see that artworks were certainly part of the collection of materials that circulated, and momentarily became more or less visible, but that they were not always at the centre of attention. Also other artefacts proved significant as they were constantly handled by the people worked with. I observed how contracts, receipts, written speeches, files, papers and catalogues were dealt with on a daily basis. I also saw how desks, computers, screens, phones, fixed walls, mobile walls, windows, and doors moved and were acted upon regularly. Furthermore, scaffolds, pins, cloth, boxes, drills, perfume, vans, taxis, chairs, ropes, sweat, fans and air conditioners, formed part of how the activities took shape. Not to forget that cables, light bulbs, coffee, dust, and humidity would always there in the midst of the undertakings.

These observations, together with the interest in how art *works* (that is, how the activities around art happen and what they "do"), triggered a seemingly contradictory impulse to pay even more focused attention to the artworks[5]. Without abnegating that many artworks are immaterial, perishable or

4 The 2014 edition of ARCO, the annual art fair held in Madrid, had a total budget of €4,5 million (US$6,2 million). Most of the sales were reported to have centred on the low-to-mid market, with €20.000 (US$27.400) having been the median price point of sales and the top of the market around €60.000 (US$82.200). The fair's most expensive work was priced €8,5 million (US$11,4 million) (Forbes 2014). A recent study shows that the most influential art event is Art Basel (Schultheis et al. 2015).

5 Barbara Bolt emphasizes such distinction between artworks and the "work of art", that is, the work of art, as action and process with effects beyond the material (Bolt 2004:5ff).

ephemeral, I began to explore the very notion of these artefacts and the potential agency of their materials, starting to wonder what would happen if I, for my study, put the material properties of artefacts into the centre of attention.

It seemed worthwhile, after this, to explore in greater detail some of the aspects of the *concerns* that the works of art conveyed. It began with concentrating on some particular and selected works of art that had already caught my attention. My rapport with the artists was already established, and the conversations about their work now deepened. The concerns expressed were, I realised, both material and relational. The shift of focus that led the study to trace one particular artwork was therefore partly empirically driven, partly intuitive, partly encouraged in discussions with my supervisor at the time, Jonathan Friedman, and partly enriched by the anthropological intellectual paradigm to engage in queries about the agency of art (Gell 1998) and the rethinking of the place of the non-human in human relations (Knappett 2008).

This is how my study came to be an anthropological exploration into the concerns expressed by the artist through one artwork. My ethnographic following, which had been going on for a while, now took a turn and the fieldwork began to focus on the material of that artwork (wool) and its presence and impact in its region. At the time, my fieldwork seemed to be something of a leap of faith, since on the surface there was no obvious analytical connection between my interest in wool production and my initial inquiries within artistic practices.

My current approach has been to move the inceptive aspiration to grasp artistic practices from the inside through anthropological inquiries to the background, without undervaluing them, and to instead allow these practices to re-emerge from a different angle. The initial interest – and the problems it entailed – is in other words still pertinent, but I let it enter into the study sideway. Although this thesis springs from the initial attention paid to contemporary artistic practices, it has become an anthropological account pulled from within the particular concerns expressed by one artist through the gesture of an artwork.

In this way the study works ‘from within’ the artist’s preoccupation and in an outward direction. Without aiming to reproduce her interpretations, I set out to extend and add to them by weaving their anthropological version. In doing so, I propose, the study in itself re-presents (in the etymological sense of the term, as ‘making present again’ (Ayto 1993; Weekley 1921)

an anthropological variation of the landscape lived, touched, thought, traced, contested and pointed towards by the artist. As such – and along the way – the study has transformed. It is today a synergistic experiment that is caught up with both art and anthropology, while it still works in the 'inside-out' direction that triggered and motivated my investigative curiosity at the outset.

This preface is aimed to signal a subtle yet crucial explorative element that runs through this book: the *transformative* and *transforming* value of anthropological research. The fact that this study has transformed along its way resonates with the notion of fieldwork as transformative, in the sense that there is always a mutual impact between fieldworker and field. Fieldwork is never "innocent" and never "stems from nowhere", as Donna Haraway would say (Haraway 2008).

At the same time, I have wanted to explore the transforming capacities of anthropological methodologies. This is why I consider this thesis to be, first and foremost, a *methodological* contribution. A good way to explore methodological issues, I have managed to conclude, is by asking *what* and *how* questions (rather than why). What vocabulary and imagery to use and how fine-grained should we be when we describe the asymmetric and complex world that we stand in the middle of? How do we find ways to explore, respond and add to it, while we cannot avoid getting caught up in it? How do we trigger some further inquiries, be they subtle or slow?

I ask the reader to walk with me while we travel through the course of the accounts that follow. My hope is that the end point will eventually shed some refreshed light upon the starting point.

Acknowledgements

This thesis is the outcome of many years of engagements and encounters. During the process I have been fortunate to meet and work with a large number of skilled and encouraging people who have all in some way shaped and directed this work's making.

My sincere thanks go, first and foremost, to all the informants and respondents whose insights have contributed to the study. I am genuinely grateful to everybody who, during my fieldwork, opened up their doors and invited me in to their worlds to spend time with them. A particular

mention goes to Mónica Giron, for generously and patiently sharing her ways of seeing and doing.

My deepest gratitude goes to David Wästerfors for his engagement with whipping this thesis into shape, through constructive comments both on the overall argument and on the details of the manuscript. Thank you also to Christer Lindberg for facilitating specifics during the final stage of the work. I am grateful to Laura Watts for her useful feedback on the manuscript during the final seminar. I thank the departments of Social Anthropology and Sociology at Lund University.

I want to thank Jonathan Friedman for inspiring the initial parts of this project and for the continued impact he has had on my own – and on so many others' – anthropological life. I am also profoundly grateful to Sue Wright at the DPU in Copenhagen, for her guidance towards an understanding of how to better manage the challenges of writing in higher education. A special thank you to Tim Ingold for the invitation to be part of the Knowing from the Inside-team at Aberdeen University. Furthermore, my sincere gratefulness goes to Nikos Papastergiadis for his unremitting interest in my PhD project. Again, a huge thank you to Johanna Esseveld for her thoughtful backing, and to Susan Paulson, University of Florida, for cheerful encouragements.

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I dedicate this thesis to three people. To my parents, Eva-Mari and Lennart, because their biological overlap resulted in a surprising heritage that turned out to be a most useful survival kit: a sense of humour. I also dedicate this thesis to the memory of my dear friend and colleague Lena Carlsen, who during many of our chats stated: "you will finish your thesis". She knew.

The study was externally financed throughout, and its realization has depended on my various day- and night jobs. The activities it has involved would not have been possible without sponsoring from my families. Erik and Gurli Hultengrens Foundation for Philosophy contributed to the travel expenses when participating in the conference *Vital Powers and politics: Human interaction with living things*, Association of Social Anthropologists of the UK and Commonwealth 2011 (ASA11), in Lampeter, Wales. A few months writing time was granted through The Lars Hierta Memorial Foundation.

Note on photographs, translations and confidentiality

All photos and translations are mine, unless otherwise indicated. In order to preserve confidentiality and anonymity, names, places and circumstances have generally been changed. The exception is Mónica Giron, whose informed consent permits that she overtly appears as the artist behind the work of art in focus. She has also generously agreed that photos taken by herself of her work may be reproduced in this thesis. Any mistakes or errors that may have occurred are mine and unintended.

List of figures and tables

Introduction

Why wool and how it matters

> A 'small' thing can thus be made to say as much as a 'big' thing.
> (Strathern 2004: xix)

This thesis builds on fieldwork conducted in the Southern Cone region of South America, first during 14 months stretching across 2010 and 2011, and for three additional months in 2014. In both occasions interviews and observations were carried out with people who work with Merino wool. Also an active engagement was maintained with artist Mónica Giron (and an artwork of hers, knitted from Merino wool[6]) during both periods. A series of observations and concepts have successively shaped the argument of this thesis into its current form. By use of the term 'fibre formations' – a key conceptual and methodological element of the thesis – I bring to light how woollen fibre, is part of messy, multiscaled, and often complex larger wholes. The approach also allows for an inquiry into anthropological processes of 'siting', and I propose wool as the site of this study.

In what follows, I will introduce the key passages that motivate my argument in order to clarify their significance in the collected analysis, and to properly reach the explicit aim and research questions. The internal

6 Another two artists and one artwork of each had been engaged at an earlier stage of the study. This was Moises Barrios, and his work *Republica Bananera*, and Kendell Geers and his work entitled *Self-Portrait — 1995, Found Object, 9,5 x 7,5 x 6 cm, Original Destroyed on Flight TW800 Edition 12+2AP (not numbered)*. These artist and artworks came into view quite naturally as the exchange with the artist had intensified. There was a mutual interest to explore the meeting points of their concerns and my own endeavors as an anthropologist. I am deeply grateful to Moises and Kendell for having shared so much of their time and thoughts with me, and although their work is not directly included in this thesis, the talks and exchanges we had have been an important part of the foundations of how it is framed.

relationship between the concepts included in this thesis, I will show, is processual and overlapping rather than hierarchical.

From artwork to woolwork

Before 2010, Mónica Giron and I had already established a rapport. We had met and I had interviewed her when occasion was given in several places: Spain, Sweden, Uruguay and Argentina. During 2010 I was living in Montevideo, Uruguay, and our exchange continued. I spent time with her in her home city, Buenos Aires, just across the water from where I was based. She also had reasons to take the ferry over to Uruguay and we made sure to meet to keep up the dialogue. Our attention focused on one of her artworks: *Ajuar para un conquistador* (Trousseau for a Conqueror)[7] [8].

7 On the artist's request, I will keep the title in Spanish throughout the thesis, referring to it as "Ajuar para un conquistador" or the shorthand "Ajuar".

8 A trousseau is a bride's outfit of clothes and house-linens (Ayto 1993; Weekley 1921).

Figure 0.1 One of the pieces of Ajuar para un conquistador (Trousseau for a conqueror) Mónica Giron 1993
The photo shows one piece of the *Ajuar* series of about thirty knitted pullovers for Patagonian birds. This one is made for a Chimango (Phalcoboenus chimango, commonly chimango caracara) which is a bird of prey in the Falconidae family. The artwork is a pullover for the Chimango which imitates its size and physical features, and is knitted from Merino wool. The only other material used are some buttons that match the pullovers's, and thus the bird's colors. (Photo Mónica Giron).

Figure 0.2 A Chimango bird.
The Chimango is native to the Southamerican grasslands and its habitat extends over the whole region, andit is the most common raptor of the Argentinian Patagonia. Its length is typically 37-40cm. Its mantle and back are edged with brown feathers. Its neck, chest, abdomen and belly are light brown. Its wings have a dark brown stripe. The tail is light brown with a dark brown band. Eyes are brown. Legs are light gray in the male and yellowish in the female. This raptor has proved to have a strong explorative tendency and is known for its low neophobia (that is dread of novelty or fear of that which is new to it) as well as problem-solving abilities when exposed to new objects or situatons (Baillie 2004; Biondi, Bó, and Vassallo 2010; BirdLife International 2012).

Ajuar para un conquistador is a group of thirty apparels. They are knitted *from* Merino wool *for* various Patagonian birds that are – to some degree – in danger of extinction. The costumes echo the shapes and colours of each bird.

Giron wanted to comment on and give form to a concern about how the presence of Merino sheep has had an impact on the South American grasslands and its inhabitants, including these birds. Giron's artwork is in this way an impulse to give back some protection to these now threatened

birds, whose condition has been altered since sheep have expanded and sheep farming has grown in the region.

This quandary triggered and began to position my study: *What work does wool do – how does it matter?* The artwork, in this way, has oriented the focus of this study: it quite brilliantly draws together the artwork and the woolwork through the very material – wool. The link is further strengthened through an etymological revision of the word 'art' which exposes the word's root meaning as 'to fit together, join' (see also 'article', 'articulate', and 'artefact'), and that the word was originally semantically connected with crafts and skill. It was only by the 17th century, that its association with 'creative' or 'imaginative' skill rather than 'technical ability' resulted in less semantic overlap between the words 'art', 'skill', and 'craft'. Art is often put in contrast with science, and is then understood to be an ability to adopt a more flexible approach, and thus in divergence with the application of rigid theoretical or scientific principles. A final noteworthy point is that since the middle ages, art has often been contrasted with nature, see the word 'artificial' (Ayto 1993; Weekley 1921; see also Ingold 2001).

These inquiries triggered my curiosity about the controversial and complex presence of Merino sheep and their wool in the Southern Cone, and lead me to trace the wool and its work (its impacts, effects and transformations) in the region. In other words, Giron points to some trouble around the sheep. I suggest staying with the trouble (Haraway 2010; 2016) ethnographically, to see what happens.

From woolwork to 'un-sustainability'

During fieldwork with the woolwork, a cluster of concepts that linked it to the notion of 'sustainability' repeatedly made appearances. It was often spoken about as part of the wool's inherent capacity. People I spoke to would affirm that wool is sustainable, more so than other textile fibres. Wool is 'vital', 'organic', 'natural', 'ecological', "environmentally friendly", and therefore 'sustainable', I was told. There was an easy underlying equivalence: natural = sustainable.

Yet, upon closer inspection, the 'sustainability' aspects of the wool were hardly ever as clear-cut. For instance, it was not always obvious if the wool's identity as sustainable meant something more than just a material advantage over other textile fibres. Nor was it completely evident how (if at all) the widespread debate about a necessity to search for 'sustainability'

had any concrete influence on the practices related to wool. The term, when used, was never used without ambiguity. There was, I observed, a distinction between the *notion* of 'sustainability' (how to deal with the legal and ethical requirements imposed to prove and affect the sustainable aspects of wool) and the *concerns* for 'unsustainability' (how to handle risks regarding 'unsustainable' conditions around wool).

In other words, the term, as such, was seldom cherished; the concerns – the trouble and the controversy behind 'un-sustainable' situations and effects – were often appreciated and discussed. For instance, on my straight forward question about what 'sustainability' means to him, and to the work he knows with the wool, a laboratory technician informant answered that since it had become a political term, it hadn't necessarily added much, however, he continued, '*para nosotros se trata de mantener la lana'* – what matters for us is how to maintain the wool; how to make sure it continues on; how to *keep it going*; how to care for it. He says that 'sustainability' matters to wool in the sense that it activates questions about how we can encourage its *ability to sustain* in spite of the challenges it faces. "It seems to be a very European topic", one woolworker reflected. "Then of course", he continues, "our wool here is *part of a larger whole*". "When you look…wool is everywhere", he laughs.

At the same time, I was often reminded – and urged not to forget – that "wool from this region is wool from this region", e.g. "Patagonian wool is Patagonian wool". One weaver told me, "*Tenés que tener en cuenta donde estás. La lana de acá no es la misma que en otros lugares"* – "you have to take into account where you are. Other wool, from other places, is not the same", he says. It successively became clear to me that people saw the wool in the region as both particular and general, simultaneously 'small' and 'big'. It is 'sustainable' and 'unsustainable'; it both 'sustains' and 'unsustains' at once.

Woolwork was about maintaining a balance between 'sustainable' and 'unsustainable' aspects of its life. 'Unsustainability' was hence more a concern than 'sustainability' was a fact.

In his paper "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern", Bruno Latour (2004) suggests moving conceptually from 'facts' to the focus on 'concerns'. This implies attending to how 'matters of fact' may become 'matters of concern' by situating them in practice. In a later publication, Latour distinguishes 'matters of fact' from 'matters of concern' explicitly:

> A matter of concern is what happens to a matter of fact when you add to it its whole scenography, much like you would do by shifting your attention from the stage to the whole machinery of a theatre. […] Instead of simply being there, matters of fact begin to look different, to render a different sound, they start to move in all directions, they overflow their boundaries, they include a complete set of new actors, they reveal the fragile envelopes in which they are housed. […] Matters of fact were indisputable, obstinate, simply there; matters of concern are disputable, and their obstinacy seems to be of an entirely different sort: they move, they carry you away, and, yes, they too *matter* (2008:39, original emphasis).

The focus in this thesis is not on 'sustainability' in a factual sense, as a problem to be solved or an ideal towards which to work. My interest is instead in how 'sustainable' aspects of the wool are balanced with 'unsustainable' conditions. In other words, my intent is to complicate 'sustainability', and explore a woollen sense of '*un-sustainability*'. This implies paying special attention to the hyphen, i.e. to what goes on *between* 'sustainable' and 'unsustainable'. Throughout this thesis, this is an underlying concern and preoccupation. The importance of '*un-sustainability*' in this thesis is thus as a 'matter of concern' rather than as a 'matter of fact'.

The following fieldnote will help to clarify this stance further. I took it during the annual meeting of the IWTO (*International Wool Textile Organisation*) in December 2014, an international networking event. That year it was held in Brussels, Belgium.

Figure 0.3 The IWTO meeting of 2014.
The IWTO meeting of 2014 was held in the European Comission building in Brussels. The photo shows some of the particiapants chatting during a break between talks.

I noted that not only did the notion of 'sustainability' play an active part during the entire meeting, but also I perceived a distinction that grew between 'sustainability' as a political term and some of the challenges behind the term. I wrote:

> Sustainability was on the agenda throughout all the various sessions and came in from different corners in a number of ways during the meeting. For one, there was a discussion on whether sustainability was actually a suitable term to use when referring to wool and its production. One member had recently attended an academic conference and found that people were highly critical to how the term is currently being used. The term evoked suspicion or even rejection, she explained, and had been banned and contested during that conference as either overused or as used for mere marketing purposes – *green washing* – that covered up ambiguous issues behind a product for it to sell better. Another participant responded that, while sustainability is a "trendy term" it has been born out of a crucial concern about our future and we must take it seriously as we continue to work with our wool.
>
> At this, one participant raised the question of the factual support behind promoting wool as sustainable. Wool is a material that has sustained over time, and its production may be sustainable now, *but it wasn't historically*[9], he reminds. We need to remember this when we say that it is sustainable. We need to know – to make sure – that what we promote is produced and distributed in sustainable ways if we are to state that it is. The question is, then, how can we know?
>
> A hill farmer (thus introduced) is also the Chairman of one of the Marketing Boards. When he speaks, he stresses the importance of finding ways to take both the internationally set standards for wool production and the sheep's wellbeing into account. For this, however, he uncovers something that he speaks of as a dilemma: sheep farmers of today, like him, have to deal with tensions between the requirements of standardisation (for instance the guidelines and legislations of transparency) and the need for wool industry to grow and the wool to sustain with profit.
>
> During the lectures and over lunch, the topic is kept alive. I sat with a businessman who owns a large weaving company. He spoke about transparency as particularly problematic when it comes to wool (transparency being a key term in legislations that, as the policy programs

9 He does not make explicit what he specifically refers to. My interpretation, taking into account other people's comments, is that he refers to the issues of desertification that have often been associated to the presence of sheep in grasslands.

go, “aim to foster sustainable mindsets”). It implies, among other things, that any buyer of any product in Europe is by law entitled to get information about the exact origin of the product. Yet, this businessman points out, trade and customs regulations for animal product are complicated and often collide between trade zones. Also, he states, the tonnes of fibre that are transported annually across both national borders and oceans never move in straight lines. There are so many steps and so many transportations during the manufacturing process, and it generally include mixing of qualities and origins. This makes transparency laws hard to comply to. It is very difficult – if not impossible – to trace an exact origin of a woven fabric, the businessman points out. The origin is often multiple.

(Fieldnotes)

Some of the problems discussed during the IWTO meeting are issues that, as we shall see in chapter two, also resonate in much literature and recent research on ‘sustainability’. What is foregrounded is how the wool and the work with it forms part of several larger wholes, as well as ‘sustainability’ being an ambiguous term in the woolwork practice. Also, the quotes and notes included challenge the connections between practice and policy, showing how ‘sustainability’ debates are themselves implicated in the processes they claim to change or study.

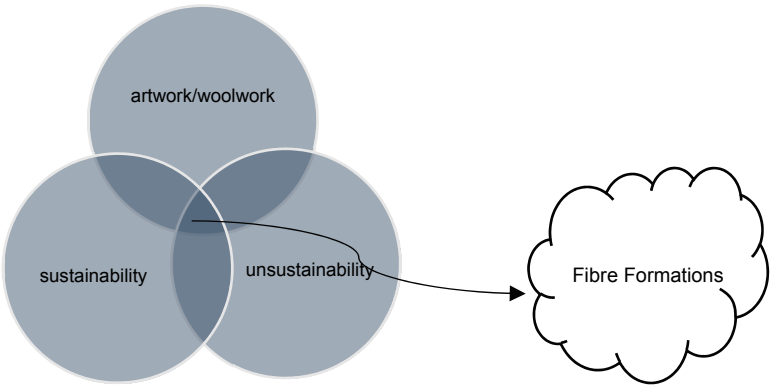

Figure 0.4 The incentive of Fibre Formations
The chart shows how the topics sustainability and unsustainability overlap with the artwork and the woolwork, and form overlap from which the approach of this study is pulled. The meeting point between these topics is, in other words, the incentive for the study’s focus.

From 'un-sustainability' to the need to reconsider standardized categories and modes of classifying

While the *term* 'un-sustainability' did not at the time form part of Mónica Giron's motivation to make the artwork, it was through her catalysing gesture, and eventually through my encounters once I had begun tracing the wool, that I became aware of a necessity to unravel 'sustainability' as a standardized category by situating it in practice – in the woolwork. This was not a question of attempting to redefine the term, nor to gain access to how the people I interviewed defined or understood it. It was rather a hunch that kept peeking its head out at me, whispering to me about the complexities of what was going on with the wool. The fibre was small and big at once; and as it was shaped and took form, it formed part of *several* larger multiscale wholes whereof the debate on 'sustainability' was one.

As I show above, the woolwork is connected to many of the issues that the 'sustainability' debate takes on, yet, the work and the wool worlds that I had begun to access did not quite fit into the debate, nor did it fit into how the debate was usually organized. There was, for instance, in the way people talked about, handled, and moved the wool, never a separation between 'economic', 'social', and 'ecological' aspects. The debate on 'sustainability' usually relies on such standard categories (sometimes 'cultural' or 'political' are also included), but, here, other ways of ordering and different acts of classification and categorization came into view. These acts had as much to do with ordering, organizing, and shaping the wool, as with relating it to other entities in the surrounding (other sets of actors), making associations, as well as forming collectives, all in order for it to fit and adapt, and, at the end of the day, for it to sustain. To quote the technician above, to "keep it going".

When I – at first together with Giron – began to explore the wool and its itinerary, presence, and impact in the Southern Cone, I could put the material properties of the wool in the centre of attention, while also tracing its transformations in the actual processing and manufacturing of the wool. My impulse to follow this kind of *trace* was enriched by the anthropological intellectual paradigm which engages in the rethinking of the place of the non-human in human relations (cf Gell 1998; Haraway 2008; Ingold 2006; 2010; Lash 1999; Latour 2000; Tsing 2001; 2008; 2015).

I was now facing acts of classification that did not easily slip into the slots of standard categories. Here, I found resonance in research conducted by

Susan Leigh Star and colleagues (Bowker and Star 1996, 1998, 1999, 2000; Lampland and Star 2009). Bowker's and Star's issue with classifications is that there is always an ideal definition of what a category is or should be, but this ideal is impossible to achieve. The result is that classifications – any kind of ordering into groups – always involve negotiations and collective work. A general preoccupation of these scholars is the question of how to make work which is otherwise invisible visible (see also Suchman 1995).

They dwell upon how the work needed to reproduce infrastructures, to keep things going, includes making some parts invisible by excluding them from the account (Bowker and Star 1999). The authors also suggest that a crucial focus to understand classifications must be on how classification systems clash. What happens to that which does not fit? These clashes are of particular interest since they form part of how categories are generated, and yet, they argue, they are most often rendered invisible. The authors refer to such clashes as '*slippages',* and highlight their influential agency – the invisible work that is folded into the result and most often not taken into account. In any classification, in any category, they argue, there is inevitably a slippage between classifications and standards on the one hand, and the contingencies of practice on the other (Bowker and Star 1999). As Timmermans and Epstein remind us, standards and standardization processes are powerful, "sometimes subtle, and sometimes not-so-subtle means of organizing modern life, and attention to them through research is crucial" (Timmermans and Epstein 2010:70).

This thesis offers a specific way of conceptualizing such 'slippages' and multiscale processes – the tracing, the multispecies encounters, the forming of collectives around the wool – by introducing the notion of *fibre formations*. Fibre formations, I argue, pull invisible movements that may dwell within woolwork of the Southern Cone, and beyond, into view. Articulating ethnographic details from within various fibre formations, I propose, may provide a means by which to add to our understanding of sustainability as a concern rather than a fact.

In certain ways, my study finds inspiration in Donna Haraway when she opens her book *When Species Meet* (2008) asking the question "What do I touch when I touch my dog?". Her question drives her to investigate anthropology and feminist philosophy, but also such diverse areas as grassland ecologies, Australian colonization, animal genetic research, and animal rights discourses (see Swanson 2013). Although my study has been

carried out from a different sensibility, from a different place and at a different tempo, its disposition could be framed as a response to a question as well: What do I touch when I touch my Merino sweater?

Fibre Formations

Corresponding to the focus on woollen fibre as being not only part of multiple larger wholes, but also larger than itself, this thesis brings forward the aforementioned approach that I term *fibre formations*. With this approach, although mobile and transformable, the fibre becomes the stable point and the anthropological *site* of this study (a stance which I develop below). Fibre formations is understood as both a methodological device (Candea 2013; Law and Ruppert 2013) and an actual place for more or less conflicting, more or less troublesome formations. The word 'formations', here, is used to signal a way of perceiving, relating and ordering; it is seen as a way of doing fieldwork and as a method for analysis (cf. Nielsen 2015). Formations are *both* the material transformations that the woollen fibre undergoes, and the impact it has upon its surroundings, i.e. the clusters of relations with which it engages and forms part of. I suggest that such impact is not necessarily measurable in terms of, for instance, desertification and alterations in ecosystems, but that it is about how lives – that is, human and nonhuman, as well as their interplay – *take place and are given form* along the wool's travel across different settings. Formations in this sense include modes of ordering, classifying and 'othering' in the world, both figuratively and concretely.

As I briefly touched upon, 'form' is both a verb and a noun. The word stems from the Latin *fōrma* (form, figure, model, mold, and sort), and as a noun it indicates a shape; a configuration; a condition or mode in which something appears. The verb, to form, denotes to make; to place in order; arrange; organize; to frame; to contract or develop relations or habits; and the manner of arranging and coordinating parts in a composition. All of these meanings are relevant for how I use the term in this thesis. 'Fibre formations' here stands for both the activities and their material effects: the shaping that the wool undergoes (Ingold 2014b) and the arrangements and communities it is part of.

In the analytical chapters that follow (Part I), I will show how 'fibre formations' do not exist in isolation, but both form and form part of several

bigger wholes, be they colonial strategies, historical accounts, geopolitical situations, global exchange patterns, international standardization policies, indigenous identities, industrial processing, regional ecosystems, farmers' lives, or artisan crafting, to give a few examples. These wholes or 'worlds' (Tsing 2009; 2010), do not always fit neatly together but may be conflicting, rub up against each other's versions of themselves and of others. They may move in closer and/or appear further away; they may overlap and/or interfere.

The terms form and formations is in this sense conceptually close to some feminist thinkers' usage of the words 'figure' and 'figurations' (Haraway 1991; 1992; 1997; 2004; Strathern 2002; 2004; Tsing 2005). Donna Haraway, for instance, reminds us how "Figures root people in stories and link them to histories" (Haraway 2004:1), and that "Figuration is about resetting the stage for possible past and futures" (ibid: 47). Forms and formations, I suggest, do just that. I have found, however, that the idea of formations is more apt for the framework of this thesis since it links to the actual work that goes on with the wool when it is shaped and takes form.

The term is empirically driven. While woolwork offers an extended list of possible metaphors for analysis (weaving the text, spinning a yarn, the thread of the argument, the plot as a clot, to mention a few), I find an advantage with the term formations in that it provides a sense of complexity, rather than conveying a simplifying or simplified view. Apart from the already mentioned association to the concept of figuration, formations is also directly associated to other concepts present in current anthropological research: 'worlding' by Anna Tsing (Tsing 2008; 2009), 'configurations' by Lucy Suchman (Suchman 2012), 'assemblage' by for instance Helen Verran (Verran 2009), 'networks' by Annelise Riles (Riles 2000) and 'ecology' in the sense Ingold uses it (see eg. Ingold 2012). I am not implying that these concepts mean the same, but that they stem from a current anthropological urge to refresh our ways to approach the task of doing research and of perceiving and interpreting that which we study – and urge that my study joins in with. I suggest that fibre formations allow for a partially renewed analytical framework tying a concrete link between woolwork and the specificities of the anthropological debates on how to study and add knowledge to the world.

Forms articulate relations as shapes; formations are the processes by which they are articulated and given shape. 'Formations' convey a sense of collective work: the processes of bringing together, organizing, relating,

and arranging elements (human and non-human, including for instance gestures, words, plants, animals, tools, laws, and documents) while disconnecting from others – 'othering' – and , how such collectives provide particular conditions for acting, making, and thinking[10].

Moreover, like much feminist work, it allows for challenging the inherited dualisms that usually run deep in our modes of ordering the world (cf. Haraway 2004:2). The notion of fibre formations moves the activities that are included in this study beyond a producer-consumer or buyer-seller dualism (which is otherwise often reproduced in conceptions of production processes and trade [see eg. Raynolds 2002; 2010)]). What is more, it also breaks down a notion of a commodity chain from 'rawer' to 'more cooked', because any 'fibre formation' is as 'cooked' as the other. It furthermore contests a linear view of time, from past to present to future, as well as any fixed gender division between female and male.

The fibre formations described in this thesis are unsettled arrangements of entities (objects, places, words, plants, animals and people) which are part of larger wholes, and their continuation (or 'future') is not necessarily exclusively associated to the next step in processing the wool. A fibre formation, I will show in the analytical chapters in Part II, does not necessarily develop into the next one in a progressing direction, as though moving 'forward'. It may stay within itself, looking inwards while connecting – entangling itself – with other parts, other formations. The term *fibre formations* is thus used as an exploratory device to unravel various temporal, ephemeral and enduring points of encounter ('worlds'), and modes of ordering (including perceiving time and classifying). They are in this sense both concrete, material forms, as well as symbolic, abstract figures that convey the 'social life' of the fibre, which includes social phenomena that evolve around it.

10 The notion of formations is in this sense also related to the how the notion of 'assemblage' has been proliferating in recent social scientific and philosophical literature (see eg. Collier and Ong 2005; De Landa 2006; Latour 2005; Marcus and Saka 2006; Sassen 2006)

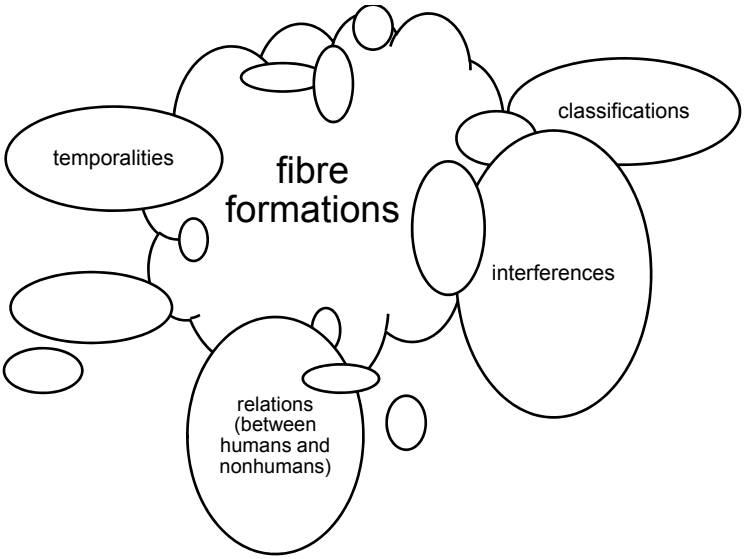

Figure 0.5 Dynamics of Fibre Formations
The figure shows Fibre Formations in relation to some of the coexisting and shifting phenomena that are pulled from the analytical descriptions in this thesis: temporalities, human and nonhuman relations, classifications and their interferences. The smaller, unlabled entities represent worlds and interactions not explicitly articulated through the thesis.

My methodological approach draws on recent debates in the social sciences in general – particularly anthropology – that think critically about the character of knowledge-making and raise the possibilities of renewed research methods (Lury and Wakeford 2012; Otto and Bubandt 2010; Riles 2006). It is informed by recent debates in material-semiotics that, apart from inspiring anthropological investigations, have influenced research in various other areas of inquiry: sociology, material feminism, post-colonial critique, the philosophy of science, political and human ecology, actor network theory (ANT), and science and technology studies (STS). With this, I emphasize that material-semiotics does not belong exclusively to anthropology, instead I consider material-semiotics to offer pertinent conceptual means to study wool; its transformative and 'social' life; and how its relations and classificatory processes happen and are reproduced – how wool dwells and what worlds it forms part of, and what relations it sustains in the Southern Cone.

The importance of interferences

While it is true that formations are messy, multiscaled, and often complex processes, it is this messiness and complexity that allows an exploration of how various formations, on different scales and in different moments, are brought into play. Here I argue that formations depend on *interferences*. I use the notion of interferences drawing partly on Haraway, but adapting and pulling it onto my own material by using it as an overarching trope – an umbrella term – to cover complex, more or less troublesome, sometimes ambiguous dimensions of fibre formations. I point to four key kinds of interferences, each one empirically drawn (i.e. closely linked to fieldwork observations), and each one driving one of the analytical chapters that follow. The sub-interferences, or variations, are *displacements*, *dissonances*, *dissociations*, and *distortions*.

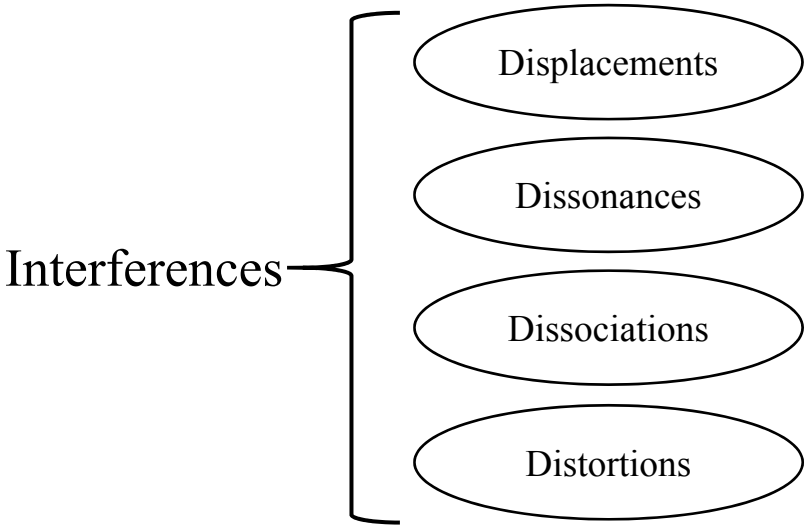

Figure 0.6 Kinds of interferences
The model shows how interfrences, as seen in this thesis, has multiple manifestations. The ones that appear in the model do not in any way form an exhaustive list, but are the main ones that I have found manifested in my material. All the chapters contain each variation, but each analytical chapter also has a particular one in focus. Chapter five (5) focuses on Displacements, chapter six (6) on Dissonances, chapter seven (7) on Dissociations, and chapter eight (8) on Distortions.

Interferences are here moments of disturbances, noise, and/or misunderstandings (Serres 1995), but also more or less long-lasting moments of tension or friction (Tsing 2005). One concrete example pulled from chapter five, is when at the end of the 19th century, Mapuche communities that where living up north where displaced to the south by

force in a military state project to occupy and so annex Patagonian lands to Argentina. Mapuche families that where already living there, and that had nothing or very little in common with the arriving communities, where violently grouped together. This, generated new units and frictious events, representing interference in the fibre formations – the production of wool was significantly affected. Another example (further explored in chapter eight) is when during an interview, an art collector accidentally makes a cut in one of Giron's artworks which he holds in his collection. As it is being mended, for a short time it is a knitted artefact and ends up outside the Art category. The artist interferes with the wool, replacing it during the mending process, and thereby reshapes the fibre formation. I argue that such interferences are generative aspects of classificatory patterns – important parts that are easily made invisible.

To grasp the notion of interferences as used by other scholars, I quote Donna Haraway:

> Reflexivity has been recommended as a critical practice, but my suspicion is that reflexivity, like reflection, only displaces the same elsewhere, setting up worries about copy and original and the search for the authentic and really real. […] What we need is to make a difference in material-semiotic apparatuses, to diffract the rays of technoscience so that we get more promising *interference patterns* on the recording film of our lives and bodies. Diffraction is an optical metaphor for the efforts to make a difference in the world. […] Diffraction patterns record the history of interaction, *interference*, reinforcement, difference. Diffraction is about heterogeneous history, not about originals. Unlike reflections, diffractions do not displace the same elsewhere, in more or less distorted form. […] Rather, diffraction can be a metaphor for another kind of critical consciousness at the end of this painful Christian millennium, one committed to making a difference and not to repeating the Sacred Image of Same. […] Diffraction is a narrative, graphic, psychological, spiritual, and political technology for making consequential meanings (Haraway 1997:16, my italics).

While my study aims to be less discursive by having specific empirical foundations and being grounded in my own fieldwork, I find Haraway's *interferences that form patterns* (Haraway 1997) to be excellent imagery from which to build up an understanding of my approach. She refers to such interferences that form patterns, as diffractions (see also Barad 2007:71-94), while I here choose to refer to them as formations. The reason is that I find formations to be slightly more concrete and graspable, and

above all, it is tightly connected to my fieldwork – not free-floating abstractions. Karen Barad, also drawing on Haraway, uses such patterns of interferences as her methodological device, defining them as "differences, contingencies and entanglements that matter" (2007:71). She further explains them in term of waves (physical phenomena such as sound waves, ocean waves, light waves) and uses the imagery of two stones thrown into the water, that make rings which end up overlapping and reshaping each other, forming a pattern. Simply put, interference patterns have to do with "the way waves combine when they overlap and the apparent bending and spreading of waves that occurs when waves encounter an obstruction" (Barad 2007:74).

Similarly, I suggest that the kinds of interferences described in the analytical chapters that follow generate the particular 'fibre formations' and include acts of sorting and ordering which do not only group together different pre-existing entities – such as people, things, materials and species – but are ways to shape and generate worlds.

Formations as generative world making

Inspired by work by Anna Tsing (see eg. Tsing 2005; 2015) and Donna Haraway (see eg. Haraway 1994; 1997; 2008), I see 'formations' as arrangements of 'parts' and 'wholes' that are not fixed nor isolated and always entwined (cf. Nielsen 2015). Entwined or entangled is here understood as more than just joined together; being entwined implies interdependence and mutual shaping of the entities involved (cf. Barad 2007).

In addition, Tim Ingold's work has been important for my approach. He reminds us how artefacts are forms that

> are not given in advance but are rather generated in and through the practical movement of one or more skilled agents in their active, sensuous engagement with the material. That is to say, they emerge – like the forms of living beings – within the relational contexts of the mutual involvement of people and their environment (Ingold 2000:88).

He develops the idea of form – and of forming – as processual and generative in relation to the skilled practice of weaving a basket.

> Consider the weaving of a coiled basket. Conventionally, we regard weaving as a kind of making. Could we not, however, reverse the argument, and regard making as a kind of weaving? The effect of this reversal […]

> would be to place the emphasis on the skilled character of the form-generating process rather than upon the final form of the object produced (Ingold 2000:290).

Ingold here presents the weaving of a basket as an activity understood as a process – a formation – that *grows between* the material and the weaver instead of focusing on the basket as the principle purpose and actual reason for the activity. I suggest that fibre formations are similarly emergent, and generative, and akin to Haraway's concept 'becoming with' which she uses, and develops in her *When Species Meet* (Haraway 2008; Donna Haraway 2010). Becoming with (and not 'becoming') are collective emergences that happen at

> every interleaved scale of time and space, in materialsemiotic places (here, not there; there, not here; this, not everything; attachment sites, not case studies for the general; oxymorons, not examples), all the way down, without end but also without ever starting from scratch and never alone (Haraway 2010:53).

Importantly, and as opposed to the mentioned kindred terms which also signal complex forms of heterogeneous relations (such as 'figurations', 'assemblages' and 'worlding'), 'formations' is a concept that has been elaborated following closely the path of my fieldwork. Formations as applied here are not as readymade containers of information that the researcher may (or may not) gain access to, instead they also form worlds and in doing so they potentially re-form the world.

By showing relations between various different and sometimes unexpectedly linked 'fibre formations', this thesis also indicates potential transformative capacities of anthropological research. When seeing anthropology as a practice of education (Ingold 2008a; 2014), that is as another kind of *formation*, anthropology is a process that entangles learning as well as knowledge production. In this way, within my approach fits a dimension that pays attention to how we as researchers may make our fieldsite. We may ask what a site is (Gille et al. 2012). Or even, how do we site?

Wool as an anthropological site

Although the subjects of my investigation are the concrete activities of relating, sorting and, grouping together practiced by those involved in processes around the wool, throughout the study I take the wool as the artefact that provides my site *per se*[11]: the wool is a site in its own right. Making wool *the* site at the centre of this study in each of my analytical chapters, suggests that my study is *not* a multi-sited ethnography. In what follows I elaborate on this position.

As a term for anthropological inquiry, ethnography has been previously problematized: as an anthropological method, ethnography is being challenged, redrawn and reassessed (Riles 2006). The assumption is that there are several different anthropologies, that there are many ways to do ethnography and that there are multiple ways to define the field and the fieldsite (Candea 2007; 2013; Law and Ruppert 2013).

Tim Ingold has recently reacted to how ethnography is often automatically linked to anthropology; however, he suggests that one does not necessarily follow the other:

> Ethnography is not a prelude to anthropology, as fieldwork to writing up. If anything, it is the other way around. The ethnographer writes up; the anthropologist — a correspondent observer at large — does his or her thinking in the world (Ingold 2014a:391).

Jonathan Friedman, a prominent scholar on global anthropology, in turn, has referred to an ethnographic deadlock when arguing that,

> The ethnographic impasse is a product of the linear relation between the anthropologist in the centre and his object in the periphery, one that tends to isolate the people being studied in both time and space, objectifying them in terms of categories already embedded in the ethnographic relation (Friedman 1994:7).

He suggests that a way out of this impasse is "to start conceptually with social reproduction rather than with social institutions", and that because

11 I use the term artefact throughout according to its etymological definition composed by *ars* + *facit*; *ars* meaning skill, (originally sharing its meaning with craft) and *facit* meaning an action, a deed, a course of conduct, effect, a result (Ayto 1999; Weekley 1921).

reproduction "traces the cycles leading from production to consumption to new production in whatever social form" it provides a more apt framework from within which we can understand the conditions under which the worlds we confront (and define) as researchers exist. He continues that "cycles of reproduction are not necessarily bonded by individual societies, and that, since they can only be defined with respect to time, they provide the total framework for the analysis of the cumulative and social transformation" (Friedman 1994:7).

We see that ethnography is not a self-evident method. Nor is the understanding of 'fieldsite' clear-cut. Mark-Anthony Falzon writes:

> Conventionally, ethnography has involved the idea – if not necessarily the practice – of a relatively long term (typically several months upwards) stay in a field site of choice. The site was understood […] to be the container of a particular set of social relations, which could be studied and possibly compared with the contents of other containers elsewhere. To some extent, the contents might also be generalized into area, regional, or, most optimistically, universal knowledge (Falzon 2016:1).

Various impulses to come away from these conventions, as well as to find renewed ways to think about and do anthropological fieldwork have been discussed. Multi-sited research has been a legitimate and powerful proposal to find ways to study the world when we see it as interconnected. It implies, in concrete terms, following a subject across boundaries, be they geographical, temporal or both. According to George Marcus, a multi-sited approach assumes that 'the global' (that is, anything beyond the 'local') *affects* the local (Marcus 1995; Falzon 2016; Juul Nielsen 2010). The idea is that collecting information from various sites helps us overcome the limitations of the bounded local fieldsite.

There may, however, be a danger that the approach, when applied, bites its own tail, if assuming that by following a subject, and joining together the multiple sites visited, the researcher gains a different perspective than the subject that is being followed. The researcher is then the person who becomes global or 'multiple', rather than the subject or the site (Holbraad and Pedersen 2009).

An alternative mode of understanding anthropological fieldwork as both 'global' and 'local' has been introduced through the *translocal* approach (Zhan 2009; Juul Nielsen 2010). This approach understands 'the global' as something that is *made* through translocal encounters, i.e. the 'global'

happens when the subject of study engages in translocal travelling between sites. This approach is acknowledged as a place-making activity in itself, as an emphasis is on the generative aspect of the encounter between researcher and subject of study.

Another response to multi-sited fieldwork has been Matei Candea's one, based on a call for a return to the bounded notion of the fieldsite, now rethought as an "arbitrary location" (Candea 2007; see also 2009). As a call for cutting the fieldsite because it appears endlessly – and overwhelmingly – multiple, Candea suggests the arbitrary fieldsite as an explicitly partial, limited and incomplete window onto complex aspects of the world. Candea asks, "if 'the field' is a framing cut out of a seamless reality, how does one make the cut?" Candea points out that the 'site' portion of the multi-sited approach has been taken for granted, when wanting to do fieldwork, which is one of our main challenges. How do we think of the site, and how do we site a seemingly seamless and unbounded world? (Candea 2007).

By drawing on the assumption that 'the field' can be understood not only as a place, i.e. as a spatial concept, but also as temporal, Steffen Dalsgaard and Morten Nielsen (2013) suggest that particular 'sites' contain and actualize different social times and temporalities (Dalsgaard 2013; Dalsgaard and Nielsen 2013). Thinking in terms of time, times or, better yet, temporalities can be a fruitful way to set the boundaries of the fieldsite (Ingold 1993; Ingold 2000).

These approaches have informed and helped define my methodological decision to define the wool as the site of this study. For one, both my study and wool are 'temporal'; 'temporal' here understood as relating to time and passing, but also as worldly, earthly, sensual in several ways (Ayto 1993; Weekley 1921). The question of temporality runs within all the upcoming analytical chapters as they demonstrate coexisting times, paces, cycles and rhythms. While I do not always make it the dominating trait of the work, in all the different moments of conducting this study I have had the presence of time in mind, concentrating on how time is conceived and how it affects how people work with the wool. For instance, on the grasslands, the presence of sheep has been determined by colonial history, and while the enormous distances slow down every displacement, the yearly cycles of breeding and shearing the sheep is also part of the temporalities dealt with by the farmers. Another example of coexisting temporalities, is in the laboratory where I observe routines that maintain an environment that is to

be ‘timeless’, because ‘neutral’, exact and clean, in order not to affect the mean value of the wool that is measured, while at the same time the ‘rush-hour’ of the activities happen during the shearing season and explicitly sets the pace.

In a literal sense, the study is ‘temporal’ because it builds on fieldwork conducted on various occasions, with various intervals, combining events and moments. Additionally, wool is a material that has travelled, transformed and sustained *over time*.

The fieldwork *has* taken place in multiple settings, because the wool appears in multiple setting, and I have followed it there, yet these could also be understood as temporal. The wool moves between various temporal worlds. When focusing on the *processes of reproduction* with and around the wool, along with Friedman’s suggestion, the prominent particularity of the position of wool in my study is that is has become the stable point. As we shall see, not only does the wool pass through a number of settings and temporalities along its transformational processes; multiple temporalities also pass through the wool (memory, stories).

In this way the woollen fibre as a *node* or a *clot* is in itself so ‘pregnant’ with topics to explore that it is quite enough to trace and unravel how it is reproduced and what it reproduces as a site in itself. I have therefore explored the wool with a curiosity on how, as Marilyn Strathern proposes, “[a] 'small' thing can […] be made to say as much as a 'big' thing” (Strathern 2004:xix).

By letting Merino fibre be the smallest common denominator of each description that follows, the wool as an anthropological site shows how variations of temporalities and categorizations, morph and add to certain normative categories and also to linear notions of time. This, in turn, I propose, contributes to recent reflections on the capacity of anthropological research to destabilize dominant norms and distinctions by adding insights and knowledge to the world.

Aim, scope and research questions

What can anthropology say about people's ways of balancing their lives between unsustainable and sustainable conditions? How to articulate this without losing sight of the complexities and ambiguities it embraces? How to situate it without getting it stuck in predefined slots?

Throughout the thesis, I show how 'fibre formations' are generated and how they also generate relations as part of something larger than themselves. The impetus of this thesis is methodological, when it argues that anthropological modes of doing research can be used more and in better ways to add to our understanding of the world today and of timely concerns within it. More specifically, the thesis is an anthropological response to the issue of un-sustainability, in the sense that it strives to describe *how* wool – a sustainable fibre – sustains, and *what* the wool sustains; what formations it brings forth, and also how woollen fibre forms part of larger wholes. Un-sustainability is a concern that is part of the *motivation* for the study – it is not an analytical term, nor is the aim to define or re-define it, and it does not in any way drive the fieldnotes or the thesis as a whole.

Instead, by loosening up sustainability as a standardised category, the study builds on the premise that standardised categories are not necessarily always helpful when striving to understand and act upon unsustainable patterns. If normative categorization is not viable, but need to be rethought and reconfigured, how can we take on categories and classificatory work as they happen in practice?

The purpose is, thus, to investigate what dimensions of category work become visible through 'fibre formations', relations and acts of classification that surround wool. Concomitantly, the approach suggests a renewed way of thinking (and re-acting) the anthropological site, and the methodological task of 'siting'.

One research question drives each analytical chapter (5-8):

- *How does sheep farming form part of the grasslands' composition? (Chapter 5)*
- *How does laboratory measuring matter for the making of the wool? (Chapter 6)*

- *How does spinning the yarn affect the formation of the grasslands? (Chapter 7)*
- *How are woollen artefacts held into place through classificatory work? (Chapter 8)*

Overview and organisation of the thesis

Part I, Approaching Fibre Formations, holds chapters one, two, three and four, and forms the background to the subsequent analytical chapters: five, six, seven and eight. The first four chapters (1-4) include a brief background to the presence of Merino sheep in the Southern Cone, a deeper review of theoretical precedents, methodological considerations and methods as tactics, while the latter four chapters (5-8) are empirically based.

Chapter two and three further motivate the focus of my study. Chapter two (2) is a review that first turns to how the current debate on sustainability has taken shape in the literature, and second review some relevant research as a means to position my own study. The focus lies on anthropological responses to the issues addressed in the sustainability debate, as well as on other studies conducted on different materials. Chapter three (3) presents the analytical framework for this thesis, discussing the theory-methodological approaches that have informed the argument of the thesis. Chapter four (4) sketches, in concrete terms, the research methods that I have used to collect, code and analyse my material. It also maps out the specific settings where the fieldwork has taken place.

Part II, Fibre Formations, holds the four analytical chapters (5-8). They do not in any way suggest a fixed chronological order or a chain of production, nor do they follow the order in which the fieldwork has carried out and the material collected. (In fact, some of the fieldnotes of the last chapter were "the ethnographic moments" [Marilyn Strathern 1999] that triggered the shift of orientation that I have described in the preface). However, the chapters aspire to pay respect to a certain flow in the processing of the wool. This sensibility has shaped the setup of the chapters, starting with sheep farming and ending with woven or knitted artefacts.

I view each chapter as a 'fibre formation', and as such an exploration of working with the wool as the smallest common denominator in

anthropological analysis (as well as in each activity presented), to find ways to apprehend aspects of this analysis that reflects the concerns and approach I have laid out in the preceding pages.

Each chapter's title has its selected proposition, which resonates with its argument. This is a gesture that is inspired by Michel Serres' "philosophy of prepositions" through which he argues for considering prepositions, rather than the conventionally emphasized verbs and nouns, as the linguistic keys to understanding human interactions (Serres and Latour 1995).

Each chapter builds on the theme of 'fibre formations' and include acts of classification, suggesting that acts of sorting and ordering do not only group together different pre-existing entities (such as people, things, words, materials and species) but are ways to shape and generate worlds. As I have suggested above, the stability and dynamics of these worlds relies on interferences. The chapters are internally organised around a series of interferences and modes of classification (grouping together) that evolve around Merino wool.

In chapter 5 these classifications involve the landscape, with the presence of sheep, historically and today, as well as the farmers' skills and care for both the sheep and the landscape. In chapter 6, what is at stake is the laboratory technicians' classification through measuring of fibre to define its qualities. Chapter 7 contrasts workers' involvement in manufacturing procedures in industrial environments with those of artisans in their workshops. Chapter 8 examines an artist's and art collectors reshaping of the knitted work of art, juxtaposing it to a sales woman's account of a sweater from the retail industry.

Chapter 5, *Displacements on the grasslands,* is an inquiry into the making of the geopolitical landscapes of classification in relation to sheep farming. *How is sheep farming part of the grasslands' composition?* The chapter describes movements from one place to another on the grasslands. These movements imply processes of reordering, re-groupings and re-otherings that, over time, have affected the current predicaments of the grasslands. The chapter conveys displacements as part of the landscape making on the grasslands. Displacements are here understood as movements of people, materials and animals, from one place to another in a performative sense, i.e. these displacements generate other relations, other groups and other living conditions on the grasslands. Displacements, in this way, disrupt one order to produce another. By exploring the composition of the landscapes

through such displacements, I trace the making of the geopolitical landscape of classification in relation to sheep farming. I bring in pre-colonial, colonial and contemporary histories and show that particular classificatory circumstances have been at the centre of the region's wool activities.

Chapter 6, *Dissonances in the Laboratory*, does what the title suggests: it explores dissonances as they occur in a wool-testing laboratory. The term dissonance refers to noise, misunderstandings and misconception. The aim in the chapter is to trace an understanding of *how lab members measure and make things matter* for the wool-making and for the communities that take shape around the wool, asking: what work do measurements do? The chapter extends our understanding of the landscape of classifications that have shaped the grasslands and the wool, by examining how they are made inside the laboratory.

In the first section of the chapter, I trace how the classification of Merino wool technicians, take in and elaborate the development of the standardised measurement for the wool industry. By tracing narratives within the laboratory activities, I specifically focus on the practices of measuring that international standards for classification have inspired. In the second part of this chapter I trace some of the dissonances that the standardised measurements trigger. I demonstrate how the technicians handle standardised classifications of the wool, and how these are part of a reconfiguring of the regional wool production. It also shows that there is a continuous balancing going on in the laboratory between the making of "stable facts" *about* the wool (as inherent to it) and the complexity of the activities *around* wool in the region. This balancing forms part of how classificatory dissonances are dealt with. The descriptions highlight that, although presented as a timeless intermediary service, the measuring of the wool in the laboratory is at the same time known to have consequences for sheep, people, and a multitude of other organisms and communities in the region.

Chapters 7, *Dissociations with spinning,* turns to the manufacturing practices of the wool to inquire *how spinning the yarn affects the formation of the grasslands.* I examine the processes of manufacturing, and relate them to storytelling. I use the notion of *dissociations*, referring to separations, disconnections or cuts that complicate the straight line of regional historical accounts, and by describing a distinctly regional mode of shaping wool.

If all wool bears traces of its own history, it can tell us stories about itself, as long as we know how to listen. Consequently, the "native" wool on the South American grasslands, whether processed industrially or in artisan workshops, recalls colonial histories and forced conversations with power regimes. The chapter provides insights into how spinning, knitting and weaving are acts that rely on skills, care, and storytelling. These are acts and dispositions which, in turn, engage geopolitical formations by dissociations and affect the wool's ability to sustain in both material and figurative terms. The chapter shows how the formation of geopolitical predicaments of classification are complicated as the wool is spun and woven.

Chapter 8, *Distortions among artefacts*, uses the theme of *distortion* – that is, miscommunication, "out of shape" and/or ambiguousness – to compare two sweaters and their associations. The aim is to trace an understanding of *how these artefacts are held into place through classificatory work.* One of the sweaters is a work of art, the other a retail pullover. The analysis shows that for the artefacts to hold together as wholes, and to keep their balance between uniqueness and ubiquity, they depend on a number of distortions. These include different versions of what entities are spoken of as present and/or absent. The comparison between the two sweaters also displays that although they are sometimes cross-cutting, they are just as often overlapping.

In all these chapters I show how dynamic, shifting, and even conflicting classifications of wool are made to 'hang together' on the grasslands. The thesis shows that, even within the impact of powerful regimes, strict standards and dominating categories, woolworkers' acts of classification are always multiple and, at times, unstable.

Finally, in PART III, the conclusions, revisit the fibre formations described, summarising the main points and arguments of this thesis. I also return to the questions posed in this introduction. I pull back in the core claim of this thesis: that fieldwork on the un-sustainability of wool on the South American grasslands demands that we develop forms of relational and less human-centred anthropology that pays more attention to the world-making, generative force of classifications.

This in turn, I suggest, promotes anthropology and anthropological modes of inquiry as fruitful ways to grasp and add to current debates – such as those on sustainability – by cutting across dominating narratives and the regimes of fixed classification systems. In the conclusion, I also indicate some of the considerations that this thesis may inspire for further research.

Part I.
APPROACHING FIBRE FORMATIONS

1. Background

Sheep are ancient creatures[12]. They are believed to have been domesticated by nomadic people in the Middle East and Asia, between 11.000 and 9000 BCE. Woolly sheep are to have developed around 6000 BCE and the wool was used for trading[13]. Today there are over 200 breeds of three main types: hair sheep (bred for their meat), wool sheep, and double purpose (bred for both meat and wool). These categories are further subdivided. Sheep can be found practically everywhere, but production for export is more intense in areas with large extended grasslands.

12 Fragments of woollen fabrics have been found in the tombs and ruins of Egypt, Nineveh, and Babylon, of the early Britons, and among the relics of the Peruvians. The first well-documented evidence of wool textiles dates from the Bronze Age. Although at times the textiles themselves have been found, more commonly the equipment used in textile production, such as spindle whorls, loom weights, and combs, have been discovered. With the Iron Age, new weaving techniques developed, and more complicated designs were introduced, together with the production of textiles of linen and silk. At this point, it also became common to have specialist weavers. The increase in textile production meant that the raising of sheep intensified in many regions during the Bronze Age. Toward the end of the Bronze Age, changes in the fleece of sheep in England indicate how the ovine rearing had increased, and accounts of trade in textiles point to an economic importance of this fibre (Zeuner 1963).

13 The symbolic and trade value of woollens have varied significantly depending on location and time. During the heydays of the North American fur trade, in the late sixteenth century, wearing a hat made of felted fur from the beaver indicated higher status, wearing caps made of sheep wool became a token for lower classes. About 200 year later in Central Africa, a chief of the Lunda kingdom managed his trade relations selling slaves in return for "fine woollens, cowrie shells, necklaces of blue pearls, velorio bread, looking glasses, and tea sets" (Wolf 1982/2010:227).

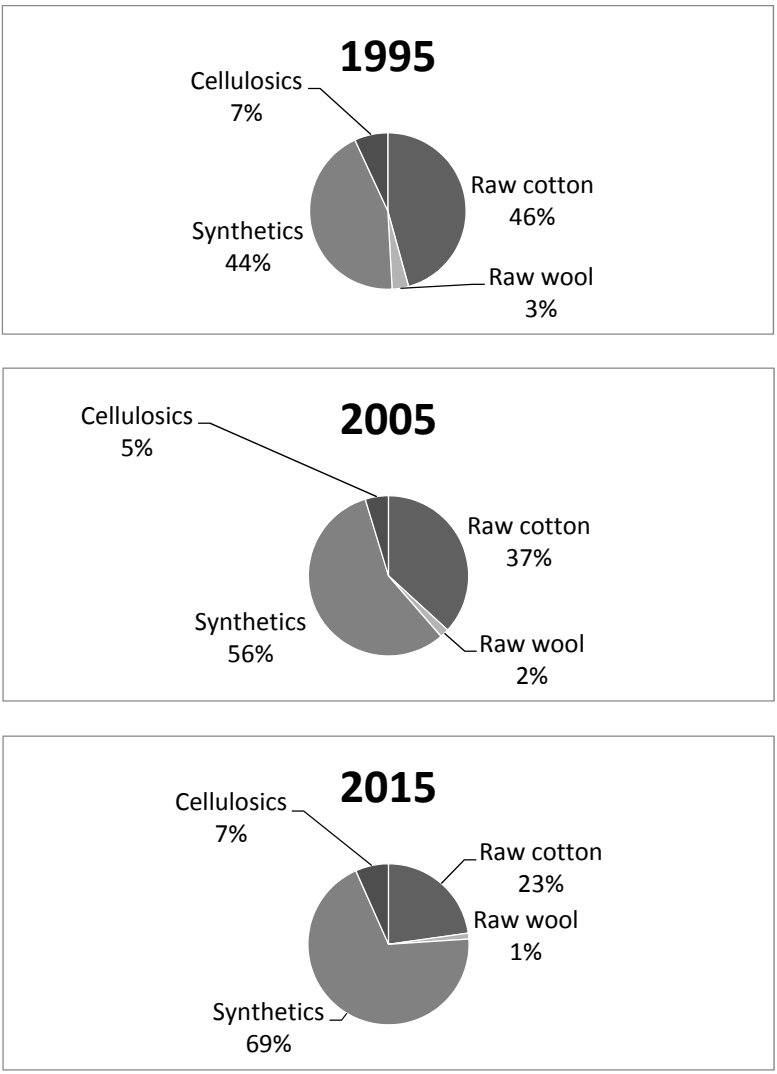

Figure 1.1 World textile fibre production from 1995 to 2015.
The charts show the world textile fibre production over the span of twenty years, from 1995, to 2005 and 2015. The charts are not meant to be exact in terms of numbers but to visualise the proportions of wool production in comparison to other textile fibres. Cellulitics stands for other plantbased fibres than cotton, such as coir (coconut, flax [to make linen], bamboo, hemp and jute). The production of other animal fibres (rabbit, mohair, cashmere, llama, yak, vicuna) is too small to show in the charts. The charts show a decreasing proportion of both wool and cotton over the years in correlation to a proportional increase of synthetic fibres. Examples of synthetic fibres are nylon, polyester, acrylic, spandex (petroleum products), and aramids (chemically prepared). The total amount of textile fibres produced has however doubled: from 43.652 kilotones in 1995, to 90.639 kilotones in 2015, which implies that the total annual production of wool has actually also increased. (Source: “CIRFS” 2017)

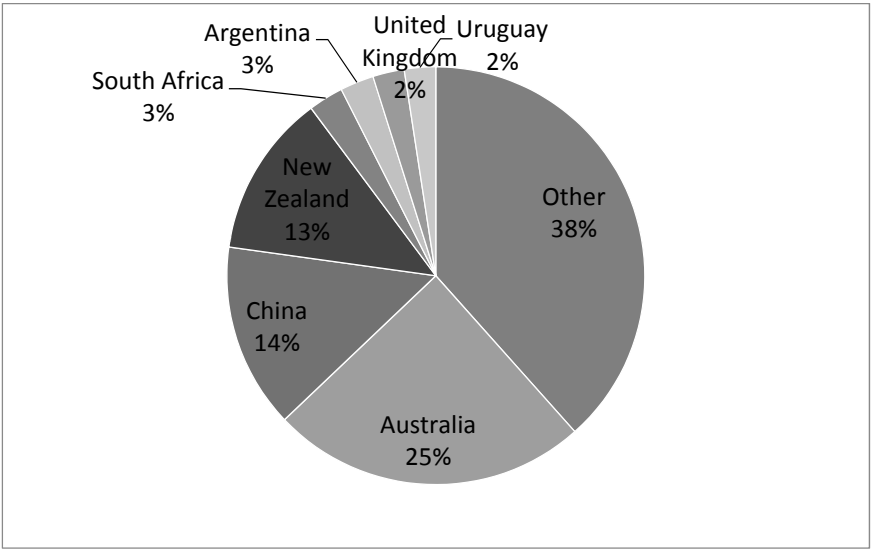

Figure 1.2 Wool producing countries in 2012/2013
The chart indicates the worldwide distribution of clean or exquivalent to clean wool production in 2012/2013. It shows that Uruguay, Argentina, the UK and South Africa produce comparable magnitudes of wool. Australia is by far the largest wool producer of the world, followed by China and New Zealand. The large field marked as 'other' correponds to the smallscale production of wool which, according the sources of the chart, occurs practically everywhere in the world. The total production of wool worldwide that year was 1070 kilotonnes. (Chart made by author from information found on www.IWTO.org and www.woolmark.com)

Today, the Sino-Australian wool trade relationship is considered the most significant in the international wool industry, although wool is produced, transacted and worked in many other parts of the world. For this purpose, millions of sheep populate large areas of pasture around the globe.

General statistics present information about either dirty, greasy wool (that is, wool taken directly form the sheep without processing), processed, or partly processed wool. The total estimated annual dirty wool production currently lands at about 2.1 million metric tonnes per year ("IWTO" 2016).

Australia produces around one fifth of that total, while China, New Zealand, Uruguay, Argentina and the UK each produce more than 50.000 tonnes. Exports of greasy and scoured wool amount to around 800.000 tonnes annually, exported to major textile centres to be spun and woven. China is the primary importer of raw wool (310.000 metric tonnes in 2007), followed by Italy. (China is both a mayor producing and consuming country). The retail value of sales of wool products is around US$80 billion a year ("Woolmark.com" 2016; "IWTO" 2016). Behind these numbers are

the transportation activities associated with dirty and semi-processed wool across oceans and, sometimes, back again for processing.

Of all breeds and qualities that are to be found today, it is the wool from the Merino sheep that is most prized. A Merino wool fibre is finer and longer than other kinds of woollen fibre. 60 percent of the Merino wool that is produced today is used for clothing. The global demand for finer woollen fibres is currently increasing, and the Merino breed is, by many that I have spoken to, thought to be walking towards a secured future.

All wool, including Merino, is composed of a protein termed Keratin (also found in hair, nails and horn). Keratin has a complex and unique structure covered with tiny overlapping scales, all pointing in the same direction. Its complex structure is what gives it its particular qualities. For instance, the scales do so that any liquid rolls off the surface of the fibre. Even if wool does eventually get wet, according to its traders, it not only keeps the body warm but also actually *generates* heat[14]. Raw wool fibres shorn from the animals back are coated in a grease that contains lanolin and is a natural water repellent. These characteristics of the fibre means that wool insulates against both heat and cold. Its material qualities, such as the ones described above, are often stated as important for the understanding of wool as a sustainable fibre ("Sustainable Fibers and Fabrics" 2016).

14 The hydrogen bond of water is broken and this creates a chemical reaction with the wool fiber molecules that generates heat when it has taken on a lot of moisture ("Sheep Wool Insulation" 2017).

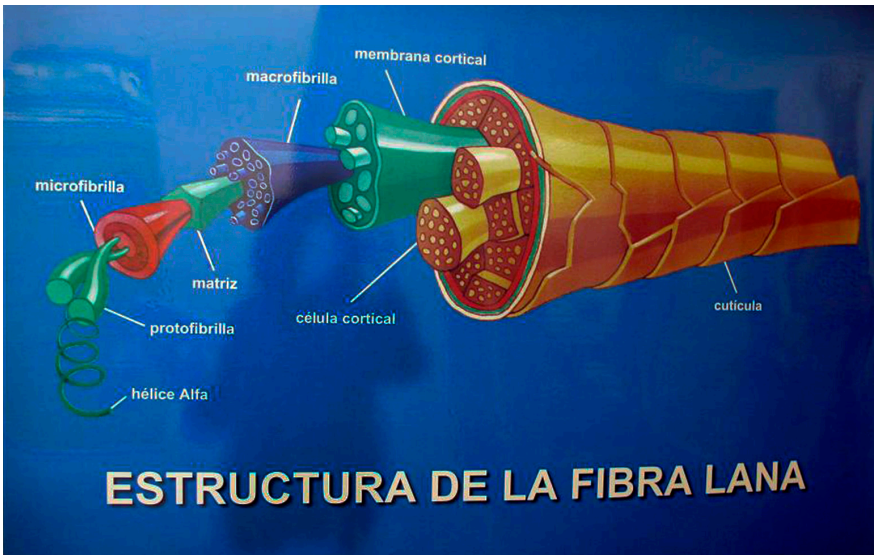

Figure 1.3 The structure of woollen fibre
The photo shows a poster indicating the inner structure of one wollen fibre. It is described by the people I have spoken to as a complex strucure which is protected by scales. This inner structure is also regarded as part of its 'sustainable aspects'. The poster of the photo was located in a laboratory that measures the wool's quality, and the reflection of the environment (including the photographer, i.e. the author) can be distinguished in the background.

There are, as we see, several aspects that make wool an interesting material. It is quite a quirky fibre: flexible and adaptable in both a concrete, material and a symbolic manner. A more recent trait that has been highlighted runs along with the currently magnified discursive and political focus on sustainability: wool is presented as the perfect example of a sustainable material.

Merino on the South American grasslands

The focus of my study is Merino wool produced on the South American grasslands, also referred to as the Southern Cone. Recent calculations tell us that there are a total of 46 million sheep in South America, whereof about 25 million pasture the Southern Cone grasslands (Merino 2014). The expansive presence of cattle during the 20th century in the region has been a topic for investigation as to their pasture's ecological effect and environmental footprint (Viglizzo et al. 2011). A 30 to 35 percent of

Patagonian territory is affected by severe or very severe desertification, and additional large areas of the land are going through desertification on a slightly less serious, but still significant scale (Mueller, Giovannini, and Bidinoist 2016)[15].

Beef was also a well-known base for the region's wellbeing during world wartimes, through international trade patterns. The Merino breed holds a similarly intimate link to the geopolitical processes of the region. During the mid 20th century, there was a 'sheep boom' and a '*merinomania'* in the region and the Merino breed expanded. Yet, between 1970 and 2002, there was a constant decrease of stock. Sheep production in Patagonia peaked in

15 The actual effect of the sheep on the lands has been subject to debate, investigation as well as governmental legislation and institutional input, since the beginning of the 20th century. In 1904 Clemente Onelli, an Italian scientist who had immigrated to Argentina, expressed his concern that the excessive number of sheep was destroying the fields. His opinion was that the fields needed five or six years of total rest from pasturing to recover. Bailey Willis, a geographer and geological engineer from New York, who worked as a consult for the Argentinian government 1911-15 and traveled the Sothern Cone extensively, mentioned the necessity to lower the animal load on the fields. The pasturing sheep obstructed the plants' production of seeds and so inhibited the natural reproduction, he observed. By mid20th century, up until the 1980's the interest and the number of investigations and publications on overgrazing and the effect of the sheep's pasturing in the region, increased. These investigations led to a series of governmental legislations and concrete projects aimed to gather information about, and protect, the fields. Also some techniques were developed for the controlling of the erosion and the most advanced processes of desertification: medanos or dunes (elevated matter to protect the lands). Several governmental institutions were created aimed to, among other things, focus on the theme. In the 1967 INTA Bariloche (*Instituto Nacional de Tecnología Agropecuaria*) was implemented to find ways to increase the ovine production in the area. It became a center for agricultural research carried out also in other parts of region. In 1972 the IADIZA (*Instituto Argentino de Investigaciones de las Zonas Áridas*) was created with a special research group that focused on desertification. In 1972 the UN held its conference in Stockholm on the Human Environment, and during this conference the UNEP (United Nations Environment Programme) was established. In the 1977 conference of the UNEP, held in Nairobi, Kenya, Argentina officially applied for international support and technical cooperation on the urge to work against desertification, primarily focused on the situation in Patagonia. This is how the LUPEDA (*Lucha contra la Desertificación en la Patagonia*, Struggle against Desertification in Patagonia) was established in 1990 – a cooperation between the INTA in Argentina and GIZ (*Deutsche Gesellschaft für Internationale Zusammenarbeit*, German International Association for Cooperation), and an important institute for the work against desertification. Some legislation was also implemented. In 1980 came Law 22.154, Economic reactivation of the Agricultural Sector in Patagonia, and in 1981 came Law 22.428 for the Promotion of the conservation of the Patagonian soils. The latter implied conservation of large areas of degraded land as well as a number of protected zones. Additionally, some public as well as private institutions were established in 1989. One of them were the PRECODEPA (*Proyecto de Prevención y Control de Desertificación en Patagonia*, a project for the preventions and control of desertification in Patagonia). Most of these projects focused on trying to control the most severely affected areas, without accounting for areas within a lower risk range of desertification. Lately, technological devices such as satellite images and measuring, have been developed and applied to combat the correlation between desertification and the presence of sheep (Méndez Casariego 2010; Gatti and Stryjek 2017).

1952 at more than 21 million head, but has today fallen to ten million. The ovine sector in Argentinian Patagonia today directly employs 23.000 people and the total volume of animal fibres that are produced annually in the region are 140 million kg ('greasy' or 'dirty' wool, i.e. weighed before processing), sheep wool being the main production. There are more than 600.000 farms engaged in the enterprise. Most are small holders with subsistence units, that usually also own some camelids or goats, yet there are numerous commercial ventures of varying sizes which produce wool for selling. The sector is said to be regaining life due to the increasing international interest in finer woollen fibres. The quality, fineness, finesse and complexity, as well as the uniformity of Merino fibre, has made it thrive. The spreading of the breed has also happened through fusions – crossbreeding – so that new Merino 'sub-versions' are continuously generated (Suttie, Reynolds, and Batello 2005).

Well appreciated for their ability to adjust, the Merino sheep and their fine, high quality wool, belong to a breed known for having been born under human observation and guidance, an artificial, 'cultivated' breed. In this way, the breed combines the survival of its own species with human interests in controlling, escalating and refining wool production. In addition, artificial insemination and embryo transfer identify exceptional animals to ensure and accelerate the spread of their genes. Along these lines of human-sheep relations, the international development of the Merino sheep is said to be entering a new phase, and the so-called 'objective fleece measurement' is used to further enhance the quality of the wool.

Huge parts of the South American grasslands are characterized by poor forage and scarcity. The harsh climate is attractive for being particularly favourable to breed Merino sheep. Sheep happily spread and multiply anywhere[16], but they do so particularly well here. Yet, warnings of processes of desertification have been called out, and efforts are made to control the flocks.

16 Advantageous characteristics of the sheep are their handleable size, early sexual maturity and high reproductive rates. Its 'social nature', relative lack of aggressive behaviour and the disposition to be easily led are also noted. Sheep are able to subsist on sparse forage and limited water. These features are probable reasons why the animal sometimes is referred to as stupid, alternatively represented as a symbol for devotion, peacefulness, virility or fertility.

Of all woollen fibres from sheep, the Merino is today regarded as the most sophisticated. While Merino is continuously enhanced through different techniques of crossbreeding or farming management, synthetic fibres are competing as they are to rapidly produced and work through other sales patterns. Sheep wool textiles cover only two percent of the total global textiles. Merino sheep farming on the South American grasslands also competes with other agricultural crops today (such as rice, palms and soya) that grow fast and generate more direct and profitable results.

The future of the Merino – its ability to sustain – is, in spite of everything, as uncertain as any future.

2. Previous research

> We are all here on earth to help others; what on earth the others are here for I don't know.
>
> W. H. Auden

In this chapter, I turn to relevant previous research and literature that help position my study. While my focus on woolwork has engaged a large amount of research themes, concepts and associations and suggested a multiplicity of domains and processes that might apply to wool in general, I have been obliged to exclude many of these from the present research in order to allow depth my enquiry. Therefore, I have centred this review of literature on two main areas that are closely linked to themes brought into view during my fieldwork.

After a brief background, I look into anthropological research that addresses sustainability. This does not imply a total and chronological review, nor do I aspire to embark upon an investigation into how solutions may be offered. My aim is to achieve insight into some of the ways by which anthropological inquiries have met up with the debate. The purpose is to, albeit slowly, move towards a position where my own study can be a contribution to the concerns that the debate enfolds. I subsequently concentrate on a selection of empirical studies that add to body of research on sustainability.

In general terms, sustainability is understood as the ideal, the good intention, which we must all work towards (in this sense it resonates with the first, solemn, part of Wystan Hugh Auden's saying "We are all here on earth to help others"). However, the review that follows exposes some underlying predicaments that the literature carries forward (that would find echo in the final, more down to earth, part of Auden's saying: "what on earth the others are here for I don't know") (Auden 1942; Davenport-Hines 2011).

Secondly, in this latter section of the chapter, I provide a synthesis of the chosen research where specific materials – including cloth – are in focus. These precedents have informed my own study, and driven it into its disposition, to explore and rethink a human-centred understanding of the world.

Background

The term 'sustainability' had already been employed in contexts of environmental issues before 1987. After the 'Report of the World Commission on Environment and Development: Our common future' (most often referred to as the Brundtland Report) was published in that year, the word 'sustainability' became most frequently associated with the expression 'sustainable development' (Brundtland 1991). In recent decades, these terms have spread and proliferated. Today they can be expected to appear on a multitude of governmental and educational programs, and they are indispensable for any business agenda. Next to 'human rights' and 'democracy', 'sustainability' forms a discursive part of any political strategy (Dahre 2008).

The scholarly literature is tinted by disagreements as to how to define and how to proceed with sustainability as a project. The discrepancies tend to depend on disciplinary methodologies and approaches. Most scholars agree, however, that there are a series of serious crises behind the expanded political usage of the terms. Richie Nimmo sums up the situation, when writing that "[t]he end of modernity, which has for so long been prematurely hailed, celebrated and discussed in abstract discourse, is at last upon us materially in the form of a world crisis, not merely of capitalism, nor of society, but of nature" (Nimmo 2010). Other scholars align with this view, adding an urgency to it when stating that "sustainability is not an issue that can wait for the next generation" (Susan A Crate and Nuttall 2016). These quotes signal that the place of *nature* and the perception of *time* are underlying issues that sit at the core of the debate.

A general and contemporary definition of the term sustainability is "the global problem of how to meet human needs in a world of declined material resources, persistent poverty, conflict, and resource degradation" (Bodley 2006; Susan A Crate and Nuttall 2016). Although "sustainability has different definitions for different people" (ibid), the standardised reading of sustainability and sustainable development is most often ordered in a

triptych of categories, or as "the three pillars": social, ecological, and economic.

The normative discourse rides on the aim to achieve "the reconciliation of social justice, ecological integrity, and the well-being of all living systems on the planet. The goal is to create an ecologically and socially just world within the means of nature without compromising future generations" (Brundtland 1991; Moore 2005). A more recent inclusion of a 'cultural' dimension and an additional 'political' pillar is sometimes supported[17] (Kagan 2014; Thiele 2013).

Recently, however, an increase in critique, accompanied by numerous redefinitions of these terms, has been published. The terms "sustainability" and "sustainable development" have been criticized for being overused, emptied out of meaning and even abused; accused of being mere buzzwords (Thiele 2013). Sceptical voices highlight that the term sustainability is vague, attracts hypocrites and fosters delusions (Robinson 2004). The most unconvinced reading suggests that the endeavour to achieve sustainability can be likened to a problem that has occupied mathematicians for thousands of year: how to square the circle – how to construct a square that is equal in area to a given circle (Robinson 2004). A 'circle-squarer' is one who attempts the impossible. Achieving sustainability is then regarded as a similarly impossible task. John Robinson writes that "The term sustainable development has been seen by some as amounting essentially to a contradiction in terms, between the opposing imperatives of growth and development, on the one hand, and ecological (and perhaps social and economic) sustainability on the other" (Robinson 2004). Others hold that 'sustainable growth' is "an oxymoron that ignores the limits of the system in favour of promoting ongoing consumption" (Farley and Smith 2013)[18]

17 UNESCO held the Summit on Culture and Sustainable Development in Stockholm 1998, which was followed by the UNESCO conference Culture: Key to Sustainable development in Hangzhou (China) in 2013. Both events focused on the link between culture and sustainable development ("UNESCO Culture and Development" 2016).

18 'Degrowth' is an example of a suggested alternative that involve encouraging "a renewed vocabulary for a needed new era" (D'Alisa, Demaria, and Kallis 2014).

Anthropological responses to the sustainability debate

Where anthropological insights play a part, the responses to the sustainability debate are various and particular. Alf Hornborg, anthropologist and foremost researcher on sustainability, highlights the importance of analysing the debate itself as it develops (Hornborg 2013). Hornborg discusses how the conventional discourse on sustainability fails to acknowledge the distributive, political, and cultural dimensions of global environmental problems. By showing how a series of interconnected illusions imbedded in the rhetoric obstructs a view of the political and global dimension of the debate, he argues that the discourse is stuck in a 'zero-sum game'. One such illusion, he states, is the fragmentation of scientific perspectives into bounded categories such as 'technology', 'economy', and 'ecology'. Another is the representation of inequalities in societal space as developmental stages in historical time. A third illusion, that Hornborg emphasises, is the conviction that 'sustainable development' can be achieved through consensus. He shows how the term sustainability in a sense therefore works against itself (Hornborg 2009).

Alf Hornborg further argues that much of the confusion regarding the prospect of sustainability derives from a lack of communication between the social and the natural sciences (Hornborg, Clark, and Hermele 2013). "Anthropological, cultural analysis should […] have crucial things to say about past, present and future concerns about sustainability, yet it is conspicuously absent from mainstream debate" (Hornborg 2011:38). A core reason for this absence, he continues, is that much of the debate is centred on natural scientific arguments. Yet, paradoxically, it seems to be such a logic of science that has brought us here in the first place (Kagan 2014).

What, then, does the logic of the sustainability debate look like? For one, the parametres that organise the rhetoric – 'development', 'growth' and 'future' (Brundtland 1991) – are concepts that stem from particular paradigms, where notions of universal laws and objectivity prevail. Among other things, this follows a logic of cause-effect; a linear temporal model (from 'a' comes 'b'), i.e. time is perceived as running in a unidirectional manner from past through present to future (Friedman 1992; Hodges 2008).

The convention also includes measuring by quantification, which relies on figures, numbers, objective facts and statistics. Some scholars highlight how the role of the natural sciences as unequivocally representing the

"reality of nature" is mirrored in the sustainability debate's principal focus on the environment (Escobar 1999; Tsing 2001). Heather Farley and Zachary Smith observe that the term *sustainability* many times seems to only be replacing the term 'environmental' (Flaum 2013; Farley and Smith 2013). Other authors conceive this as unbalanced attention to the economical or environmental aspects of sustainability, while they state that social and cultural dimensions are too easily forgotten. Hence, the social aspect of sustainability easily disappears and appears to be a "missing pillar" (Boström 2012).

Alf Hornborg and colleagues add a deeper historical dimension to the issues that the debate addresses (Hornborg 2009; Hornborg 2011; Hornborg, Clark, and Hermele 2013). They suggest that wider fields of relations must be taken into account, and that more complex ways of understanding sustainability need to be brought into the picture. Drawing on authors like Immanuel Wallerstein and David Harvey, Hornborg takes on a world system perspective. He points, for instance, to the prevailing unsustainable and unequal production and consumption patterns which were established during the industrial revolution and their core in the British textile industry's expansion and shifts from using wool to using cotton. These changes and displacements of fibres, he argues, also exemplify the establishment of the asymmetric flow of commodities, "the global economies of (natural) space and (human) time" (Hornborg 2006b), upon which the current world system still depends (Friedman 1994).

The culture of un-sustainability and the importance of paying attention to artistic practices

In a similar pattern of thought Sasha Kagan argues that a complex understanding of the 'culture of un-sustainability' is both possible and necessary, and that it should echo a complex understanding of nature; one that is not held back by the numerous binaries that otherwise prevail (such as, ecocentric vs technocentric; biocentric vs culturecentric; preservationalist vs conservationalist (Kagan 2014; Farley and Smith 2013)[19]. Instead, he turns to French philosopher and sociologist Edgar Morin's definition, where nature "is not only physics, chaos and cosmos

19 Sasha Kagan explains such binaries as leaning on two divergent discourses based on different ways of seeing nature: those who see nature as an art form [with an spiritual dimension of its own and who] prioritise the non-human (preservationists, ecocentric, biocentric), and those who prize utility [of nature for mankind and] favour the human (conservationists, technocentric, culturecentric) (Kagan 2014).

together. Nature is what binds, articulates, makes the anthropological communicate in depth with the biological and the physical" (Morin 1992:382; Kagan 2014).

For Sasha Kagan, the broader anthropological conception of culture is helpful in providing a necessary awareness of the inherent contradiction involved in the ordering into categories (or separating out) which is a driving concern within the sustainability debate. Rather than struggling to foreground one 'pillar' over another or advocating for a focus on their interdependency, sustainability is instead regarded as a complex playing field, and should be understood as a political term, not a neutral or scientific one[20]. Furthermore, Sasha Kagan sees a relation between sustainability and art. He argues that this link should be made more explicit and that room for this may be given by engaging with 'culture' – but both in the broad anthropological sense of the word, and as a reference to artistic practices. He points to the 'culture of unsustainability' as that which needs to be addressed in order to work towards sustainability.

Sustainability, in Sasha Kagan's work, is, therefore, the search for a way *out of unsustainability*. The aim is to work towards an alternative worldview altogether and this endeavour is going to be full of friction and resistance since it implies revising dominant narratives and powerful paradigms through a crisis of the Western worldview and mode of knowing (Kagan 2014). For his analysis Sasha Kagan includes a revision of some artistic practices in order to make two points: 1) art has, along with science, contributed to the establishment of the 'culture of un-sustainability' that we are confronted with today, and 2) artistic practices have been – and continue to be – interesting to pay attention to for bringing forward ideas about complexity and paradoxality into the debate on sustainability (Kagan 2014).

While Sasha Kagan points to the necessity of thinking nature as complex when promoting a renewed worldview, philosopher, sociologist of the sciences, and anthropologist Bruno Latour has a suggestion that is more radical. Political ecology is for him what the sustainability debate is really about. He argues that in order to truly make a difference, a radical shift needs to happen: political ecology has to let go of nature (Latour 2009).

20 For his definition of complexity Sasha Kagan highlights that complexity requires multiple logics which are neither separate from each other and put into neat boxes, nor integrated neatly with each other, but, rather, they enter into ambivalent relations and tensions (Kagan 2014:21).

Nature-as-one or 'Nature' as a neutral entity, indifferent to humanity, which is there to be explained by 'Science' in terms of 'facts' is, as Latour argues, also subject to political decision-making (Latour 2009; 2011; see also Jensen 2006). 'Nature' as a category, Bruno Latour suggests, blocks the way for sustainability. 'Nature-as-one', is one of the mayor impossibilities we have to work against, since, according to Latour, thinking in terms of one 'reality' and multiple interpretations or representations is only going to widen the gaps that already exist in the world, for instance, between social and natural scientists.

> There may be thousands of ways of imagining how kinship bring children into existence, but there is only, it is argued, *one* developmental physiology to explain how babies really grow in the womb. There may be thousands of ways to design a bridge and to decorate its surface, but only one way for gravity to exert its forces. The first *multiplicity* is the domain of social scientists; the second *unity* is the purview of natural scientists (Latour 2009:117).

Thinking 'multiple viewpoints' on the 'same' thing, is not going to take us closer to the shift that is now necessary (Latour 2005). Such a division between unity and objectivity on the one hand and multiplicity, representations, interpretations and symbolic realities, on the other, Bruno Latour argues, is not only annoying and unnecessary, but dangerous. Instead he encourages us to simultaneously manage sciences, natures, and politics, in the plural. As opposed to many other scholarly initiatives, Bruno Latour's project is one that does not suggest a redefinition of the term sustainability. Instead, he invites – or rather provokes – a rethinking of the complex concerns that the sustainability debate results from. This, in turn, he suggests as playing a fundamental role in re-shaping and sharpening concepts that are, by nature, too general and that can never embrace the diversity they strive to pin down (e.g. gender, culture, nature, time).

Instead of trying to fit the world into one concept or one category (be it "Sustainability", "Human Rights", "Nature", "Science" or "Art") a richer and more timely approach would be to explore and account for the multiple variations that these categories present. One way of beginning to do this would be by undertaking empirical studies.

Empirical studies on sustainability

The range of empirical studies that, in one way or another, involve the notion of sustainability is as striking as the number of such studies. To date, nonetheless, there is a scarcity of ethnographic studies that directly address the issue of sustainability, as far as I am aware after numerous searches and conversations with informed scholars. While there may well be anthropological approaches hidden within research projects and other fields of inquiry, such as human ecology, political ecology, cultural geography, globalization theory, and environmental history, ethnographic methods for collecting empirical material seem to be infrequent. Due to this, further empirical exploration of the subject of sustainability through ethnography could be beneficial. Instead, recent empirical studies on sustainability often aim to find ways to measure (quantify) sustainable development (to manage and control activities), or to show whether particular production or consumption practices are sustainable enough.

For instance, and akin to Sasha Kagan when he points towards the unsustainable ground of sustainability debates, Geoffrey Heal (2011; 2012) urges us to think more thoroughly about the *incommensurable* aspects of the basic values that the sustainability debate makes evident. His critique focuses on the impossibility of measuring – quantifying – sustainable development. He writes that "[n]one of the usual measures of economic performance – gross domestic product (GDP), unemployment, inflation – tell us anything about the state of our natural capital. In fact, they can be downright misleading" (Heal 2012:2). He further notes that we often don't know exactly what is happening in the economy until a quarter or more after it (Heal 2012). Such delays make it impossible to be in absolute control of the effects of our current actions. Again, an instable relationship between nature and time seems to dominate.

Andreas Chai, Graham Bradley, Alex Lo and Joseph Reser (2015) investigate the link between time and sustainability explicitly and empirically. In their article "What time to adapt?" they present their study based on an online web-based survey with 3.096 Australian citizens. The study looked at the extent to which decreased discretionary time (time that is not spent on working production or personal care) inhibits individual consumers from developing the sustainable consumption patterns that would run along their own values concerning climate change and environmental issues. The results showed a correlation between time and sustainable consumption patterns. It was not that people did not know or

care about the urgency of climate change, but that because of "the preferences of time poor agents are less likely to be aligned with their environmental values" (2015:95) As a response, for more sustainable consumption patterns, the authors suggest that measures be taken to generally increase discretionary time.

Permaculture is another offspring of the culture of un-sustainability (Kagan 2014). In this case, the aim is to restructure shift its progress through 'real world' experimentation by developing 'eco-villages' or 'living laboratories' with the purpose of showing, in practice, what sustainable systems may look like. The practice has been said to be drawing in much on anthropological methods and knowledge (Veteto and Lockyer 2008; Farley and Smith 2013).

Susan Crate (Crate 2006) takes on a world system analysis when describing the ethnographic details of the Viliui Sakha, a Siberian Turkish-speaking horse and cattle agro-pastoralist people. Her descriptions show their struggle to adapt in order to survive under changing conditions. To maintain a "sustainable rural development" in their daily life they also handle global economic forces, including the diamond industry. She presents her study as an "ethnography of sustainability".

It is not unusual for the focus in anthropological research on sustainability to be on consumption and overconsumption, under the premise that we are consuming ourselves to death (Crate and Nuttall 2016). In this sense, Allison Loconto (2014) takes a different approach when she uses a multi-sited ethnographic study to explore the performative aspects of sustainability standards. She investigates how standards such as Ethical Trade, Fairtrade, Organic and Rainforest Alliances, are enacted by Tanzanian tea producers of *SustaianabiliTea*. She asks how these standards – which were defined in the Global North, ostensibly to measure and ensure the value of the sustainable aspects of the product – affect work in the Global South. What does *SustainabiliTea* mean to Tanzanian tea producers and what is the role of standards in holding this value of sustainability together when the tea producers did not participate in generating these codified standards, yet they must comply with them?

The author argues that in the practice of producing the tea, multiple *SustainabiliTea* (sustainable markets, sustainable farm management, sustainable qualities, and sustainable projects) work together to construct a single vision of *SustainabiliTea*. She holds that paying attention to the categories at work in practice while listening to the voices of people

involved in the tea production is important to understand the dynamics of sustainability[21]. With her study, Loconto shows that standards do not shape practices toward a fixed notion of sustainability, but that they are instead "spaces of debate" over what sustainability is in different contexts. Her argument is that, for the practitioners in the South, *SustainabiliTea* is not a project of standardisation or discourse management, but a struggle for market survival.

The tea industry has been noticed and subject to further sustainability studies (Moberg 2010; Besky 2013). One study of specific interest for my own is entitled "Tea Time: Temporal Coordinations for Sustainable development" (Kim, Bansal, and Haugh 2015). Similar to the above study on *SustainabiliTea*, this one is presented as a multi-sited ethnography, conducted in eight rural Fairtrade-certified tea-producing organisations in Kenya, Tanzania and Uganda. To examine the effects of the Fairtrade standards, and the authors' focus their analysis on the dynamics between social (how the production work was managed collectively) and biophysical (material resource) rhythms. The findings show that, while the intensions had been to help the producers towards more sustainable production patterns, in practice the Fairtrade standards actually disrupted the resource flow. The authors trace the reasons for this in a discoordination of the temporal aspects of the work inherent in the Fairtrade standards. The tea producers, on the other hand, coordinated the flow of needs and resources, responding to the interconnectedness of multiple social and biophysical rhythms. In their conclusion the authors advocate the idea of coordination of multiple temporalities – overlapping teatimes, so to speak – rather than controlling the time of sustainable development[22].

Studies of various materials

I mention some research above where products (such as tea) are at the centre of attention and are explored as part of questions about sustainability. My study is informed and inspired by such previous

21 Examples of other anthropological studies that engage the patterns of material entities on local, regional and global scales are john Law and Marianne Lien on Norwegian salmon,(J. Law and Lien 2013); Heather Swanson on Japanese and Chilean salmon(Swanson 2013);Anna Tsing on the global supply chains of Japanese Matsutake mushroom (Tsing 2005; 2009; 2015).

22 In Moberg (Moberg 2010) several ethnographic studies on Fairtrade are presented . Sillitoe (Sillitoe 2007) presents a compilation of studies that link local and global knowledges with ideas on sustainable development.

research, and certain other recent investigations have further helped orient my focus.

While anthropologists have always shown interest in how animal, plants and artefacts form part of human life - be it yams, horses, cattle, necklaces or shells (Hoskins 1998; 2006; O'Connor 2011). Recently, and as Penny Harvey reminds us, "the heuristic promise" (Harvey and Knox in Harvey et. al. 2014:1) of objects and materials in the contemporary social sciences and humanities has inspired a number of studies in specific and renewed ways. Yet the investigatory purposes for placing objects, things and materials at the centre of attention are exceedingly varied.

Food or drinks are instances of popular entities to be followed, either historically, their local consumption patterns studied, their effect on regional development and/or tourism, or their globalized production chains mapped. Some examples of goods previously studied in this way include salt (Kurlansky 1999; 2002), broccoli (Benson and Fischer 2007), wine (Barbera and Audifredi 2012; Demossier 2001; Forsythe 1996), coffee (Austin 2012; Loureiro and Lotade 2005), and milk (Jönsson 2005; Nimmo 2010). Although they do not explore the materials in question through in-depth ethnographic fieldwork, and they all have a different focus and purpose (see also for instance Riello 2013) these studies are informative and enlightening.

Still, other studies set out to find renewed ways to understand human interaction with nonhuman entities, moving their interest towards a notion of multispecies-ness. Such studies are relevant to the current one, when they focus on animal, plants, people and/or things. Objects and materials are here taken on as vital, or vibrant (Bennett 2009), matter, which may have concrete political impact (see also Harvey 2014). They are seen as matter that matters, not by themselves, but as they engage in many kinds of relations (cf Abrahamson et al 2015). Once more, edible matter seems to be of particular interest, but also other 'stuff' and animals: trash, power networks, powder, metals, horses, meerkats, sheep, salmon or omega 3 (see e.g. Abrahamsson et al. 2015; Candea 2010; Harvey 2014; Latimer and Miele 2013; Lien and Law 2011; Law 2010; Law and Moser 2012; Reno 2009; Swanson 2013).

I do not suggest that these studies have the same or similar approaches or outcomes. However, a general aim of all is to find renewed modes of conducting research, by rethinking relations. In this way, they contribute to an understanding of the complex interrelationship between humans and

non-humans and so, almost inevitably, they dissolve and complicate a strict human/nonhuman divide. Based on ethnographic fieldwork, a central claim of many such multispecies studies is that the human and the non-human can be performed together, through various acts of differentiation. A dynamic between detachment and engagement in turn constitutes what these entities are, or rather how they *become* what they are, and the great challenge is to find methods, vocabularies and tropes to take them into account, that is to 'hear their story'.

Richard Robbins, editor of the Routledge series *The Anthropology of Stuff*, makes clear that a premise for the publications included in the series is that "stuff talks, that written into the biographies of everyday items of our lives – coffee, T-shirts, computers, iPods, flowers, drugs, coffee and so forth – are the stories that make us who we are and that make the world the way it is" (Robbins in O'Connor 2001:ix). And, Kaori O'Connor argues in her book *Lycra – how a fibre shaped America* (2011),

> "Stuff doesn't just happen. But exactly how and why does stuff come into being as part of the everyday material world that surrounds and defines us individually, socially, locally and globally? Standard explanations usually involve three out of the "Four C's" of contemporary life – Capitalism, Corporation and Consumption" (2011:3).

Some of these studies focus on materials as storytellers, seeing them as capable of deepening our understanding of diverse human societies, and humanity in general. Of these, Jane Schneider's work entitled *The Anthropology of Cloth* is of particular interest to the current study, as she reviews how cloth – textile and woven fabric – have long been part of anthropological inquiry spanning "many categories of human want and need" (1987:409). Schneider writes that, in many societies, lace, embroideries, or patterned weavings "enrich the trousseaux of brides and fill their chests of household linens and heirlooms" (1987:410). Drawing on cases in Indonesia, West Africa, the Northwest Coast of North America, Mesoamerica, and the Andes she provides an overview of how anthropologists have studied woven fabric as an intensifier of sociality, not only at marriage and death, but also in rituals of birth, initiation, and cunning.

Cloth has been used to consolidate many a political system, Schneider emphasises, and to smooth social relations resolving occasions of tension, as peace offerings. The Maori used textiles – often a cloak of the chief –

during conflicts to cover up corpses and protect them from being eaten. In the Northwest Coast of North America, potlatching ceremonies, donors of the most prestigious Chilkat blankets tore them into strips for distribution among supplicants whom they did not consider worthy, and who – appreciating the pieces – used them to make leggings and aprons. In the Inka state no political, military, social, or religious event was complete without textiles being bestowed, exchanged, or sacrificed. Schneider further recounts how scholars of Southeast Asia have read messages of gender in the cloth that women produce. Cloth and the activities of weaving were here seen as a complement to men's production of swords, speeches or sacred letters. Others, she holds, have shown that North African women's treated weaving as a subordinate, nonverbal discourse. Some scholars have also identified male and female stages of the weaving process, and male and female parts of the fabric and of the tools used in the process.

It is not only the material result – the cloth – but also the processes around it and the activities of weaving, have been studied anthropologically as parts of concrete human necessities of transforming, protecting and healing the human body, in all societies (cf. O'Connor 2010). As such, cloth has been interpreted to be communicating meaning and identity, gender, ethnicity and class (see also Brumfield 2006; Dransart 1987; 1991; 2002; 2007). These fascinating studies focus on the specificities of delimited areas and cultures while aiming to build an understanding of the particular ways that each group is structured and organized through the textiles.

Other studies that concentrate on materials and the processes around them strive to explore and rethink a human centred understanding of the world. An interesting example of such a focus is the study of *foie gras*, i.e. French goose liver pâté (Heath & Meneley 2015). Here, the researchers have published an article entitled *The Natureculture of Foie Gras* based on data collected from media and blogs, as well as on ethnographic fieldwork made in the United States and France. The authors suggest that *foie gras* offers a suitable case to consider the relations "among social, technical and nonhuman animal worlds, and to examine the contested claims of those positioned differently in these agro-food networks that link the bodies of domestic producers, farm workers, vegan activists, and the ducks, the geese, their esophagi, their fatty livers, and those who savor or abhor them" (2015:425). The authors pose the question of whether *fois gras* is natural or pathological. For the analysis they juxtapose those who view *foie gras* as "the apotheosis of murderous meat production" (2015:422) and those

who consider it to be a co-production between humans and animals. They conclude by arguing for the importance of developing further an "ethics of care" which takes into account both the wellbeing of animals and of humans, along with food safety and quality.

Multispecies ethnographies, such as the one just mentioned and others (e.g. Hayward 2010; Kirksey and Helmreich 2010; Franklin 2001) link their research to broader currents within academia, touching on the biosciences, philosophy, political ecology, and animal welfare activism. They are in this sense of particular interest for my study which also – through the woolwork – shows connections between domains that are otherwise often thought of as disconnected (such as art and science, and artisan and industrial work) while cutting across others (such as national difference and gender).

Another set of studies that my study has grown in parallel with, are a series of publications made by Anna Tsing (2009, 2010, 2015), with the Matsutake World Research Group. The protagonist of these studies is the Japanese mushroom Matsutake. With the aim of exploring global capitalism by tracing this fungus – a gourmet treat and precious gift which thrives in pine tree forests – Anna Tsing shows that its itinerary involves American war veterans, undocumented Latino workers, and Southeast Asian refugees, groups of villages, pickers, traders, consumers and scientists. She writes,

> I seek histories through which humans, matsutake, and pine create forests. I work the conjunctures to raise unanswered research questions rather than to create boxes. I look for the same forests in different guises. Each appears through the shadows of the others. Exploring this simultaneously single and multiple *formation,* [each chapter] illustrates how ways of life come together, patch-based assemblages are formed. Assemblages, I show, are scenes for considering livability – the possibility of common life on a human-disturbed earth (Tsing 2015:163 my italics).

Tsing's book *The Mushroom at the End of the World* (2015) is about more than a mushroom, as it takes in the workings of global commodity chains and shows, without offering a way out, how these involve what she refers to as "salvage capitalism", an economic formation that brings dispersed, non-capitalist practices into view. It may seem like an impossibility, but by zooming in her study on the spores of a mushroom, Anna Tsing shows the bigger picture of the capitalist formations. Such multiple vision, in which contradictory complexities are allowed in, has been an inspiration for my own focus on woollen fibre.

Summary

I structured this literature review in two sections with slightly different, but interrelated, focuses. First, I showed that the notion of sustainability is built upon a series of paradoxical relations which do not easily hold together. These are often hard to pin down, grasp and put into order, and so are often rendered invisible in the public discourse. Without oversimplifying, the debate on sustainability tends to lean onto dichotomies like nature/culture, self/other, subject/object and production/consumption, Global north/Global South etc. The three main points which I draw from the scholars I have reviewed are: 1) we need to reconsider categories in relation to sustainability, particularly "nature", and also "time"; 2) we need to bridge the gaps between natural and social sciences; 3) we need to find ways to allow for complexity.

The sum of the scholarly reasoning for this chapter points towards the importance in understanding the unsustainable foundation upon which the sustainability debate rests. For this, the studies urge us to reconsider, reconfigure and/or loosen up underlying, more or less hidden, often fixating, categories. Two divisions stand out: the sustainability-working-model-divide (environmental/social/economic) and the notion of future, based on a linear idea of time (past-present-future).

My thesis weaves itself into many of the issues expressed in this chapter, but approaches them from a 'woollen angle'. Each of the analytical chapters is an exploration of the multiple natures and times that prevail around the wool as it is being transformed. In order to offer insight into the links between the literature and the analytical chapters, I briefly highlight some of the themes below.

Chapter five looks at the South American grasslands as they form part of the establishing of the current *world system,* also showing how sheep farmers juggle their activities with the *global* wool market (Crate 2006, (Crate 2006; Friedman 1994; Hornborg 2009). Chapter six explores the acts of *measuring* in the laboratory (Heal 2011; 2012), where *standards* and *standardised* methods and tools are used (Kim, Bansal, and Haugh 2015; Loconto 2014), and touches the theme of *communication between the social and the natural sciences* (Hornborg, Clark, and Hermele 2013; Hornborg 2009; 2011; Kagan 2014; Latour 2009). Chapter seven complicates the straight *timeline* of regional historical accounts (Friedman 1992; Hodges 2008), highlighting *multiple* and at times *paradoxical*

rhythms (Chai et al. 2015; Kim, Bansal, and Haugh 2015). Finally, Chapter eight pays attention to the associations that are made around a woollen work of art, among other things, addressing a '*culture of unsustainability*' and *artistic practices* through the artwork (Kagan 2014). It is such thematic associations to previous research that my chapters lay open, through the fieldnotes and analysis presented, for re-considering sustainability as a concern that must balance its own link to unsustainable predicaments.

The second part of the review brings in some other previous research that has been relevant to my own. I gave some examples of studies that have focused on materials, not only for the sake of helping us humans understand our societies better, or to guide our progress or development, but also, as a way to reconsider our position in the world as it looks today. As Schneider shows, anthropologists have taken into account the cross-cultural presence of cloth and weaving practices. Yet, for my study it is multispecies ethnographies, such as those carried on by scholars like Anna Tsing and the Matsutake World Research Group have been particularly inspiring.

In an edited volume on the role of anthropology for understanding the current concern of sustainability and climate change, Susan Crate concludes – together with her co-editor Mark Nuttall – that "anthropologists are strategically well suited to interpret, facilitate, translate, communicate, advocate, and act both in the field and at home, taking action and responding to the causes of change and communities facing and adapting to change" (Crate and Nuttall 2016:147). In the chapter that follows I will expand on the anthropological resources that have been crucial for the shaping of this thesis.

3. Doing anthropology with wool – an analytical framework

> Animals are brought into human social categories by a simple extension to them of the principles that serve for ordering human relationships. The method is to do the painstaking work of how the categories are used. (Douglas 1989:33).

> Things form cultural worlds
> (Sjørslev 2013:9 my translation)

In the introduction of the current thesis I emphasized how the focus of this study grew in the contact zone between empirical and conceptual conundrums. Likewise, I ended Chapter two with a note on the role of anthropology in understanding present-day concerns on sustainability. These points are pertinent to reiterate here because they signal the methodological approach of the study, which will also be the focus in what follows. I use methodology, here, in accordance with its etymological meaning: "knowledge about method", suggesting a meta-level of the endeavours of research and so theorising (thinking) about methods (how we do research) (Ayto 1999; Weekley 1921).

This chapter is, in this sense, a deeper orientation in the theory-methodological meeting point and, hence, the analytical framework, of this thesis. The approach is framed through ongoing movements between the different moments of the fieldwork (interviewing, observing, asking questions, chatting, recording, jotting, writing notes, generating and collecting empirical data) and the deskwork (reading, writing and presenting ideas, reflecting and mesmerizing, reaching deadlines, discussing reflections and findings, conceptualizing and whatnot). This is

a dynamic which resonates with what Marilyn Strathern calls the 'ethnographic effect' which, above all, reminds us that when we do anthropology we also *touch* and *make* our fields. In this way of viewing 'field' and 'desk' are never mutually exclusive but instead reciprocally shaped (Dalsgaard and Nielsen 2013; Lutz 2013; Strathern 1999). To this I add the statement that 'the field', and what goes on in it, is no less conceptual, theoretical or analytical than 'the desk'.

Fieldwork, in this sense, always involves particular acts of classification[23]. Classifications were deployed among other methods by early natural scientists, and were also commonly used by early anthropologists, to sort and order, label and organise the world and people into categories (Malm 2012). Taxonomical tasks, as such, implied grouping together certain kinds of entities by excluding others. Therefore, classification entails processes of 'othering' and always involves moments of comparison.

More recently anthropologists have dedicated research and writing to a more reflexive understanding of comparison, engaging the ideas that we always (to some extent) intervene and interfere with during our acts of 'othering' and of making comparisons (Jensen 2011; Strathern 2011). Heather Swanson, in her study on Japanese salmon-making, uses what she calls a Strathernian kind of comparison: "the kind that stops us up (as researchers) and makes us question our own categories". Typically, this involves a moment of surprise that may spark the direction of the research (Swanson 2013). My study has certainly had such 'sparks' and turns, and I have already introduced some of them above. Analytically, the study is informed by the trains of thought that stem from the recent 'material turn' in anthropology and which forms part of a reconfiguring of our take on human-nonhuman relations.

Crucial for this approach is striving towards a less human-centred focus, and a disposition that ecology can be understood beyond the human-nature divide. While human-nature and culture-nature binaries have long been an important contribution to theoretical and methodological themes in anthropological modes of knowledge building (Levi-Strauss 1973; 1955; Lechte 1994) it has now taken on a slightly new guise. Humans, human

23 In line with Ingold's critique on ethnography (Ingold 2008a; 2014) where he reminds us of the difference between ethnography (that would be inscribing ethnos and ever separating the researcher from the object of study) and anthropology (as a practice of education) I here use the term fieldwork to indicate my engagements with the people who work with wool.

endeavours and human tools, for the material-semiotic approach, are not necessarily regarded as the measure of all.

In this chapter I aim to position my own project in relation to such reflexive research by thinking through the generative notion of acts of classification within anthropological methods, which I have made efforts to apply in my analysis. My claim in this chapter is that doing anthropology involves the making of a field. In what follows I will discuss relevant concepts that have informed my anthropological itinerary, many of which draw on scholars who are engaged in material-semiotic and/or feminist theory.

The Material Turn, Relationality and the reconsidering of fixed categories

The ideas behind the claim that the field is made can be better elaborated by reviewing Mike Michael's article "On making data" (Michael 2004). Michael uses one anecdote drawn from an interview that he conducted, at which a pit bull terrier, a cat, himself the interviewer, a person who was interviewed and a tape recorder were present. At the time of the incident, the interview seemed, to Michael, to be a total and disorderly flop (the cat played with the recorder, the interviewee held an uninterruptable monologue, the dog licked Michael's feet). When revisiting the event after some time had passed, however, he found it productive for understanding the importance of paying attention to how non-humans are entailed in the process of ordering and disordering our data.

Mike Michael argues that paying attention to more or less fortunate relations between humans and nonhumans, which are by nature heterogeneous, provide us with the possibility of finding and articulating new units of analysis (in Michael's case a 'pitpercat' = pitbull + person + cat, and a 'intercorder' = interviewer + recorder). Michael's contribution is first and foremost a reflection on the methodological possibilities when including nonhumans in our work as social scientists. He argues that the roles of nonhumans are usually hidden and that "[i]t often takes something to 'go wrong' to reveal how non-humans have in their quietly disciplined way, been contributing to the production of smooth social routines – routines such as social scientific interviews" (Michael 2004:6).

His point is that nonhumans (be they objects, animals or plants) and humans operate together to produce both order and disorder. If we see nonhumans as legitimate parts of our research, as *co(a)gents* (or *'hybrids'* in Latour's terms; *'cyborgs'* in Haraway's), they can serve as mediators of larger entities. In Michael's case the *co(a)gent* he concentrated on was the 'pitpercat'. The larger entities that he finally realised were made visible thanks to the "failed" event, were the university sector (where Michael was working), the Burger King Corporation (where the interviewee was working) and the public understanding of science (which was the focus of his research). Michael's methodological point is that this approach allows us to explore how the immediacy of mundane and seemingly 'trivial' nonhumans, form part of the dynamics of how larger, more distant, entities are reproduced and reproduce themselves. These units, in turn, can be useful for understanding our research situations and for 'making our data' – and our field – with them (Michael 2004). I think it provides a clarifying example.

In my study a co(a)gent would be the Merino sheep, who are at once real and constructed – hybrids that have been generated along with their geographical, geopolitical and historical travel. Their (literal) prolongation – the Merino woollen fibre – is a co(a)gent which appears in all analytical chapters and, likewise, constitutes the site of my study. The Merino woollen fibre is the entity that 'orders' my material.

Remarkably, and in spite of 'being' the same material, the Merino woollen fibre 'becomes' a different co(a)gent in each setting. It joins together with different 'others', and engages different larger entities (such as colonial Spain, the Benetton Group, the Australian wool market, the artisan community, the laboratory network) in each chapter. It is, besides, at once 'real' and 'constructed'.

Michael's proposition is closely linked to the movement towards a material turn in social sciences: an attempt to situate and theorize material and non-human entities. This is an approach that also examined the ways in which otherwise perhaps unnoticed artefacts shape everyday life and practices (Henare, Holbraad, and Wastell 2007; Kohn 2013; Walford 2013; Riles 2006).

By stressing the complex interweaving of the material and the semiotic, many of these authors suggest that it is possible and necessary to develop new methods and new vocabularies in order to look at the ways in which the material comes to be 'translated' and 'disciplined' into the semiotic, and vice versa. Such renewed ways of doing, thinking and articulating are

also important in order to find the means of narrating the heterogeneity that is always inherent in the processes that we study. Penny Harvey and Hannah Knox suggest that the current episteme with a growing interest in objects and material indicates an

> agreement across the humanities and social sciences that things are relational, that subject/object distinctions are produced through the work of differentiations, and that any specific material form or entity with edges, surfaces, or bounded integrity is not only provisional but also potentially transformative of other entities (Harvey and Knox in Harvey et al 2015:1).

It is in this context interesting when 'data-making' is not regarded as more of a social construction than any other research procedure. For Michael 'the data' is made visible through the building up of the anecdote – the 'anecdotalization' (Michael 2012) – and thus emerges out of the relations *between* the entities that form part of an event. At the same time 'the data' is performing or inventing those relations (Jensen 2012a). Michael's anecdote traces the co-emergence of research, researcher and the researched (Michael 2012a:39). There is thus a double force (Suchman 2012) to such research methods, inasmuch as they are performative: they do not merely reflect or represent the world, they introduce responses into specific situations or problems (Lury and Wakeford 2012).

Mike Michael's article links straightforwardly to the ideas of multispecies research, a recent contribution to anthropological thinking in turn inspired by scholars in Science and Technology Studies (STS). Aiming to open up the nature-human/nature-culture binaries, this research provides a slightly different understanding of ecology than the normative one[24] (Hayward 2010; Franklin 2001; Kirksey and Helmreich 2010; Haraway 2008). This

24 While the binary contrast between nature and culture has been an important analytical tool, and a metaphor used to better understand some general human traits and universal ways of structuring societies, it has coloured the logic of other binaries, such as the dichotomy between raw and cooked, wild and tame, female and male (Lévi-Strauss 1970, 1966/1996, see also Lindberg 2009). Townsend reminds us that the often underlying and once unquestionable assumption that there is something "out there" called "nature" and there is something "in here" (in the human mind and between humans) called "culture" suggests a hierarchical order where culture has domination over nature (Townsend 2000:23). This hierarchy is today being, not inverted, but questioned and forced to be rethought, since the current crisis signals that 'nature' both speaks and acts back. Alf Hornborg responds to the debate by, rather than dissolving the binary, arguing for an even clearer distinction and a stronger focus on 'Culture, to refine the analytical tools for understanding human-environmental relations to avoid reductionism, and to be able to "critically scrutinize 'naturalist' explanations of societal power structures (Hornborg 2009: 2).

understanding of ecology is, I argue, relevant to clarify here because it fits with my desire to loosen up some static categories.

Ecology names the study of interactions between organisms or species and their environments[25]. In a feminist approach on science and technology studies, to engage ecology as *natureculture* (Haraway 2008; Law 2004) is to emphasize the ways that practices of knowing and intervening involve more-than-human others. In this intellectual tradition *multispecies ethnography* is often used to focus attention to how species interact and become what they are because they relate. Species is here understood etymologically, as a thing seen, a figure or a sort or a kind and is not tied up with any biological sense of the term, which would imply a link to race (Ayto 1999; Haraway 2008; Weekley 1921; see also Malm 2009:188ff). Therefore, the term species embraces humans and artefacts, as well as animals – kinds of entities that are seen as involved in the production of our data. 'Becoming with' is the expression for this, coined by Donna Haraway (Haraway 2006; 2010; 2008) inducing an understanding of entangled encounters between kinds – 'species-meeting' – that is about relating and responding to each other in ways that end up producing the particularity of each entity, and of each world. Haraway draws on her engagements with science through her background in biology when explaining:

> I love the fact that human genomes can be found in only about 10 percent of all the cells that occupy the mundane space I call my body; the other 90 percent of the cells are filled with the genomes of bacteria, fungi, protists, and such, some of which play in a symphony necessary to my being alive at all, and some of which are hitching a ride and doing the rest of me, of us, no harm. I am vastly outnumbered by my tiny companions; better put, I become an adult human being in company with these tiny messmates. To be one is always to become with many (Haraway 2008:3).

Donna Haraway reminds us here that, "every species is a multispecies crowd" (Haraway 2008). In this thesis, wool figures as a multispecies site. Its variations figure in a number of ecologies along its transformative process in going from pasturing sheep to woven or knitted fabric. In each ecology (in each analytical chapter), wool is a version of itself. One version is not more 'true', 'real' or 'pure', nor more of a subject to interpretation than the other. It just enacts different ecologies.

25 For a history of the concept see (Worster 1994).

With the disposition to rethink what ecologies are come critical and reflexive considerations on how to study them and, concomitantly, how knowledge is built. The paradigm is thus as much methodological as theoretical. From having been born as a science of 'alterity' (Fabian 2014; Marcus and Myers 1995), anthropology is here discussed as a 'tracking' or 'following science' that studies activities and relations as they occur "close to the ground" (Jensen 2012b). This is what Nigel Thrift calls 'the geography of what happens' (Thrift 2008; Anderson and Harrison 2010). On the premise that practices occur as by-products of activities, rather than as their cause, he suggests that actions presuppose practices and not vice versa (Thrift 2008).

The approach, therefore, requires a 'bottom-up' gaze and an engagement with the rich diversity of the ways to be human *or* nonhuman, but also the ways for humans and nonhumans to *relate.* Animals, plants, landscapes, artefacts, forests, documents, cloth, data, categories, information, standards and markets have, in recent research, been subject to anthropological inquiry, followed and read as knowledge carrying entities by themselves (see eg. Callon 1986; Kohn 2013; Riles 2006; Walford 2013). While I engage with this debate in all the upcoming analytical chapters, it is most explicitly dealt with in Chapter seven, where I turn to the question of whether the wool can be understood as telling a story.

These discussions have provoked a radical methodological shift for anthropology. The shift has taken us from understanding material mainly by association to humans, i.e. from considering that material objects and nonhuman entities gain "social life" and proper "biographies" through their involvement with people (Appadurai 1986; Gell 1998; Hoskins 2006; Mauss 1925/2011; Sahlins 2004) to suggesting that the predefined distinction between human and material could, instead, be eliminated altogether (Latour 1993, see also Holbraad 2011). Furthermore, from stating that people and things emerge from each other dialectically (Miller 1987; 2001; 2005) a transition has been made into suggesting that, in certain situations, people and things can be comprehended through their sameness (Strathern 1990; see also Holbraad 2011).

An interesting link has been made between this debate, and the one that was prominent during the 1980's, referred to as the "representational crisis" that included the issue of emancipation of our object of study (Clifford and Marcus 1986; Marcus and Fisher 1999). When 'the other' who we were studying and classifying ended up speaking back to us we

had to rethink how – and whether – to represent her. Today, "nature speaks back", the environment is a hot political topic and we have to rethink how – and whether – to hear her.

Martin Holbraad points to a forceful distinction between views in the current debate on the place of the material in human life, and writes that

> "[t]he distinction turns on contrasting stances to the ontological division between humans and things. Humanist, then, would be approaches that seek to emancipate the thing in terms of this division, while post-humanist would be ones that do so by going beyond it. The move from one towards the other, I argue, can also be understood as a move from emancipating things by association, i.e. by letting some of the light of what it is to be human shine on them too, to emancipating them as such, i.e. showing that they can radiate light for themselves" (Holbraad 2011:4).

Tim Ingold, when reacting to recent intensified use of certain concepts, (and particularly of the term 'materiality') asks, "What academic perversion leads us to speak not of *materials and their properties* but of *the materiality of objects*? (Ingold 2007). Instead he suggests that we work *with* the materials and see them act upon and transform their relations, because "things are active not because they are imbued with agency but because of ways in which they are caught up in [the] currents of the lifeworld. The properties of materials, then, are not fixed attributes of matter but are processual and relational. To describe these properties means telling their stories" (Ingold 2007:1; cf. Hornborg 2006a).

The place and the agency of the material – here wool – has certainly been part of the conundrum that I have explored along the itinerary of my study: what the wool is, what it does, what it has and what it becomes. Nonetheless, it cannot be studied in isolation. It has to be seen through its relations. What associations are made around it? In this way I consider wool to be the site in its own right (Walford 2013), and not the case of this study. As a case, it is the 'sample'; a part of a whole that would say as much about the part as about the totality of the whole. By these virtues, it is applicable to other cases (Beaulieu, Scharnhorst, and Wouters 2007; Ragin and Becker 1992). Contrarily, nonetheless, I do not necessarily aspire to draw conclusions or generalize about other materials, aside from the wool and the particularities of its formations, from my analysis.

An important drive within the 'material turn' is the rethinking of the notion of 'the social' (Latour 2005b). Here, 'the social' is never a pre-constructed

layer or dimension consisting of human relations set apart from other layers or dimensions (such as 'nature', 'economy' or 'environment'). Nothing is *not* social – everything, every act, every entity, every event is relational and caught up in a continuous *becoming*, through its relations. All acts and activities are seen as encounters between different kind of human and non-human entities. These encounters happen as ongoing processes of relations that form more or less strongly connected collectives. Such collectives may be reproduced over temporal cycles but are never already there, fixed and pre-defined, and their scope and boundaries vary.

The premises for the analytical moves taken up here and applied in the analytical chapters that follow are informed by scholars who, in turn, engage in debates referred to as feminist theory (e.g. Donna Haraway), actor-network theories (ANT) (e.g. Bruno Latour), after-ANT and science technology studies (STS) (e.g. John Law). These scholars work from different countries and stem from different schools and intellectual traditions, and while there would be disagreements between them, I suggest that the debates thought which they engage have had cross-pollinizing effects on anthropological inquiries. My disposition is not to adopt, reject or refute any of these schools in favour of any of the others, but, rather, to think with them and to explore my own material.

With the topic on the agency of nonhumans in human relations comes the notion of heterogeneous or multispecies networks. The network is here understood as a methodological approach that offers a device for understanding agency as distributed throughout the work of nets of more or less strong or lasting associations (Ingold 2008b; Latour 2005; Law 1999; Law 2009; Tsing 2008). The concept of network emphasizes that there is symmetry between human and non-human agency and that this is what makes 'things' – such as scientific facts, data or artefacts –'happen' or 'become' (Callon 1986; Latour 1993; 1999; 2005b; Thrift 2008; Walford 2013). Networks are heterogeneous in the sense that multiple species, not only humans, are recognised as active parts. The notion of networks is methodological since it offers a way to grasp how worlds of relations are built and reproduced by following the actors' own way of tracing their networks.

This debate has brought light upon the notion of context and exposed it to processes of rethinking. Context is a concept that has, in much, been distinctive for anthropological knowledge building: what we were doing was to make sense of (re-contextualize) diverse – sometimes, perhaps,

seemingly absurd – human behaviour (Gell 1998). 'Context' lies close to 'category' and has been discussed as a core 'problematic' for social scientific research and anthropology (Otto and Bubandt 2010).

Scholars who promote networks as working devices often reject the idea of contexts as predefined entities. Context is refused. This is because, as anthropologist Anna Tsing clarifies "[c]ontext identifies the actors in advance, making it impossible to attend to how they make themselves through networks" (A Tsing 2009). To contextualize is to classify and there may even be a danger in taking categories as rigid containers (Bowker and Star 1999). Contexts as predefined wholes may, in this way of viewing, block our vision as researchers.

Scholars who promote networks as a methodological device do it to challenge rigidity, yet when applied the metaphor tends to establish new or other kinds of rigidities (Knox, Savage, and Harvey 2006).

Tim Ingold responds to this debate by introducing the idea of the meshwork. While context is 'already there', and people can enter and exit from it, a 'network' exists because connections are made between different agents or actors (be they human or non-human). The focus is primarily on the agents. A meshwork, in turn, is the work that generates the links. It is more focused on the 'work', the efforts, the practices and the transformations – the 'undergoings' – than on the entities and agents that are connected or, as I understand it, on the result, the net as a whole. (Ingold 2009; 2008b; 2011).

While I take on *fully* the ideas of relationality that are proposed in nuanced ways by all these scholars, a question about the scope of such relations has, nevertheless, emerged along my research process. To study the intimate relations between practitioners, their material and their tools (Ingold 2011) has been a fruitful disposition that has offered an enriched sense of the activities around wool and of "the geography of what happens" in concrete terms (Thrift 2008).

I have found, however, that the authority exerted through political, governmental, policy and decision making, including the forceful flows of local, regional and global markets and powerful historical and geopolitical events – events that were there, yet primarily accessed beyond the immediacy of the 'ethnographic moment' – play crucial parts in how everyday life proceeds around the wool. These dynamisms cannot be

ignored but risk disappearing in the relational approach that I have taken on[26].

My response has been to let the descriptions include associations and links that are made *by* the practitioners to such larger forces, and to take them on as entities that *per se* influence the work with the wool. This is to say that instead of taking on, for instance, the Australian market or the International Wool Textile Orgnanisation (IWTO) as abstract institutional macro-entities, I look at how they are *reproduced* in the more or less intimate relations I have had access to through my fieldwork (Friedman 1994)[27]. This response is particularly prominent in Chapter five when the composition of the landscape and the initial arrival of Merino sheep on South American grasslands is discussed. Also, in Chapter seven, when colonialist history and processes of 'indigenous othering' are shown to directly affect the direction of the narrative.

Classifications and their interferences

Classifications and the task of finding and defining metapatterns has been detected as a condition for survival for both humans and animals (cf Malm 2012:104ff). To identify, select, order and name, and to negotiate concerns around categories, is understood as part of learning the skills of life (Malm 2012:104). But, if categorizations and classifications are common sense and inevitable, what can we learn from them as they happen today? And, if normative categories as we know them ('social', 'nature', 'ecology') are not always viable but are, instead, sometimes in need of rethinking or reconfiguring, then what classifications may instead be useful? I have found resonance for these questions in research conducted by Susan Leigh Star and colleagues (Bowker and Star 1996; 1998; 1999; Lampland and Star 2009).

These scholars rationalize their approach by appealing to current needs for new classifications – new categories - a necessity that stems from new flows of information as a result of technological development. They emphasize that, while categories help frame our representations of the past

26 The limits of the relational approach have been discussed in (Yarrow et al. 2015)

27 In this case, the 'macro' and 'meso' entities, such as the global and the regional wool markets, are not larger than any other entities, but reproduced and observable in the local settings (Jensen 2007).

and the sequencing of events in the present, they can best be understood as doing the ever local, ever partial work of giving the impression that science describes nature (and nature alone) and that politics is about social power (and social power alone) (Bowker and Star 1999). Bowker and Star's issue with classifications is that there is always an ideal definition of what a category is or should be, and that this ideal is impossible to achieve. This results in that classifications always involve negotiations and collective work.

When referring to their interest in categorical work and the consequences of classifications Geoffrey Bowker and Susan Leigh Star ask, "[h]ow can we see and analyze something so ubiquitous and infrastructural – something so 'in between' a thing and an action?" (Bowker and Star 1999:285). The authors remind us that these are questions that have occupied social scientists for the past 100 years. Categories, they maintain, cannot be directly seen, but come from actions and, in turn, from relationships. They are remade and refreshed with a lot of skilled work (Bowker and Star 2008:285). "There is a lot of hard labor in effortless ease", they highlight (Bowker and Star 1999:176). A general preoccupation of these scholars is the question of how to make work that is otherwise invisible, visible (see also Suchman 1995). They dwell upon the complexities of infrastructures and how the work that is needed to keep them going includes making some parts invisible by excluding them from the account. They continue that "[t]he work of attaching things to categories, and the ways in which those categories are ordered into systems, is often overlooked" (Bowker and Star 1999).

With the insight that categories are hard to contest because they tend to be grooved into our common senses, Geoffrey Bowker and Susan Leigh Star set out to study how categories are reproduced, and more specifically how classifications and their standards work in practice. In their book *Sorting things out: Classification and its consequences* (Bowker and Star 1999), the authors also state that a crucial focus to understand classifications must be on how classification systems clash. What happens to that which does not fit? they ask (Bowker and Star 1999). These clashes are of particular interest since they form part of how categories are generated, but they are most often rendered invisible. Well aware of their own acts of classifying through their work, the authors refer to these clashes as *slippages*.

Additionally, Geoffrey Bowker and Susan Leigh Star highlight the influential agency of the slippages – the invisible work that is folded into

the result and most often not taken into account. In any classification, they argue, there is inevitably a "slippage between classifications and standards on the one hand, and the contingencies of practice on the other" (Bowker and Star 1999:293). To understand these processes, they suggest an infrastructural inversion which implies recognizing "the depth of interdependence of technical networks and standards, on the one hand, and the real work of politics and knowledge production, on the other. It foregrounds these normally invisible Lilliputian threads and furthermore gives them *causal prominence* in many areas usually attributed to heroic actors, social movements, or cultural mores" (Bowker and Star 1999:34).

The 'causal prominence' is important for my study for two reasons. For one, classifications that take place around the wool may have consequences that are unexpected. Secondly, by looking at the actual work that goes on for classifications to occur, much of what may seem to be 'magic moves' are pulled into sight and flattened out into more pragmatic activities. For instance, in Chapter six I show how the standardised measurement that are applied in laboratories, coexist with other modes of classifying it and in Chapter eight I show how the 'artness' of an artwork is actively maintained by means of invisible work to adjust the art back into its category: "Art".

Why is this important? Because this is a means to shed some light on the 'magic leaps' back and forth between different modes and scales of ordering, and, concomitantly, onto abilities to sustain which otherwise tend to be ungraspable and shrouded in mystery[28].

Bowker and Star link to the 'material turn' in the social sciences, when calling for focus to be placed on the invisible work which classifications inevitably entail. They suggest an approach that takes into account the interplay between the material and the conceptual, by not only acknowledging that materials, tools and artefacts have conceptual and symbolic aspects, but, also by giving importance to the brute material force of that which has been considered ideal, such as categories (Bowker and Star 1999).

These authors argue that a main aspect for categories to function as such are the slippages – the disturbances, the misfitting events, the misunderstandings, the interferences. Similarly, Mike Michael in his article "On making data", cited above, draws on French philosopher

28 David Turnbull (2000; 2002) talks about similar dynamics in knowledge building practices as collective work, that is located and that locates, situated and situating.

Michel Serres, who argues that patterns of communication are mixtures of signal and noise, or interference, produced in the course of transmission. We are also reminded that the many and varied patterns of communication which occur are characterized as much by noise or misunderstanding as they are by success (Serres and Latour 1995).

These interferences, which form patterns in their own right, are of equal interest. Both Michael and Serres suggest that they play a formative role in the development of a given set of ideas or theories, concluding that not only can there be no straightforward exchange of messages from one point to another, but that noise is a productive component of all transmission. Without noise (interferences, misunderstandings, detachments, slippages or disorientations) there would be no communication at all. Mike Michael suggests that an emphasis on interferences as legitimate components of the relational situations that social scientists work with proves relevant and may potentially help make visible particular versions of the field that are otherwise perhaps not visible.

Through the specific empirical foundations grounded in my fieldwork, I find that Haraway's *interferences that form patterns* (Haraway 1997) fits as an imagery from which I have been able to build my approach. She refers to such interferences as diffractions (see also Barad 2007:71-94), while I have chosen to refer to them as formations. Simply put, interference patterns and fibre formations have to do with "the way waves combine when they overlap and the apparent bending and spreading of waves that occurs when waves encounter an obstruction" (Barad 2007:74). I suggest that the kinds of interferences described in the analytical chapters that follow generate the particular 'fibre formations' and include acts of sorting and ordering which do not only group together different pre-existing entities – such as people, things, materials and species – but are ways to shape and generate worlds.

Summary

Anthropology offers resources that are useful for studying complex worlds. When wanting to study wool, its relations and its abilities to sustain – its formations – anthropology provides methods for observing and analysing that are not found in other kinds of descriptions. The discipline's long-term engagement with sociology, feminist theory, feminist materialism, post-

colonial critique, the philosophy of science, political and human ecology and science technology studies offer numerous conceptual means for engaging power, process, knowledge production and subjectivity (cf Swanson 2013). These means make possible narratives that account for intertwined human and non-human relations. These relations may involve non-human agents – be they material or non-material; animal or plant – and are in this way multispecies. To pay attentions to such relations is a movement towards a less human-centred approach, which is also called for by many scholars today.

This thesis takes on a set of concepts that have been at play in a contact zone between various debates; a contact zone referred to as material-semiotics, or 'the material turn'. By weaving together certain aspects of these debates with my own fieldwork material, my approach is a selection of versions or variations. The conceptual tools I use are those that I have found resonate with my fieldwork. This also implies that my approach, at times, cuts through or bypasses certain aspects of those debates. In my efforts to describe the work around the wool on the South American grasslands, I have been vigilant as to how natures and temporalities are perceived and generated in the specific details in my fieldnotes and have responded by letting these echo with the literature.

The bottom-line that follows from this chapter's exposure is that this thesis, and its focus on 'fibre formations' as field members' acts of classification on the South American grasslands around wool, is overtly in itself an act of classification. This implies that acts of classification are in what follows at once the interest of study, a way to perceive, a method for analysis and a mode of intervening with – making – the field (Swanson 2013). The stable point in this endeavour, albeit transforming along the way– the site – is the woollen fibre.

4. Fieldwork: Methods and Settings

I have already opened up a number of methodological considerations in the introduction, when presenting the notion of 'fibre formations' as my device and approach – as a way of perceiving, relating, ordering, of doing fieldwork and a method for analysis – when proposing wool as a site *per se*. Also chapter three where my analytical framework is developed further is tinted by methodological debates on how to include materials while 'making the field' during research. Furthermore, the analytical chapters in Part II, all weave in current discussions on methodological aspects of doing anthropological fieldwork. For instance, chapter six offers a trans-local comparison between laboratories and includes reflections on the possible dissonances between what people say they do, what they do and the scope of what they consider themselves to know; chapter seven discusses different methods to 'hear' the story of the wool, based on the observation that people who work with it, speak of it as an active part of telling a story. I link to storytelling as method.

Since such methodological topics are partially integrated and run along the whole thesis, in this chapter I choose to focus more on the practical aspects, the settings, the procedures, and the tactics used during the research process of the study.

In spite of the numerous possible settings and the conceivably endless scope of wool, I spent my fieldwork time in a limited set of places. During slightly over a year, in 2010 and the beginning of 2011, I conducted fieldwork with sheep farmers, in laboratories, with artisans in their homes and/or workshops, and in several washing, spinning, carding and/or weaving industries. I made most of my visits inland Uruguay, and in or near the capital, Montevideo. During that year, I also spent time with the artist, Mónica Giron, in her studio, in galleries and at the art school where she also worked, as well as in some of the art collections that hold her artwork in Buenos Aires, Argentina.

In 2014, I resolved to go back for three months for additional fieldwork, this time mainly in Patagonia, on both the Chilean and the Argentinian side of the Andes, and in the Chilean archipelago. In December 2014, I also attended the annual International Wool Textile Conference (IWTO) in Brussels, Belgium.

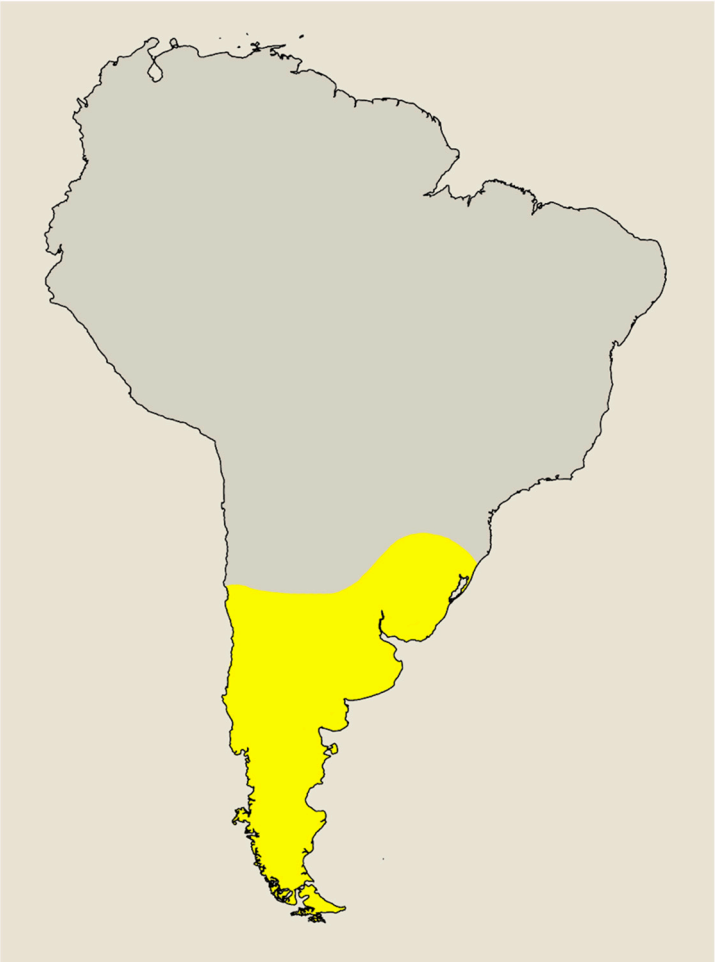

Figure 4.1 Map of South America.
The yellow area indicates the region within which the fieldwork of this study has been conducted. The area coincides with the Souther Cone and embraces three nations: Chile, Argentina and Uruguay. (Map drawn by Bruno Capelán based on Cardellino and Mueller 2014).

The reason for limiting the fieldwork to this place was, as explained in the introduction, that the concern of the artwork which triggered the study pointed and lead me to step deeper into the wool production of this region.

The fieldwork involved a lot of long distance travelling. When thought of as *one* place, the grasslands – here used in its wider sense as grazing lands – span an area of 4.944.081 square kilometres, and three countries, Chile, Uruguay and Argentina (Suttie, Reynolds, and Batello 2005; Frame and Reynolds 2005). They embrace a variety of ecozones, biozones, geozones, microclimates, farming and pastoral systems, urban and rural variety and management policies. My decision to focus on the grassland as *a* region entails taking an opportunity to rethink categories when placing together material that has been collected at enormous distances, and making certain kinds of comparison – certain classifications. Such a move does not deny the diversities or the differences that may, for instance, stem from national and local governance, but must inevitably overlook certain aspects, in order to lift forward others that lay intimate to the purpose of the study.

In this sense, a premise for my study has been a transregional comparison, by clearly cutting across certain differences without ignoring them. This allows for a lifting forward of details about the relational activities and skills that I have set out to pay attention too.

Making phone calls, sending emails and telling people about my interest in work with wool was part of the contact making activities. New contacts were then made in classical ethnographic chain reaction manner – one contact leading to the next and the next and the next, and sometimes included a combination of luck, stubbornness and personal motivation.

For instance, once, I was walking back from a rent-a-car agency, just having returned the vehicle that had taken me many kilometres back and forth and across inland Patagonia. I had spent about a week travelling between different sheep farms, asking the farmers about their work and life and walking the fields with them. I had slept a few of the nights on the farms, for some nights I had found a room to rent and the rest I had slept in the car. I carried a lot of recordings, photos, notes and impressions, as well as a bad cold, and as I was leaving the agency I took a tired turn onto what I hoped would be a shortcut to the room I had booked and the comfortable bed that was on my mind. I ended up standing in front of a Mapuche wool workshop. I went in, sat down and told them about my project and was invited to come back the next day. From there, several interviews and further contacts with artisans rolled in.

Otherwise, most contact was made through already established informants. A laboratory technician that I had interviewed would pick up the phone to call a person that he knew who worked in a Mapuche sheep farmer cooperative. Once that person had approved, I got his number and we set up a meeting.

Also the opposite was sometimes true: that some efforts to make contact did not automatically 'roll on'. One person to whom I reached out for contacts with sheep farmers at first showed great enthusiasm and promised to call me back with information, yet although I left him several messages over an extended timespan reminding him of my interest, I never heard from him again. A similar situation happened with the Benetton Group in Patagonia. My calls were not returned. Although I was eager to get a sense of their own version of their presence and activities in the region, I ended up accepting that with this multinational company there were other kinds of conditions and gatekeepers at work, and that the version I would get from them was through what was already published in press releases and online. A more nuanced understanding of their presence was to become visible through my fieldwork with other farmers and woolworkers in the region.

In hindsight I see that I was moving this study quite carefully, without wanting to push it in any forced direction, but letting it happen and build itself up along its own trajectory. I also moved quite carefully in the places and rooms I spent time in. This does not imply that it is in any way 'innocent' or that I have acted like a 'fly on the wall'. I made specific choices along the way, and here the purpose, aim, methodological disposition and conceptual focus were always actively motivating the decisions.

Having been careful may, then, sometimes have affected my conduct, but not necessarily the results of the study. During one fieldwork session on a farm I was the only woman present. This fact made my presence more special than I would have wanted. I hesitated for a few moments when wanting to sit down and talk with the shearers on their break, as the circle they formed where they sat was very closed. I did create the opportunity to squeeze in between two of the men and the conversation took speed quite easily after that. I also, however, decided to not spend the night on the farm. I saw absolutely no danger, but neither did I see a reason to feel vulnerable at night.

In the laboratory I accompanied several technicians during their work: I sat and walked with them as they went about doing their job and asked questions. Most of my time was spent in a combination of watching and asking questions. This was a similar procedure as with the artisans in their workshops. I tried to take care to not interrupt their job, but I know that my interest and questions did divert their attention and swallow some of their time. I also know that it was not always clear to them *what* I was after. One technician asked me: if anthropologists compare cultures, why did I spend time in a laboratory? Nor was it always understood *how* I went about with my research. An art collector whom I was interviewing would interject that I was not adding anything with my inquiries that he didn't already know. An artisan would ask what my hypothesis was. I tried to explain again and in a different way what I had always already introduced: that my efforts had to do with getting to grips with their everyday work with the wool or the woollens, with their skills, and with the way they saw their own work and their worlds. I did not work with a predefined hypothesis, but with assumptions and dispositions, and that it was in conversation with people like her, and with the scholarly literature, that my project took shape.

Another challenge was to move beyond or work actively with contradictions that would sometimes occur between what people did, what they said that they were doing and what they said was the effect or significance of what they did. Once I had accepted such contradictions as not only a common aspect of doing complex fieldwork (Atkinson, Delamont, and Housley 2008) but as part of my findings (which I make more explicit, particularly in Chapter six) I could proceed with more confidence. In relation to this issue I also found Maria Puig de la Bellacasa's quote comforting when working on, as she suggests that "Knowing and thinking are inconceivable without a multitude of relations that also make possible the worlds we think with" (Puig de la Bellacasa 2012).

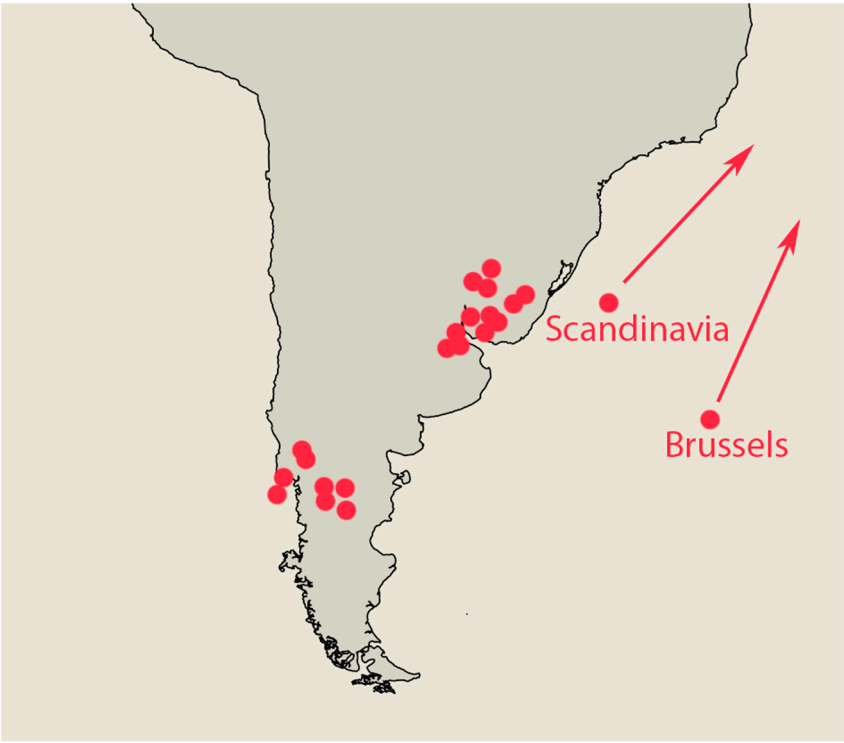

Figure 4.2 Map of the region with details of my fieldwork settings
This map details the location of the sites/environments: the laboratories, the sheep farms, the manufacturing plants, the artisan workshops, the art collections, the artist studio, the Benetton stores in Scandinavia, and the IWTO meeting in Brussels.

All in all, I conducted about 40 interviews. These were recorded when possible (there were a few times when the recorder did not work). Along with the interviews I took photos, and sometimes recorded short videos (also the camera failed a couple of times). In addition, I dedicated a lot of attention to what was going on – I made observations[29]. Tim Ingold highlights the significance of observation in anthropological research:

29 To clarify, we are talking about observation as an anthropological research method and not about authoritarian control, panoptic surveillance or any candid presence, although recent debates about this kind of observation also include questions about the effects of technology, and critique this notion for insufficiently characterizing the complexities of contemporary surveillance practices (Gad and Lauritsen 2009; Dubbeld 2005; Lyon 2006).

> For to observe is not to objectify; it is to attend to persons and things, to learn from them, and to follow in precept and practice. Indeed, there can be no observation without participation – that is, without an intimate coupling, in perception and action, of observer and observed (Ingold 2000: 108). Thus, participant observation is absolutely not an undercover technique for gathering intelligence on people, on the pretext of learning from them. It is rather a fulfilment, in both letter and deed, of what we owe to the world for our development and formation (Ingold 2014a:387-388).

My committed observations were all written down, at first mostly as jotted words, lists or half sentences, in a notebook (or sometimes on a piece of paper) by the end of the day or when I had just left the place. Later, I wrote whole sentences and paragraphs (called fieldnotes in the analytical chapters) sometimes by hand but mostly in a word documents on my computer. I always made sure to write up these fieldnotes as soon as possible after the visit. I invested a considerable amount of time on writing them, and also on transcribing the interviews. I saw these tasks as ways to reflect over and code the material (Emerson, Fretz, and Shaw 2011; Sanjek 1990). When writing up the thesis, I would go back both to the original recordings, and to those notes and I would sometimes remember other version, or notice other aspects, of the same event. I would also note new details by revising the photos and the videos I had taken. This may be referred to a variation of a hermeneutic spiral where the oscillation between parts puts 'the whole' in motion (Alvesson and Sköldberg 2009).

Fieldnotes and the photos are, in this sense, not accurate descriptions of 'reality as it really is' (Clifford and Marcus 1986). Brit Ross Winthereik (Winthereik 2004) suggests replacing the notion of 'accurate' with 'adequate' description, referring to how well the researcher links the fieldnotes, the transcripts, the analytical and theoretical resources (2004:12; see also Juul Nielsen 2010). This way of viewing also allows the researcher to adjust, and re-adjust the study and its focus along the way.

The analytical chapters, in part II, also include discussion on methods. I have given my fieldnotes as well as the photos a lot of space in the analytical chapters. The fieldnotes included in the analytical are elaborated from the original notes taken, and slightly adjusted in order for them to be more coherent for a reader. I sometimes include a few words or sentences in Spanish to provide a livelier sense of the voice the speaker. That the photos are given so much space in my work, is mainly due to my personal background in photography and to the strong conviction that visual information, such as photos, does not simply illustrate what the text is

already saying but can be used to add to the flow of the narrative. I therefore think of the photos and their accompanying picture-headings and picture-texts, which I have carefully selected for the analytical chapters, as overt parts of the body of text, of the argument and the place-making of my thesis (Collier and Collier 1986; Pink 2008; 2013). This is also why I do not include in text references to the photos.

Every so often, in conversation with the people I was talking to about their tasks and activities, they would make associations to other sources, recommend me to read texts or look at reports and documents that they thought would interest me. Most of the times I made efforts to find these sources. I have, in the chapters, cited these as references.

Practically all interviews were conducted in Spanish and I translated the parts that I found relevant along with the transcriptions. Before every interview and observation, I made sure to inform the participants about the purpose of my study, that the interviews would be used only for my project and not by anybody else, and that they could withdraw at any point without further questions. I have as much as possible preserved anonymity of persons, places and circumstances, with the exception of the artist, who has given her consent, and who is a public enterprise. I see this confidentiality as both an ethical consideration and as part of the coding process of seeing links beyond the immediate.

Part II.
FIBRE FORMATIONS

5. Displacements on the grasslands

> Sheep stories offer snapshots of the simultaneously ordinary and complex imbrications linking humans and domesticated animals, and they are often used to reveal the paradoxical dimensions of these connections. The ways in which sheep are literally folded in to human social life are certainly not limited to rural, peasant or subsistence economies (Franklin 2001).

How are sheep "folded in to" life on the South American landscape? This chapter explores the formations of the landscape through insights into its history mixed with my fieldnotes. More precisely, it traces *the making of the geopolitical landscapes of classification in relation to sheep farming*. It builds on the theme of classification introduced above that suggests that acts of sorting and ordering do not merely group together different pre-existing entities (such as people, things, materials and species), but that they are ways of forming and generating worlds. To hold together these worlds in turn rely on different kinds of interferences. The kind of interference in focus in this chapter is *displacements*.

A premise of this chapter is that classifying the grasslands is not *only* about delimiting, dividing up the actual land, by drawing borders and setting up boundaries towards neighbours; and it is not *only* about the knowing the quality of the soil and whether there are processes of desertification. Acts of classification, I suggest, also happen for instance when the sheep pick their feed, and when people, or animals, are displaced from one point to another.

In beginning to explore how acts of classification make and form environments, communities and practices around Merino wool, the chapter runs along two intertwined strands of selected descriptions based on my material.

The first strand of descriptions (1) explores a crossing through the grasslands where the wool making takes place. It signals coexisting

temporal cycles, paces and rhythms. Geological eras meet up with historical accounts of conquests. Such accounts turn out to be crucial for an understanding of the landscape's composition. But also volcanic eruptions mix with seasonal cycles and the daily routines of sheep managing, trigger modes of displacements that shape the activities.

The second strand of descriptions (2) explores some of the idiosyncrasies of classifying which the wool making activities rely upon. To achieve this, I paid special attention to how (a) the sheep, (b) the farmer and (c) the landscape relate in order to make wool. This triad (a-b-c) is crucial for an understanding of the technical and practical particularities of wool making in sheep farming. At the same time, it provides a sense of the skill and the care that is, by necessity, involved in the making, by placing particular emphasis on how various challenges are spoken about and handled.

The chapter is organised as an 'ethnographical driving through' the field. It is a contribution to the discussion introduced above on how we, as anthropologists, too make our fields by classifying (selecting, ordering and othering) and how we, by doing so, provide particular versions that may (or may not) add valuable knowledge to timely concerns. Within such endeavours, nonhumans are to be taken into account as active parts.

Driving with dinosaurs and guanacos

The destination of the drive this time is located some 250 kilometres southeast from the skirts of the Andes. Travelling inland, crystal lakes and black ponds pass by. Leaving the breath-taking peaks and stunning high valleys behind, the car still sweeps along a wavy surface but the humps elongate and the curves become blunt as the landscape loses elevation, flattens out, calms down. Huge raptors draw air circles as they glide the icy winds, browsing the pale fields for hiding prey: weasels, opossums, rabbits, young Patagonian maras and foxes, snakes and worms, smaller birds, birds' eggs, *tuco-tuco*, *aperiá* – two kinds of endemic rodents – and insects. All are there, yet they are mostly visible to hunger-induced gazes.

Figure 5.1 Patagonian grasslands.
The photo shows Patagonian grasslands as they stretch eastwards from the Andes facing a pre-mountain range *(Meseta de Somuncurá*). In the photo, the vast stretch is interrupted by a fence along the road. Fencing with wire or barbed wire was introduced in the region from 1830 onwards by a British settler and landowner (Pieske 2016). At first, the practice was looked upon with certain mistrust by the farmers because the wire would leave scratches in the animals' skins as they ran into it. Nevertheless, as landownership was reordered the need to set boundaries increased. When the wire was made finer, it was eventually accepted and began proliferating as a common fencing material. This introduced a new skill carried out by *el alambrador*, the 'wire fencer'. The task was then often taken on by Irish migrants in the beginning and, later, by settlers arriving from Lebanon. A subsequent effect of the fencing practice was its interference with the passage of the *gaucho* – the mestizo horse riding farmhand – who had previously roamed freely across the open grasslands, offering his labor force from farm to farm, often herding sheep or cattle. As wire fencing was adopted the gaucho's situation transformed. His characteristic mobility and his presence on the grasslands gradually decreased. In the photo, the fence serves a multiple purpose of delimiting property, directing and bounding the sheep that pasture, and mutually protecting animals and vehicles that pass on the road.

These are sedimentary lands which blend with volcanic deposits. Sedimentary lands are composed of solid materials – rock, minerals, plant and animal remains – which have been displaced and deposited here by water, ice, or wind. The land was settled over an interval of the geological time from about 252 to 2.5 million years ago (Suttie, Reynolds, and Batello 2005). Dinosaurs are said to have wandered here. Some exceptional remains were recently excavated from a hitherto unknown giant lizard, the *Argentinosaurus*. A 26 metres long, 60 tons heavy *Dreadnoughtus* was made public in 2014 (*Colossal Dinosaur Skeleton Found in Southern Patagonia* 2014.). With the exception of birds, the dinosaurs were extinct some 66 million years ago (Suttie, Reynolds, and Batello 2005).

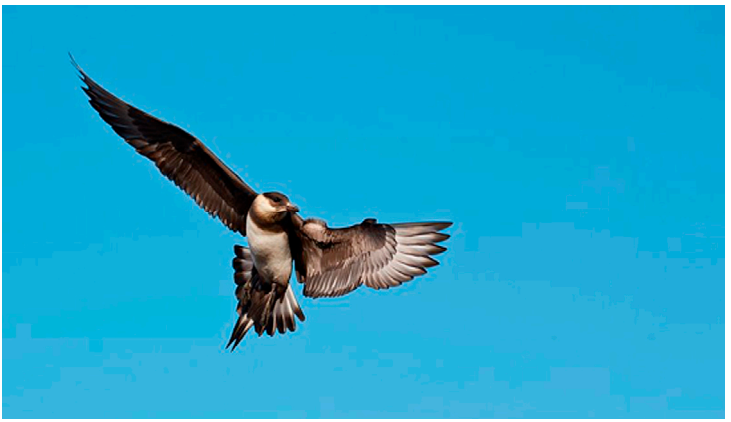

Figure 5.2 Parasitic jaeger in flight.
The *Parasitic jaeger* (*Stercorarius parasiticus) is* a bird of prey can be seen in the region today. This species is highly migratory, breeding in the Arctic region of the northern hemisphere as far north as the Norwegian archipelago Svalbard, located in the Arctic Ocean, and then migrating to the far southern hemisphere. The *Parasitic jaeger* eats small birds, rodents, insects, eggs and berries. This bird makes a variety of calls, including a long shrieking call when defending its territory and a short, often repeated call, used especially when attacking or just after landing (*Parasitic Jaeger: (Stercorarius Parasiticus)* 2016; "BirdLife International Species Factsheet: Stercorarius Parasiticus" 2016). Popularly they are often shot at illegally due to stories of their dive-bombing disturbing the sheep and occasionally driving the grazing animals over cliff edges. Recent information states that this species is today classified as 'least concern' and does not approach the thresholds for vulnerable, i.e.it is not currently in danger of extinction ("BirdLife International Species Factsheet: Stercorarius Parasiticus" 2016. Source: "Alaskabirder").

Figure 5.3. A Guanaco herd grazing the Patagonian grasslands.
The photo shows how these animals appear to disappear into the background. (Photo Diane Walking 2014).

Despite the estimates that the region has been inhabited by humans since at least 10.000 BCE through alternating waves of migration[30] (McEwan, Borrero, and Prieto 2014), it is today classified as one of the world's least populated areas, with a density of 1-2 persons per square kilometres. The treeless semi-arid grass and shrub steps have been grazed by ungulates for centuries, the native ones being the camelids vicuñas, alpacas, llamas and guanacos.

The guanacos (from the Quechua language '*huanaco'*) were an early important protein source together with the rhea (a small kind of ostrich locally known as '*ñandú'*). The guanaco fibres were spun and woven into textiles. To capture the animals they would either be driven into a ravine where a group of hunters lay in waiting to spear them or chased on horseback with '*boleadoras'*: a hunting tool made of one or several rounded stones sometimes covered with leather, tied with interconnected cords, and thrown to capture animals by entangling their legs or wings (Bailey 2011).

As I drive on I am reminded of Charles Darwin's description of these animals in their habitat:

> December 23rd [1833]. [---] The first landing in any new country is very interesting, and especially when, as in this case, the whole aspect bears the stamp of a marked and individual character. [---] The surface is quite level, and is composed of well-rounded shingle mixed with a whitish earth. Here and there scattered tufts of brown wiry grass are supported and, still more rarely some low thorny bushes. The weather is dry and pleasant, and the fine blue sky is but seldom obscured. When standing in the middle of one

30 The indigenous peoples of the region included the Tehuelches, whose numbers and society were reduced to near extinction not long after the first contacts with Europeans. Tehuelches included the Gununa'kena to the north, Mecharnuekenk in south central Patagonia and the Aonikenk or Southern Tehuelche in the far South, north of the Magellan channel. On *Isla Grande de Tierra del Fuego*, the Selk'nam (Ona) and Haush (Mannekenk) lived in the north and south-east respectively. In the archipelagos to the south of Tierra del Fuego were Yámana, with the Kawéskar (Alakaluf) in the coastal areas and islands in western Tierra del Fuego and the south west of the mainland. In the Patagonian archipelagoes north of Taitao Peninsula lived the Chonos. These groups were encountered in the first periods of European contact with different lifestyles and languages. Around 1000 BCE, Mapuche-speaking agriculturalists penetrated the western Andes and from there across into the eastern plains and down to the far south. Through confrontation and technological ability, they came to dominate the other peoples of the region in a short period of time, and are the principal indigenous community today. The Mapuche model of domination through technological superiority and armed confrontation was later repeated as Europeans implemented a succeeding but conceptually identical cycle, essentially replacing the position of the former dominators with a new, predominately European class (Briones 2002; McEwan, Borrero, and Prieto 2014).

> of these desert plains and looking towards the interior, the view is generally bounded by the escarpment of another plain, rather higher, but equally level and desolate; and in every direction the horizon is indistinct from the trembling mirage which seems to rise from the heated surface. [---] The guanaco, or wild llama, is the characteristic quadruped of the plains of Patagonia; it is the South American representative of the camel of the East. It is an elegant animal in a state of nature, with a long slender neck and fine legs. It is very common over the whole of the temperate parts of the continent, as far south as the islands near Cape Horn. It generally lives in small herds of from half a dozen to thirty in each; but on the banks of the St. Cruz we saw one herd which must have contained at least five hundred. They are generally wild and extremely wary. [---] The sportsman frequently receives the first notice of their presence, by hearing from a long distance their peculiar shrill neighing note of alarm…. On approaching nearer a few more squeals are given, and off they set at an apparently slow, but really quick canter, along some narrow beaten track to a neighbouring hill. [---] I have more than once seen a guanaco, on being approached, not only neigh and squeal, but prance and leap about in the most ridiculous manner, apparently in defiance as a challenge (Darwin 1833/2001).

The "apparently slow, but really quick canter" would be a perception play – an optical illusion – due to a background-foreground shift. Because the background is vast and seemingly endless, the movement of anything seems diminutive and slow. This is applicable also to my car when it crosses the landscape today. The hugeness of the vast makes even speedy movements seem delayed. After hours of frictionless driving, the smooth asphalt surface transforms into bumpier eroded dirt roads. The rate of each kilometre diminishes. The weather gets harsher here: precipitation drops to between 150 and 300 mm per year. The mountains no longer afford protection from the wind, and temperatures become more extreme. During the summer, in daytime, temperatures can rise up to 35°C, and in the winter record lows are documented as -35°C (Suttie, Reynolds, and Batello 2005).

It is striking how Charles Darwin's descriptions, written as late as in 1833, emphasize a scientific discovery of the numerousness and wildness of the guanacos, which by that time had already in many aspects been stirred and displaced by European settlers and their livestock, particularly sheep. The guanaco population of the region decreased rapidly. The herds suffered active removal strategies from landowners to protect the pasture for sheep; '*chulengos'* (guanacos young) were hunted for wool, meat and hide trade; both long and short-term feed shortages due to overgrazing by sheep have thinned the herds; and fencing has blocked mobility and become a fatal as

the animals attempt to cross roam the grasslands searching for better pasture[31].

The estimated total of guanacos in South America today is under 600.000, whereof at least 540.000 pasture in Patagonia. These numbers, however, are considered rather speculative as they result from the collation of scattered information rather than from planned surveys (*IUCN Lama Guanicoe: The IUCN Red List of Threatened Species* 2016). In other words, it is difficult to accurately count the guanacos on the vasts. Nevertheless, a rough estimate of the guanaco population is good enough for the purpose of making a comparison to the presence of sheep. Recent calculations indicate a total of 46 million sheep in South America, of which circa 25 million pasture the Southern Cone grasslands (Cardellino and Mueller 2014). The sheep displaced the guanacos, but they took their time in doing so.

Border-crossing sheep and wool

Most likely, sheep first stepped on Southern Cone soil in 1549 (Bakewell, Holler 2010). They were brought to the grasslands from Spain via Lima, which was the capital of the Vice-royalty of Peru (the Spanish colonial administrative district established in 1542). Sheep were considered to be a good solution providing nutrition and clothing to the conquerors and colonists who travelled by land because they could be brought on expansive, explorative expeditions with relative ease. They were appreciated for adapting well to the harsh landscape, not needing as much pasturage as cattle. Local inhabitants could be engaged for the shearing and the working the wool (Bakewell and Holler 2010).

The Merino, a breed that is growing in request today for its finer fibre, only arrived centuries later. This delay has its roots in Spain, where the export of Merino sheep was strictly prohibited for 600 years.

El Honrado Concejo de la Mesta – The Honourable Council of the Mesta was a corporation for sheep owners in Castilla, Spain which was recognised and accepted in 1273, at the time when areas of Spain formed part of Muslim civilization (711-1492)[32]. During the 13th and 14th

31 Guanacos are today protected in most parts; they may still be sheared but not hunted for killing. The guanacos' coats consist of fine fibres which can be seen in luxury fabric and which are valued second only to those of the vicuña (Bakewell and Holler 2010; "Royal Fibers" 2016).

32 The name Mesta is thought to derive from the Arabic word *Mechta,* meaning winter pastures for sheep (Klein 1920).

centuries the *Mesta* developed into the central institution which promoted and controlled all sheep rearing. It ended up holding both administrative and legal powers, having been granted these privileges by the Spanish crown. Thanks to the Mesta, Merino flocks possessed a legal right of way over any land for their migratory routes. The flocks were to be given access to pasture where needed. The Mesta had its own officers authorised to call in any offending persons who refused to comply into its own tribunals. In his study on the Mesta and the Merino Julio Klein (1920) writes: "Spanish merino wool was for generations one of the great staples of commerce during the period when modern Europe was in the making" (Klein 1920).

The history of the Honourable Assembly of the *Mesta,* the Castilian sheep rearers' guild, presents a vivid picture of some six hundred years of laborious effort on the part of one of the great European powers to dominate the production and marketing of that essential raw material. This policy, though primarily concerned with the agrarian affairs of the realm, had, nevertheless, a far wider significance because of its part in the mercantilist ambitions of the Castilian monarchs. The high unit value of wool, its compact and exportable form, and the universal demand for it made it one of the most valued means for determining the relative status of rival monarchies (Klein 1920).

Through its favourable deals with the Netherlands, a leading textile producing state, the *Mesta* controlled the largest and most profitable trade business in medieval Spain. By the 16th century, the Mesta held more than two million heads of Merino sheep. The organisation ensured a monopoly of the Merino breed until the mid-19th century when the organization began to decline and the fine-wool Merino sheep would begin to be distributed and mix with other breeds worldwide. The *Mesta* was dissolved in 1836 and replaced by the General Stock Raisers Association.

So profitable were the activities of the organisation that Spain's nascent industry tended to be neglected in favour of stock breeding, and the country continued to export raw materials and import manufactured goods well into the 19th century. Thereby, the *Mesta* has been held responsible for Spain's relative lack of industrial development compared to the rest of Europe. It was wool money which, to a considerable extent, financed Spanish rulers and their conquistadors' voyages to what was known as the New World. On Columbus' second voyage, sheep were brought to the Americas (though they were not Merino). Eric Wolf reflects that "together, Spanish sheep and American silver underwrote large-scale Spanish military

operations in Europe and the growth of a royal bureaucracy far beyond the ultimate capacities of the Spanish economy"(Wolf 1982/2010).

Nevertheless, by the mid-17th century Spanish unmanufactured wool exports had begun to lose out to the English production of the raw material. England, in turn, was being transformed into a kind of colony of the Flemish wool and yarn manufacturers by supplying them with the unprocessed material. Henri Pirenne's analysis highlights that the Spanish wool exports were to the Flemish cloth industry what the Argentine Republic and Australia are to the cloth industry of Europe and America today. Instead of competing with them, they devote themselves to producing more and more wool for which there is always a buyer (Wolf 1982/2010; see also Phillips and Phillips 1997; Power 1941).

By the beginning of the 1900s the textile industry demanded finer wool. This affected the European producers who had focused more on meat production. British manufacturers turned to importing wool. The US Civil War had generated a cotton crisis. In combination, these events produced a drastic rise of the market prices of wool. The knock-on effect of these processes in the case of Uruguay was an increase in the number of sheep from 800 000 to 26 million individuals between 1906 and 1952. This expansion involved a "*merinización*", i.e. an intensified cross-breeding of the existing sheep population and the newly imported Merino breed with the aim of refining the wool, and thus adapting to the demands of the European market. This was the "The Wool Revolution" (Chouy 2014; Lorenzo 1997).

Jorge Chouy reminds us of yet another seemingly remote event which hugely and directly affected the presence of sheep on the Southern Cone grasslands: "the great wool disaster" (Chouy 2014). In the 1980s the Australian wool industry thrived in Response to increased Chinese demand for wool and gradually became the backbone of the Australian economy. However, between January 1988 and February 1991 the wool industry collapsed, largely due to an imposed reserved pricing scheme (Woolmark 2016) which came about through a series of events which would prove unfortunate for the global wool industry.

A principle buyer of wool during the 20th Century was the Soviet Union and this nation quickly became Australia's biggest buyer. Nonetheless, the drastic political changes that occurred at the end of the 1980's saw this trade partnership abruptly collapse much as the Berlin Wall did.

The Australian Wool Corporation, who was in charge of overseeing market trends and stabilising prices, interpreted the collapse as a transient situation, assuming that the Soviet market would eventually recover and return. As an immediate solution to the huge stock of wool that was the immediate concern after the collapse, the Australian Wool Corporation decided to buy the wool up the had been destined for the Soviet market at a very low price as an interim solution while it waited for the Soviet market to return.

But the Soviet market did not return and a huge stock of surplus wool accumulated in Australia; a stock which would take decades to digest into the market. This stock had to be sold off and this resulted in unstable prices and a general value depression which would splash onto the prices of wool produced in other regions, amongst them the Southern Cone (Chouy 2014; Massy 2011;).

Today, the total volume of animal fibres that are produced annually in the Southern Cone region are 140 million kg ('greasy' or 'dirty' wool i.e. weighed before processing), sheep wool being the main production. There are more than 600.000 farms that are engaged in the enterprise. Most are small holders with subsistence units, that usually also own some camelids or goats, yet there are numerous commercial ventures of varying sizes which produce wool for selling. The three types of farms present on the grasslands are today are: large commercial ones with flocks of more than 6000; medium and small farms with 1000 to 6000 heads, and subsistence farms with less than 1000.

In the Southern regions through which I am travelling the patchwork patterns of pasture fields, where large areas mix with smaller, are partially defined by access to water, precipitation patterns and types of soil. Private property has, for centuries, been the dominant form of land tenure (Sánchez 2006). Here, there are a number of colossal commercial farms. One of them is the Benetton Group, whose 900.000 hectares engulf me on either side as I drive through the grasslands.

Imprinted on the land is what journalist Pepe Escobar sums up as a regional history which appears impressed by occupation and conquest (Escobar 2010). "First there were the indigenous peoples. Then came the Iberian navigators, the English pirates, the European scientists, the religious missionaries, the exiles who dreamed of America. Then came the landlords from Chile or Holland, Wales or Poland, Scotland or Denmark. Then, in the 1990s, came the First World billionaires" (Escobar 2010).

The sale of Patagonian land started in 1996, under the governance of President Menem who wanted to sell the country's 'surplus land'. More than 10 percent of the Argentinian land is owned by foreign capital. Today, textile multinational Benetton is the largest landholder in Argentina, ensuring that their hundreds of thousand sheep have a place to pasture and produce the tons of wool annually which the company requires (Escobar 2010; Sánchez 2006).

In this same landscape, the Mapuche populations –today estimated at nearly 1 million people across Chilean and Argentinian borders– sustain their traditions of sheep farming, weaving and knitting. Since 2007, legal controversy has risen between families of the Mapuche community and the Benetton Group for occupying each other's land (Popham 2004; Staff 2014).

And so, when pulling together the various modes of displacements that have happened, the surplus, desert, virgin, sterile, empty, magic, windy, no-man's-land classifications of these grasslands seem to fall flat. The apparent absence –or weaker presence– of a human population in many narrations is, upon examination, filled with a long line of conquests, conflicts and interfering displacements. Yet enactments of categories are never done by narrative alone. They are also always material practices of landscape making (Ingold and Janowski 2016; Otto and Bubandt 2010; Swanson 2013).

Not terra nullius

My car has moved without stopping for several hours. Reaching the last town before my journey's end point, I detour from the main road to find Emilio's home. Emilio is a veterinary from the northern city Rosario. He has lived here for about ten years, involving himself in sheep management projects with local Mapuche cooperatives. We spoke on the phone the day before and he is awaiting my arrival. He has prepared a light meal which we eat in his kitchen, leaning over a map on which he points out the boundaries of the department[33]. We also estimate the distance to our destination and begin talking about how the distribution of land here has come about. Before long we are heading out of town, ready to travel for yet another hour. As we exit the town he continues to tell its story.

33 The department extends over some 475.736 hectares, whereas the municipal lands cover 150 hectares.

"When I first came here I felt it was like moving back in time", Emilio says. "Now, I have learnt that this weave is very complex. There are several issues that are hard to grasp, especially when it comes to the Mapuche communities".

As we drive on – and talk on – I am gradually able to picture what he refers to when he says "this weave" and "complex". By the former he seems to mean the entanglement of relations which includes a number of human and nonhuman entities – the landscape of relations at work here. By the latter he seems to mean that there are many versions of what goes on here that do not necessarily add up neatly, and that certainly are not easily understood, let alone retold.

Today the town has some 500 inhabitants (Rosso 2014), to which about 130 neighbouring farms are added as part of the municipality. It was established after a decree was signed by Argentinian president Roca in 1890 (Rosso 2014; Skottsberg 1911/2004). With the landscape having been classified *terra nullius*[34], 'nobody's land', a boundary dispute between the two newly independent nations of Argentina and Chile was set to ensue. To the Argentinian State, the Southern territories were seen as strategic due to their potential to extend Argentinian power into Patagonia, and thereby curbing Chilean expansion and a move was therefore made to formally annex these lands.

The decree implied a state military campaign, the Conquest of the Desert, with an added purpose of establishing control over the indigenous people. This project was described by some as a civilizing process for the region; for others, it was genocide (Bridges 2000; Giaquinta 2013).

While considering possible strategies for the Conquest, Alvaro Barros –a military governor in Patagonia during the campaign – wrote: "The resistance by the Indians who have sought refuge in the desert is still unknown to us: hence the difficulties that will have to be overcome. As a first step of the plan, we have to choose between two options: 1st to encircle the Indians in the desert, cutting all their communications to the other side of the Río Negro. 2nd to enter and persecute them in the desert without mercy or contempt until exterminating them, to submit them, or to force

34 Terra nullius or 'nobody's land' is used in international law to indicate territory which has never been subject to the sovereignty of any state ("Terra Nullius" 2016).

them to seek refuge south of the Río Negro, and thus to establish the frontier there" (Barros 1872).

The Conquest of the Desert project resulted in the opening of a Mapuche reserve in this area. Up till now the Mapuche (from *mapu* 'earth' and *che* 'people', a collective name for several groups with a common linguistic heritage) had not been governed by the Spanish Viceroyalty, although confrontations, conflicts, assimilations and intermarriages had been going on for centuries in Patagonia[35].

During the Conquest of the Desert, hundreds of Mapuche families were forcefully displaced from the Northern Province of Buenos Aires. These families were grouped together with local, native Mapuche families, who up till then had mainly been self-subsistent and nomadic, living on hunting (guanaco) and gathering; transhumance agriculture of cattle and sheep; and ovine and goat breeding, which shifting between summer and winter pastures.

This was also when the set up for the current production model and distribution of landownership were established[36]. A few self-subsistent and export-driven family owned *latifundios* (large estates) with commercial eyes turned towards Europe would coexist with – and feed off – the *minifundios* (small holdings). These smaller estates depended on the import of manufactured products to complement their scarce resources, while their associated members would subsist by lending their labour to the *latifundios*. The conditions for the *minifundios* were extremely precarious: houses made of adobe, sundried clay-bricks, and thatch, would have no heating; there was no health care; no transport; no energy supply; and the small amounts produced had a low value when bartered with the *mercachifles* – the merchants (Rosso 2014).

35 The name Patagonia is derived from the word *patagón* used by Magellan in 1520 to describe the native people that his expedition thought to be giants. It is now believed that the people he called the Patagons were *Tehuelches*, who tended to be taller than Europeans of the time (McEwan, Borrero, and Prieto 2014).

36 European missionaries and settlers had arrived through the 19th and 20th centuries, notably the Welsh settlement of the Chubut Valley, but other large areas of the Patagonia were generally isolated from European settlement until late in the 19th century. In the 1860s sheep from the Falkland Islands (Islas Malvinas) were introduced to the lands around the Straits of Magellan, and throughout the 19th century the sheep farming grew to be the most important economic sector in southern Patagonia (Ferradás 1998; Bakewell and Holler 2010; Rosso 2014; Sánchez 2011).

The effect of the Conquest of the Desert on the native inhabitants was a forced push towards the geographic borders of the region, ultimately compelling them to integrate as rural workers. The subsequent territory was, as a result, exposed to the arrival of new populations over the 20th Century (Rosso 2014). Groups of immigrants from Spain, Syria and Lebanon appeared, primarily taking up roles as settled *mercachifles* and, secondarily, as rural workers.

These *merchachifles* would eventually settle down, acquiring land through accumulated debts from the small estate holders, thereby expanding their presence in the region and gaining status and influence.

Emilio tells me that about 80 percent of the population in the area today is Mapuche. Migration to the region has continued, particularly from Northern provinces. People generally move south to find work, principally searching for jobs in healthcare and for education and research. Nonetheless, in practice, the majority of these migrants find work within municipal institutions, in tourism, public administration, some education and healthcare, transport, the police force, post offices, while 40 percent of the population remain unemployed.

Emilio is driving while sharing stories and information. At one point he stops the car to list the vernacular names of the shrubs on the fields which we pass.

Figure 5.4 The tufty fields in the grasslands that the sheep pasture off of.

Before reaching our destination we cross a few streams and wetlands. We also stop to open, go through and close a few gates behind us. Finally, the car stops. We have arrived.

Living the landscape: sheep and farmers

Raymi[37] presents himself as a Mapuche *lonko* –a chief – and the President of one of the local Mapuche Cooperatives. He lives in the company of his horse, dog, cat, and some hens and chickens. His closest neighbour is a nephew with his family. They live half an hour away on horseback.

The means of to communicate across the long distances is radio. A community channel announces local events. When somebody wishes to pay a visit they telephone the radio station for it to be announced. In this way, news of guests reaches the hosts. Emilio has called ahead.

Figure 5.5 View from a sheep farmer's doorway
The photo shows Raymi's horse, the hen house and the barn where he keeps sheared wool. In the background, parts of the grasslands which surround his farm are seen.

37 *Raymi* = "celebration" in Mapundungun (pseudonym).

Figure 5.6 A sheep farmer in his kitchen.
Raymi with his mate; this place was his maternal grandmother's. He grew up with sheep, and became a *productor* –a farmer with his own sheep– at the age of thirteen. His great-grandfather was moved to the deep south during the Conquest of the Desert, but his grandfather found that frost and fox were too aggressive that far down so he ended up moving here and marrying into this land. Later, as Raymi's father was also away working on estancias, he decided to get a herd of fifty sheep to help the household. Once an adult, he spent time away working on estancias, amongst them the Benetton Group's sheep farm some fifty kilometres away. When his father died in 1986 he moved back and took over the farm place, expanding the production. He now has some 200 sheep and 70 goats. For three or four years he worked and sold individually but today he is the president of one of the Mapuche Cooperatives which organises collective selling of the wool, amongst other things. "This pays off better and we learn from each other's experiences to improve the production" he says.

Raymi has heard on the radio that we were coming and has the water for his mate ready in his kitchen. The cat sits on the window frame looking in at us. 'She is my doorbell', he jokes. Like any doorbell the cat makes him go to the door and open it. I ask him about his activities and his relation to sheep farming. I ask if there is anything he particularly likes more about it.

> *Todas las tareas son lindas* (I enjoy every task), he replies. But you have to enjoy being in the open –spending time in the fields. What we do is take care of the place; we care for it. We never say that we are landowners. We are part of the *tierra*, we want to live with her. I don't like cutting the plants, particularly not some of the native ones. There is one kind that is perfect as fire wood and that is disappearing. These are things that worry us.
>
> You learnt the skills early in your life. Is it much different now than when you began?", I ask. "It is similar, but the work has changed, mind you. Although the sheep pasture freely they require more attention now than

> years ago. It's delicate. They are delicate. The campo is delicate. Summertime can be very dry. We keep learning about these things. Through the cooperative we learn from each other. We animate each other.
>
> What else do you remember as different? I ask. The displacements were constant at the time. People who had lived here were cornered into the uglier lands by the big enterprises like Benetton. But, like I said, the Benettons also gave me a job. Then there were the Lebanese who fenced across the Mapuche reserve, so that the sheep had to take other routes. Other [people] were literally scared away. They were told: *se viene el fin del mundo* – the end of the world is coming! Go look for somewhere safe to live instead of here!
>
> Fieldnotes

Raymi has a solar panel to collect and convert sun energy to electricity, which he uses mainly for his light bulbs. I ask about that and he comments that "the fact is we don't even get that much sun here. We get it from 9 in the morning to 6 in the afternoon, and between mist and fog and volcano ashes, you know, there is less sunlight. But it is a nice way to have things work." Main expenses are the shearing, the vaccination of the animals once per year, firewood, gas and groceries.

Cautiously, Raymi keeps sharing details with me about his daily life and situation.

> Food supply is what it is, he says. He explains that the kind of food that is called '*vicios'* [vices or luxuries] – salt, flour, sugar, *yerba mate*, noodles, oil, polenta– are bought once or twice per year. The farmers who are organised in the cooperative can get a hold of it at a better price, when it is purchased as wholesales. Those who are not organised buy it from the *mercachifle* –the local gatherer and merchant– who is someone with a vehicle who also transports the wool, the fleece, the skins. He sets whatever price he wants and delivers the *vicios* at a high price. Fruit and vegetables are scarce. People buy it in the village when available, or also from the *mercachifles* or from peddlers who travel the fields. "These are the same ways we have to purchase clothings, utensils and tools", he explains.

The diet is basically carbohydrates –flours– and meat. *El Mate* –the drink of the region– provides minerals and vitamins (Ricca 2009). A family eats about 30, maybe 40, small animals a year, and one or two larger animals. Normally a foal is slaughtered during winter. Some of the old sheep and other animals are eaten. A sheep's teeth are worn as the animal ages. When

this happens, struggle to eat and start wasting away; they grow thin and do not make it over the winter. Hence, by the end of the summer or in the fall, older animals are usually bartered for firewood, timber or grass; others are consumed. It is usually the muttons that go first, but sometimes old females that are no longer useful get eaten as well.

Nowadays, Raymi has some 200 *chivas* (angora goats). These goats are genetically developed to be rustic and smaller in size. They require more work than the sheep, particularly during lambing. This is because they are born tiny and if they do not receive particular care and protected their risk of mortality is high[38].The goats are generally left to pasture over the day in more enclosed areas and gathered in the afternoon to make sure that the lambs are fed by their mothers. This is a procedure which is not required for the sheep. However, the expenses associated with sheep farming are slightly higher in comparison, since they need to be given regular anti-parasite baths.

The Merino survive well on *campos malos* (arid fields, literally 'bad pastures') and the goats can nurture from even worse ones; really bad ones. This is thanks to both species' capacity to *ramonear*: browsing the pastures, picking the grass which they find good to eat.

There are two fundamental approaches to managing the fields. Either shifting between summer and winter pastures or employing all-year pastures. Then there are other situations that require *potreros* (folds). When there is summer grazing the sheep go there in November/December and return in April/May. Generally, they pasture freely, though every now and then they require collection and transferal to some other area. This is an action known as *repunte*.

The most intense work happens during lambing season, in September-October, and during two or three days for shearing. Land areas used for particular service activities such as lambing, shearing, bathing or breeding the sheep are left empty until they are required. Usually, these are the higher quality fields with better grass. They are enclosed with *malla* –metal nets– and used for only two or three months each year. So, generally the

38 "Mohair" is derived from Arabic (*mukhayyar*, a goat's hair cloth). The goat in question, the Angora (*Capra hircus*) is thought to have originated in Tibet. Turkey was the centre of mohair textile production before the goat was introduced to southern Africa and the USA during the 19th Century. Although angora goats are raised for mohair around the globe, the major producer today is South Africa ("Natural Fibers" 2017)

sheep pasture freely with moments of *recorridas* and *repuntes*, when they are gathered in by the herders sometimes daily, in other cases less often. This depends on the presence of predators of the area: mainly fox, puma and people. Thefts are not uncommon. In the open areas the *recorridas* are more frequent than when they are enclosed.

The people I talk to say that also a number of non-human agents affect their work with the wool[39]. One of those is the wind. "It's windier this year than last year", one farmer tells me, as a response to my query about the wellbeing of the sheep. Another agent is the earthquakes; a seism can change the course of the streams. A local story tells of a lake which once disappeared after a land shake. Another agent is precipitation. The amount of rain and snow affects the conditions for both farmer and sheep. A stream dries out in summer and when the ice and snow melts in springtime the stream changes its course. *Se desplaza* –it displaces itself. Yet another powerful agent are volcanic eruptions.

39 I refer to them as agents not because they may have selves or spirits, but because they are considered so by the inhabitants, who talk about them as active entities that directly affect the grasslands, the activities that go on there, the work with the sheep and the quality of the wool by the farmers themselves (Knappett 2008).

Figure 5.7 Eruption of the volcano Arenal, Costa Rica 1998.
I took this photo in Costa Rica 1998. It is included here to give a visual sense of the powerful force of a volcano eruption and of the amount of ashes that is pushed out of the mountain and eventually onto the landscape.

In June 2011 the volcano complex *Puyehue-Cordón Caulle* on the Chilean side of the Andes, became active and spat out an estimate of a hundred million tons of ashes, sand and stones (INTA 2015). The *Cordón Cualle* part of the complex has been registered as active several times, most recently generating an earthquake in 1960. The *Puyeheu*, however, is believed to have been dormant for about 850 years. The wind carried the spreading ashes to remote places like San Carlos de Bariloche, Buenos

Aires, Montevideo, Porto Alegre, Ciudad del Cabo, Perth, Melbourne, and Auckland.

The ashes were analysed as acidic, lacking calcium, phosphor and sulphur and therefore not beneficial for agriculture. As they land on the landscape they affect the plants and the grazing conditions, covering up the shrubs and destroying the dental composition of feeding animals. The effect of these eruptions most recently was that the total stock of sheep in the region diminished by 78 percent (*INTA Noticias: Luego de La Erupción Del Volcán En 2011* 2015). "*Muy fuerte! Muy, muy fuerte*! – Very powerful!" There were some recovery projects supporting farmers who had lost sheep. Of course, some would state a higher number than they lost.

Cutting the landscapes: shearing the sheep

On another occasion, during shearing season, I get the opportunity to visit another farmer. The passages from my field notes that I share here provide additional details on how the landscape is generated and perceived.

> I am told that spring is delayed this year. And I have noticed it myself. It is still cold and the winter-rain keeps insisting. It is the topic of everyday conversations on the street and in the grocery store. This time I hear it over the phone. The man at the other end is the *gerente* (manager) of an association related to the production of Merino wool in the country. When it has been raining the sheep's' woollen coats have to dry before the shearing cutter can work again. So he will be in touch. So I wait. I wait for weeks. Then one dry day he finally calls me with the message I have been waiting and hoping for: "There is a machine working! Can you come?" I take the night bus up north that same evening. The next morning, I am picked up by José in his car. José is employed by the wool association and in charge of overseeing the shearing activities.
>
> We have been driving for hours and hours and are soon to get to our final stop. The country seems to have ceased to be a country and is just a vast expanse. We are driving through what the map refers to as the "South American humid Pampas." Yet the road is dry. The car cuts, rattling across the arid landscape while sucking in its billowing dirt. The inside of the car is now coated with thick white layers of dust. During the last long minutes, the two of us sit silent devoted to our intense thirst for arriving.
>
> Three boar hides hang on a fence, welcoming us as we finally enter the property which we have been journeying to. The ranch holds 3.000 Merino

sheep. “One of their worst enemies is the boar”, José explains. Boars attack and feed off sheep when hungry. The sheep are hard to protect as they run freely on the steppe land. Fencing and re-fencing doesn’t stop predators from attacking and eating the sheep. In bygone years, a hungry gaucho passing-by might slaughter himself a sheep to grill in the open. This still happens, but less frequently. When it does, it is traditional to leave the sheep skin with the wool behind for the farmer. At least he can use that. Boars are not so reverent. “The predators don’t leave the farmer with anything of use”, José reflects.

The ranch owner, who is introduced by José as *el Productor* (the Producer) welcomes us timidly and graciously as we stretch our rigid bodies out the car. “The machine is working”, is all he says. He then makes a gesture to invite José and myself into the roaring space demarcated by the sounds of a large engine sitting at the centre of an open barn.

Nine men are moving systematically, wordlessly, inside that noise. The Producer disappears behind the intensity of the work. Next time I see him he is a silhouette, a distant hat-man-horse combination, riding off rhythmically toward the meeting point between the sky and the landscape, accompanied by some barking dogs. He is, I soon realise, going to collect a flock from the vast lands behind the estancia.

Shearing. The presence of the engine is at first overbearing. It is heavy, its droning sound is unbearable. But while it dominates the first impression, it eventually becomes a background layer of noise, as the sheep silently step into the picture. Of course, they don’t say a word. They just seem overwhelmingly many.

Fieldnotes

Figure 5.8 Sheep assembled outside the barn waiting to be shorn.
Some fifty sheep are grouped together just outside the barn, framed by fences. They stand close together, watching, as though patiently waiting for their turn to get rid of the warm weight of their winter wool. The photo's quality and 'blueness' is due to the fact that it has been cut from a video I took of them as they ran and moved inside the fenced area.

A collective run has just taken the flock from the wind of the grasslands to the bounded *corral* (pen) where they are now assembled. The running, I am told, is favourable as it brings out sweat under the heavy fibrous cloak of the sheep. This softens the skin and makes the shearing smoother. One of the sheep is picked up by a man, boosted over his shoulders carried towards the machine, all seemingly in one movement. There, the sheep slides down near the bare feet of another man who is working one of the six cutters attached to the engine.

The animal wedges into place and adjusts itself between the man's knees. The two bodies integrate as if in a dance: they balance each other's limbs while they both crouch and bend through a series of more or less awkward positions.

Figure 5.9 The shearing.
The man on the photo is working one of the six cutters attached to the machine behind him. Other men bend over their own animal, each distributed around the machine while working the cutters. The animal's fleece is carefully peeled off, detached from the body where it has grown, nurtured by the grasslands until now. From here it starts a different journey of displacements. In addition to the farmer, there are some thirteen or fifteen men engaged in the shearing acitivites.Also this photo is cut froma video I took of the shearing, and therefore blueish and with sharper shadows and contrasts.

The cutter works its way around the animal's body, carefully separating the fine wool from its host skin. Some tiny wounds open up in the more curved parts of the body, some streaks of blood appear. When finished and ready to spread his arms wide to collect the fibre from the floor, the man is given a token that he puts in a cup next to his cutter. *Ping!* Each token is worth some 30 pesos –about 1 US dollar – at the end of the day.

The sheep –now white and skinny looking– allows itself to be lifted up again, this time with less effort. It staggers a bit when let go, testing how to handle its new body weight then runs off, jumping. It is at least three kilos lighter

The shearer carries the still sheep-shaped fleece over to a working surface. Here, it is spread out by two other men. Bad and worse bits are taken out; good and better sections piled together into clips: the collection of several individual fleeces. A young man, in charge of the packing of these clips, shuffles the bundles into a pressure-machine which with a loud and powerful 'huff' compresses them tightly into one large *fardo* (a cubic bale).

Fieldnotes

Figure 5.10 Sorting the fleece.
The photo shows three men sorting the fleece on a table, deviding the whole up into spearate parts that go into different piles. Yet another photo that has been selected and cut from a video I took of the sorrting processes of the wool. The exposure and the light reveals that it is a motion sequence rather than a still photo.

Figure 5.11 Sheep carried towards the shearing machine.
The photo shows one of the men carrying the sheep back and forth, in and out of the barn. To the left of the photo the fleece is being classified.The gestures, movements and the coexisting directions of this photo, together with the high contrasts and the blueish tone, indicates that it is cut from a video that I took and that followed the various moments of the shearing process.

Once the wool is packed and stacked, a sharp hollow cylinder is used to penetrate the mass of some of the *fardos*. To pierce the bale, the full bodyweight of the man is needed. This cutting is referred to as sampling, and I am informed that it is done in a standardised manner in order to send samples that represent to whole range of qualities produced on the farm, to a scientific laboratory in the capital. There, it will run through a number of tests to have its mean quality determined (I will return to this procedure in more detail in the next chapter). The sampling is a crucial moment for the Producer in that it is the first step in the standardised procedure used today to determine the quality of his wool and hence its potential market value.

The men talk about their experience with sheep shearing. One of them tells that he grew up with it. He has worked with it for twenty years. Now, he says, he is also imparting courses, teaching the trade. It takes three or four years to become a sheep shearer. “And then the skill is of course refined with practice”, he explains.

“Do you know where your wool ends up once it leaves your lands?” I ask “No, no” the man says. “Once it leaves the farm I have no way of following it. I see no reason to, either.”

(Fieldnotes)

Figure 5.12 A sheep farmer contemplating his wool.
A sheep farmer is contemplating his freshly sheared, classified and packed dirty wool. Samples have been sent to a laboratory where the quality of his lot will be established. Here, he is awaiting the certificate that will be used in the selling transactions and facilitate establishing a price per kilo.

The shearing season expands over time because of the climate, which varies from year to year and within the region. This machine and its team continue to travel south and end up in the very, very south a few months later. I am told that the machine will also be travelling to Spain, both to shear sheep that pasture there and for the team to give courses to shearing apprentices. This is because the regional shearing skills are appreciated for their long standing tradition, one of the men explains.

> Somewhat ironic, I reflect, recalling how the Merino breed developed. It is often said to be originated in Spain although the exact line of descent from tame sheep to their wild ancestors is unclear. A complex crisscrossing of breeds has taken place. What is beyond doubt in most versions of sheep history is the important role that wool has had in trade. Wool money to a great extent financed Spanish rulers and their conquistador voyages to what was to be called the New World. Then, much later, at the end of nineteenth century, European settlement in this region was dominated by people from Spain and the British Iles; many of them came to establish commercial sheep farms. What a roundabout, I conclude, and some of the men agree.
>
> While the men have their afternoon rest, the Producer invites me to share some food on the porch of his home together with his son. We joke about the fact that we are not eating lamb for lunch and the Producer confirms that yes, when a sheep is no longer producing high quality wool, he picks it out to kill and grill.
>
> “Have you come across the expression 'sheep eat men'?” I ask. “It was a seventeenth century slogan of English peasants who were dispossessed when common land was enclosed for private pastures and herds began to expand in an occupying manner, threatening to...well, actually outgrowing humans in number. Who eats whom, seems to be shifting back and forth. Are you familiar with this phenomenon?” I ask. “Well, no”, he responds. “I hadn't heard that saying before, but I agree, the eater-eaten relationship shifts. For instance, the other day I captured a baby boar that I now keep in a cage. I feed it and look forward to roasting it when it has grown enough.”

Over lunch we talk more about his situation as a producer. This ranch with its land has been inherited for several generations. Sheep farming is a family tradition.

> “It's more or less the same today as it was for my great-grandparents, when it comes the sheep farming. What has changed a bit is some of the tools and the control”. “What do you mean by control”, I ask. “Well, you have associations, some of which form part of the national government's policy

to manage the pasture so that they are not overgrazed, and we have access to courses and to information through these associations. That is both a kind of control and a help to improve the business, to keep it going. And then there are the tools that are used. Like the shearing, it used to be done with hand cutters, but now there is this machine, so it's the same skill, but with other tools. It takes some conviction to stay on in this business", he continues. "Almost like an inherited passion. It is not easy I can tell you that much. The stressful moment every year is wondering how much we will get for the lot of dirty wool that we sell. I am hoping for 6 US dollars per kilo this year, but the market is unstable and the prices go up and down from one week to another."

He explains that his responsibilities are about proactive care for the wellbeing of the sheep and their environment, and that the work is aimed at intensifying productivity in order to keep the business going year after year. Normally this involves the routines of shearing, including eye-shearing[40] a couple of times a year and the general shearing which is done in spring. Another task is protecting and cutting the sheep's hooves when necessary. Adequate nutrition includes managing pastures, with fences and dogs, and distributing the droves over the grassland in relation to water sources. Although sheep are able to survive and reproduce under harsh conditions and with limited hydration, water is still key to this business.

"There is no problem with water here, we have plenty. But we all depend on the comings and goings of the rain. As any farmer does", he explains[41].

Then there is the breeding. And birth assistance when necessary. Lambs are marked and their tails are docked; the male lambs are castrated. Feed supplements are generally not needed in this area, nor are vaccinations. Controlling internal parasites or washing to control lice are procedures that are not often necessary.

"These are problems that seldom appear under the conditions we have here", the Producer says.

(Fieldnotes 2010)

The activities described, tell us about how the landscape is both generated and perceived. Both the farmer's and the sheep's own main efforts involve

40 Eye-shearing is a term used to refer to the practice of shearing the area around the eyes for hygienic purposes and to keep the sheep's vision unobstructed.

41 During certain years, storms, heavy rains and flooding have affected the stock and often killed parts of the flock, particularly when the farmer does not have the recourses to protect and feed the sheep.

making sure they move around so that they get enough feed. Shifting (displacements in) the landscape also implies shifting (affecting, shaping and making) the landscape. Nutrition is obviously survival for the sheep, and from the farmer's point of view it affects how the wool sustains in terms of its resistance –poor feed makes the fibres break more easily, but if the feed is evenly poor all along the year, it makes it more sustainable, that is, less likely to have weaker sections. These are details that occupy the farmer. I learn that this harsh landscape is particularly favourable to the quality of Merino wool. Not only are sheep able to subsist on sparse forage and limited water, their wool actually grows better and finer if the nurture is not too rich. In addition, it is important to protect the flock from predators, mainly boars but also foxes and pumas, in this area.

We talk about the requirements for the sheep to grow the wool which makes his business sustainable. While they require looking after –they need their shepherd– they do wander these grasslands quite freely.

Inspired by the earlier conversation on Spain I mention what I have found out elsewhere about how sheep have travelled historically, to the Producer, and dwell on the key role sheep are given by some authors in the history of farming. The animals' gradual transformation, the multiplication of breeds, their expansive wandering and migratory patterns across borders have happened in confluence with technological changes and trade networks for thousands of years. Archaeologists have found evidence of domestication in Mesopotamia dating back some 10.000 years. By around 3.000 BCE, tame sheep were widespread through western Asia, and from there they are believed to have entered central Europe through Turkey and Greece and through Egypt and Northern Africa into Spain.

There are a few scattered wool textiles from the Neolithic, but initially sheep were kept for their milk, meat and pelt, within transhumance nomadic traditions. In fact, I have read that no wild sheep are wool bearing and that the ancestors had long hair and a fluffy undercoat which gradually became wool, through domestication, while the long hair disappeared. Breeding, feed, climate and protection were all influential to this development. For about 5.000 years domesticated sheep have had similar features to the ones we know today with one crucial exception: ancient sheep could not be shorn and their wool had to be plucked by hand from the animal, or the softer fleece fibres used for spinning and weaving could be collected in the fields as they fell off the animals at pasture.

> "Do you ever pluck the fields?" I ask, as an attempt to pull the information I have back onto the daily life of the Producer. "No, he laughs, that wouldn't be worth the trouble."
>
> (Fieldnotes)

The Producer and his son have listened to my enthusiastic briefing of the messy history of domesticated sheep, apparently without much surprise. Nor do I read their reactions as showing great interest. This information is beyond their world; their concerns are elsewhere and more immediate. The Producer doesn't know exactly where his wool ends up after leaving his farm, nor does he expresses a need to know. What he does have an interest in are the samples of his lot which are sent off to the scientific laboratory. After a few weeks he expects to receive a document with mean measurements which quantify the quality of his wool. (I will review and further explore this in the chapter that follows.) As soon as he receives the laboratory document, he will know his wool's value. This value has been established in correlation to the dynamics of the general world wool market, particularly the Australian Merino market, which serves as a general standard measure which determines the current prices per kilo. He needs to keep track of this for his own sake, to keep his business going.

> When I ask about the issue of breeding and cross-breeding, he is more engaged in the conversation. After lunch we walk over to a place which is special to him: a newly built barn behind his house where he keeps his latest investments. He shows me the two rams –male sheep– which cost him 3.000 and 7.000 US dollars respectively with great pride. These are high quality, fine Merinos which in time will breed his flock into enhanced fibre quality.
>
> The vegetation has been seriously modified by the presence of sheep, particularly in the past 50 years. Sheep numbers peaked in 1952 to 21 million in Patagonia and in 1991 to 25 million in Uruguay, and has since fallen to 8.5 and 7 million, respectively (INTA 2016; SUL 2016; Suttie, Reynolds, and Batello 2005).
>
> On the drive back, several rivers are crossed again. These are rivers that run east from the Andes to coalesce into the Atlantic Ocean, interrupting the vast. Colorado, Negro, Chubut, Chico, Santa Cruz and Coyle are rivers which also lend their names to some of the surrounding provinces.
>
> (Fieldnotes)

Summary

This chapter has shown that the ongoing idiosyncrasies of how people classify and are classified here include relative slowness, partly due to large distances and partly to the coexistence of various temporal cycles. The latter include the geological time it has taken for the landscape to take shape; the time it takes for the wool to grow back on the sheep; and the unpredictable interval between volcano eruptions or heavy precipitations.

The temporality of the activities also depends on other more remote entities than the land, the farmer and the sheep. Fluctuations in Australian wool prices, the itinerary of the shearing machine and its team, or governmental decisions on administration all directly affect the rhythms of the region. There is, as Marilyn Strathern puts it, "no separate external environment out there; an external environment is not part of what is imagined" (Strathern in Flint and Morphy 2000:43). The sheep, the farmer and the landscape are entangled; they act and grow through mutual movements. Instead of being a place that is "out there", separate from the activities, the perception of the grasslands depends on various kinds of acts of categorisation, of grouping together, of sorting and comparing, where an order is only sustained if a number of powerful interferences and intervals are also dealt with. These are classifications which confirm the grasslands and the activities around sheep as simultaneously marginal and centric.

The narratives coming across in this chapter (both the field members', the historical accounts which I have included, and my own) tell some of the ways through which temporal cycles form these grasslands. They suggest that various intervals, rhythms and paces generate a complexity of overlapping cycles. When linked to the work with wool, this complexity tends to destabilise a division between natural and social time. It affords an opportunity to rethink the unilineal notion of time which dominates the concept of sustainable development, relying on an imagination of time as moving from past through present to future.

I have suggested that enactments of categories are never done by narrative alone. They are also always material practices of landscape-making (Ingold and Janowski 2016; Otto and Bubandt 2010; Swanson 2013). In Tim Ingold's words: "Human beings do not, in their movements, inscribe their life histories upon the surface of nature as writers do upon their page; rather these histories are woven, along with the life-cycles of plants and animals, into the texture of the surface itself" (Ingold 2000b:198). Crucial for my argument of this chapter is that the displacements described do not

merely show how entities – sheep, groups of people, guanacos, dinosaurs, volcano ashes, move or are moved from one place to another. Rather, displacements are generative and performative actions, ongoing conflictual processes which generate new orders, new groups and new understandings of the grasslands, and field members may use the very word "displacement" to conceptualize what is happening.

The descriptions in this chapter demonstrate how the sheep-farmer-landscape triad in focus proved to include continuous –albeit more or less strong and visible – shifts of agency: who feeds off whom was not always clear and depended on every particular situation. Moreover, the descriptions show how the sheep-landscape-farmer triad forms part of a larger field of relations including heterogeneous entities and associations, and that also –if sometimes only momentarily – stretch in different directions beyond the immediacy of the grassland relations.

Such entities and relations scale from birds, foxes, rabbits and worms, to volcanoes, regional cooperatives, other communities, the farmers' understanding (haptic and other) of the land (*'el campo', 'la tierra')*, the multinational Benetton, and further to the shearing machine and its workers, travelling between farms. They also entail organisational projects which take part in managing and controlling the sheep farming, as well as the Australian market prices.

By weaving field descriptions, passages on historical events, presences and activities of non-human entities, this chapter has offered a version of how the landscape has been, and continues to be, shaped and touched. It suggests that current and future sheep farming practices and sheep population must be understood in relation to various kinds of displacements. These displacements form part of efforts to craft these grasslands into a place that is at once both marginal and central, both ephemeral and enduring.

To understand the geopolitical landscape a historical account needs to be included. Historically – and to this day – the grasslands in South America have been approached from a position of discovery or re-discovery. They are spoken of as wild and 'untouched'. As one of the globes most sparsely populated areas, the grasslands are seen as places at 'the end of the world', often narrated as unforgettable and enduring for their 'myth and mystery'. They are described as a realm of loneliness and wind; the land of no shelter. According to Charles Darwin they are 'damned land' (Fondebrider 2003; Harrison 2000; Reding 2001; Said H. and Scott-Stokes, n.d.; Sánchez

2011; Darwin 1833/2001; Bridges 2000; Giaquinta 2013; McEwan, Borrero, and Prieto 2014; Sánchez 2006; Skottsberg 1911/2004). Yet, despite the inexhaustible number of such narratives, the grasslands hold exhaustible resources such as oil and gas, and are one of the largest reserves of fresh water on the planet.

The descriptions in this chapter nuance the 'virgin', 'far away, long ago' and 'end of the world' classification of the grasslands. By alighting on different kinds of displacement – slow paced, rapid, subtle or frictive – I highlight the continuous narratives and practices that together compose and shape the landscape and how it is perceived (Ingold 2000b; Strathern 2004; Ingold and Janowski 2016).

My aim is to explore how written history and oral stories create particular categorical predicaments at the centre of the region's wool practices. The grassland region spans three countries: Chile, Argentina and Uruguay. The chapter shows how regional – and thereby transnational – efforts to manage and make landscapes comprehensible have driven people towards specific classifications. These classifications include, for instance, conflict-ridden displacements of Mapuche people or uneven land distributions and ownerships by foreign multinationals. These are but two examples of particular ways of ordering the landscape, which, over time and with friction, have generated communities, and within which sheep and sheep farming have played a significant part.

I also trace how sheep farming has become part of the grasslands not solely in relation to the regional situations. Rather, sheep farming and the Merino breed in particular emerged out of complex relations in which the grasslands and various historical events and processes have played important roles. This includes crossbreeding, world market events, as well as parts of remote European and Australian sheep farming.

6. Dissonances in the laboratory

The Benetton wool production has affected
the genetics of the Merino in Patagonia.
(Quote from interview with laboratory technician).

How does laboratory measuring matter for the making of the wool? This chapter explores the activities around measuring wool in a laboratory. It shows that there is a meticulous and caring dynamic that evolves in an intimate relation between laboratory technician, the tools and the material. With their measuring activities the technicians maintain a clean, systematic, controlled and scientifically 'coloured' environment, and the result are presented as 'data' or 'objective facts' about the wool's quality. In this way, the theme of classification of this thesis enters straightforwardly. The measuring processes that are at the centre of the activities in the laboratory are explicit classificatory procedures, and it generates specific 'fibre formations'.

A common link between the measuring and sustainability is through the challenge of finding ways to know whether the development or growth of an activity is sustainable enough or not[42]. The question is often how to best measure sustainability, i.e. what measuring methods are best used and what data is comparable (Heal 2011). This chapter suggests a different kind of link between measuring and sustainability. During my fieldwork with the wool, I was often told that the laboratory was a crucial place in wool production today, and that, in many ways; it affected the material's abilities to sustain. Through the disposition of my study to ethnographically explore how and what the wool sustains, the aim in this chapter is to trace an understanding of how measuring matters for the wool and for the communities that take shape around the wool, asking what work do

42 Another link of this chapter to the theme of sustainability is the notion of laboratory which is frequently used in the permaculture approach (Farley and Smith 2013; Veteto and Lockyer 2008). This approach is a response to the 'culture of unsustainability' (Kagan 2014).

measurements do? I propose that a response to this question can be found in my fieldnotes from the time I spent in laboratories.

Early Science Technology Studies (STS) in the late 70s and early 80s caught issue with how scientific facts are made into "objective" and "universal" knowledge in practice by drawing on ethnographies of laboratory studies (Callon, Law, and Rip 1986; Johansson 2008; Latour 1987; 1993; Latour and Woolgar 2013; Lynch 1985). In much thanks to this early research "science" has come to be regarded as "culture" (Asdal and Moser 2012; Franklin 1995; Pickering 1992), and that, as John Law and Annmarie Mol put it, "facts have been localized" (Law and Mol 2001). We now know that facts – including the ones which are presented or considered objective – are always produced somewhere; that they are situated (Haraway 1991). While before the above mentioned research "universality of facts depended on never asking where-questions" (John Law and Mol 2001), the descriptions in this chapter are, instead, driven by a search for the *wheres* of the measuring activities and the *wheres* of their impact. Location or, rather, *locations* turn out to be crucial for an understanding of how measuring matters.

In the Southern Cone region, there is an established network of laboratories performing work that is linked to agricultural production. The work that goes on inside these laboratories is, in general terms, defined as the analysis of agricultural materials (INTA 2016; SUL 2016). More specifically, their function is "measuring" and "calibrating" the quality of agricultural products (Slepetis, Perez San Martin, and Vaccaro 2011). Some of the laboratories form part of privately owned companies, their task being to analyse the products (sold or bought) by that particular company. Others are consulting private enterprises who sell their services to third parties: the clients. Others yet, are public and governmentally financed. These latter kinds may be dedicated to investigation, governmental inspection (*fiscalización*) or to selling their services onwards to clients. The number of laboratories that examine wool and woollen textiles in the region was given as eleven[43], of which I visited two: one in Uruguay and one in Patagonia, Argentina. Both are governmentally associated instances and

43 This figure was given to me during interviews with technicians. I am told that there are seven laboratories in Argentina whereof three in Patagonia: San Carlos de Bariloche, Rio Negro, and Rawson, while the remaining four are in Chubut, Río Gallegos and Santa Cruz. There are a further three laboratories in Uruguay and one in Chile.

form part of the national wool associations[44]. Both these labs are measuring laboratories that sell their services to a variety of clients at different stages of the wool processing, such as sheep farmers or private spinning and weaving companies. The labs present themselves as epicentres of the wool production – like spiders in the local woollen web (INTA 2016).

I chose these two particular laboratories as cases in the fieldwork for two main reasons. The first was related to the pragmatics of easy access. The second was a methodological interest in making comparisons that cut across certain boundaries, while highlighting others.

My access, in the case of the laboratory in Uruguay, came through the *gerente* (manager) of SUL through whom, in turn, I had already come into contact with the one of the employees in charge of the administration of shearing in Uruguay. Through this contact I also got access to the sheep farmers which I visited (see Chapter five). Wherever I went I was told that if I wanted to understand wool –to really understand what wool is about– I'd have to go see the laboratory work. With this in mind I decided to contact the *gerente* again. He instantly put me in touch with the head of the laboratory so that I could make an appointment.

In the case of the laboratory in Argentina, I knew from before that one of three laboratories in the Patagonia region was located close to where I was heading. While planning my visits to wool producers in the area, I decided to also get in touch with the lab. I got quick access and was immediately offered a date and time for a first visit. I visited these laboratories on various occasions in 2010 and 2014 respectively. I interviewed the heads of both laboratories as well as several of the technicians who formed part of the teams working there. I followed them around, sat with them, observed, and asked questions as they went about doing their job. (Later in this chapter I go into more details about their tasks.)

Beside the reason of easy access, I had an interest in comparison that drove my choice of doing fieldwork inside these two particular laboratories. Although located in different countries, it turns out that there are remarkable similarities between the two laboratories. The physical size of the spaces (approximately 700 square metres) and number of employees

44 One of the laboratoies works within *la Sociedad Uruguaya Lanera* (SUL) and the other within *el Programa de Asistencia para el Mejoramiento de la Calidad de la Lana* (PROLANA). Moreover, one of them forms part of the National Institute for Agricultural Technology (INTA) which is an organisation of the Argentinian government.

(10-15 people) are not identical, but reasonably close. The amount of samples that are tested per year in each laboratory is also similar. The distributions of educational background within the teams are alike, including both agricultural engineers with a doctoral degrees and technicians who have learnt the skill through practice, having begun as apprentices with no academic background. One of the two laboratories is described as one of the most technologically advanced in the world; nonetheless, both laboratories use similar equipment and methods for the measuring of wool.

Neither laboratory is dedicated, primarily, to doing experiments or innovation – as the term laboratory may evoke – yet they do explicitly follow a model stemming from the natural sciences' modes of doing research. Both are, so to speak, scientifically tinted inasmuch as the methods, tools, clothing, atmosphere, paces, and reasoning are adjusted to fit into logics of "objectivity" – exactness, consistency and control – and to adhering to ideas of reproducibility commonly employed within natural sciences.

All in all, that there are abundant similarities in the concrete practices of measuring fibre, enough, I argue, to give solid ground for including material from to the two labs in the same chapter. This mode of comparing, as any, is alert to some particular entities while inevitably leaving out others (Swanson 2013). It therefore inevitably cuts across certain boundaries – such as potential contrasts in local or national policymaking and infrastructure – which if included as significant eventually could underline other differences or similarities. However, in line with scholars who have recently discussed comparison as a method within the social sciences and in anthropology in particular (Jensen 2011), I suggest that this stance points not only to various kinds, but also to various scales of comparison. The etymological origin of the word compare is to place together (Ayto 1999; Weekley 1921). To place together fieldnotes from two laboratories located at a distance of slightly over 2000 kilometres from each other, in two different countries, is a decision which follows the purpose of my study: to focus on the region of the South American grasslands for an understanding of how and what wool (un)sustains. To pursue comparison within such obvious differences makes the analysis more interesting, and, I argue, allows for additional viewpoints. This is also then an explicit way to 'make a field' – 'to site' – that is to actively interfere with, rather than passively represent, during the field making and

classificatory activities of doing fieldwork, as discussed in the introduction and chapter three.

This chapter thus explicitly relies on the trans-local comparison which has been a premise for this study. While clearly cutting across certain differences, it allows for a lifting forward of details about the relational practices and skills that go on within both labs. Borrowing from Annemarie Mol, my approach aspires to pay attention to the measuring practices in the labs "on their own terms" (2008). This mode of comparing is possible because, as I have mentioned, the language used (verbal and environmental) is the same – or very similar – in both labs. The result is that, for the analysis, the labs and the activities that go on there are situated through a trans-local comparison.

The laboratories

The laboratories have been functioning for about 50 years. The initiative to establish the one in Patagonia came in 1969, the same year that The International Association of Wool Textile Laboratories (INTERWOOLLABS) was founded during the 38th International Wool Conference in Paris ("Interwoollabs" 2016)[45]. The initiator of the lab tells in an interview published online, that before the procedure of exact measuring was implemented, wool producers (farmers) sold their wool by "subjective estimation" of its quality. At that time "every producer treasured his wool" because it was "all he had", and basing their judgment on their personal eye and touch estimation, "every producer thought that

45 INTERWOOLLABS today has 88 members in 25 different countries, including the ones that form part of this study. Apart from licensed laboratories, there are members from other sections of the industry such as wool combers and spinning factories. The Association work under the International Wool Textile Organisation (IWTO). The laboratories included in this study are both accredited by INTERWOOLLABS – an official recognition giving the laboratories an "internationally standardised license" to "emit quality certificates" accepted worldwide and frequently referred to for wool transactions. The standards they follow are, in turn, set by the ISO (International Standard Organisation), an independent, non-governmental international organisation, with headquarters in Geneva since 1947. This latter organisation was created with the aim to "facilitate the international coordination and unification of industrial standards". The internationally accepted referential norm for the competence of testing and calibration laboratories is the ISO/IEC 17025 – first established in 1999 to "assure the quality, demonstrate technical competence and increment the reliability of laboratory results" (IRAM 2016). The aim of this association is to "harmonise" the measurement results by ensuring the most uniform testing and sampling methods. This is done through developing technical standards and measurement equipment, as well as regular and strict controls (every six months) to which members must submit in order to retain their certification ("Interwoollabs" 2016).

his wool was better than his neighbours'". The expressed purpose behind establishing the laboratory was to find ways to "augment the production and the quality of the wool" (INTA 2016).

The measurement procedures that are taken on in these laboratories follow the guidelines of the International Organisation for Standardisation (ISO)[46]. The standardised measurements are tools which, according to one of the laboratories' webpage, provide the producer with a "real dimension" of the qualities of the wool[47]. It is considered necessary that producers know the characteristics of their wool with exactitude, because they will directly determine the price. Such precision is only possible via an objective measurement of a representative sample of each producer's wool.

When the laboratories started up it happened slowly. Finally, they were accepted, albeit with some initial resistance from the farmers. The staff point to the advantages for the farmer as a result of adopting habit of sending off samples of wool for analysis. This habit allows farmers to know both the virtues and the defects of their production so that they can decide what changes in management may be needed in order to improve their product. Moreover, the information derived from the laboratories when placed next to the available information about market prices allows them to know the value of their wool with better certainty. Or, as stated on the Interwoollabs's webpage, "accurate testing protects from disputes in the trade of wool and woollen textiles" ("Interwoollabs" 2016).

The work in the laboratories that I describe in detail in this chapter consists of three main steps: (1) sorting and singling out the samples (fibres), (2) measuring them and (3) collating the measurements into data. The process

46 The ISO webpage states that with "a membership of 164 national standards bodies from countries large and small, industrialised, developing and in transition, in all regions of the world", and that the "ISO's portfolio of over 19200 standards provides business, government and society with practical tools for all three dimensions of sustainable development: economic, environmental and social". ISO standards "make a positive contribution to the world we live in. They facilitate trade, spread knowledge, disseminate innovative advances in technology, and share good management and conformity assessment practices. ISO standards provide solutions and achieve benefits for almost all sectors of activity, including agriculture, construction, mechanical engineering, manufacturing, distribution, transport, healthcare, information and communication technologies, the environment, energy, safety and security, quality management, and services." ("ISO International Organization for Standardization" 2016).

47 Woollen products on the market that have gone through the standardised measuring process have an S number attached to it. The S number is a direct measurement of the thickness of the product fibres and is intended to state, with precision, the fineness of the wool fibre used in the product measured in micrometres (INTA 2016).

is spoken about by the technicians as the service of quantifying the quality of the wool. It is done in accordance with the standardised measuring procedures set by the Interwoollabs. My descriptions in this chapter show that the step for the laboratories to also be considered a knowledge producing place (Turnbull 2000; Verran 2011), rather than an intermediary instance that provides informative facts, is also explicitly recognised by the members of the laboratories themselves, although this is only admitted separately, away from the measuring activities of the laboratories and in removed physical or symbolic rooms. The people who work here explain and show that they measure the inherent quality of what is thought of as already "there" (they classify), and from here they generate data (facts). Their primary task is not to change anything, as they see it. What they bring forward through meticulous, systematic work and with care is, in this sense, taken as pre-existing. The qualities are already "in" the wool; they simply shape them into numbers on a document.

My fieldwork shows, however, a simultaneous generative and powerful impact of the classifications happening in the laboratories. This implies that the classifications that are carried out in the laboratories are explicitly generating knowledge as well as shaping the wool. Yet, for the data to be taken as facts, there has to be a dissonance between this shaping and the measuring activities. Dissonance, in this usage, refers to a kind of interference that shows a gap, a detachment or a disagreement, which is part of the classificatory activities in the laboratory. Unlike Bowker and Star's argument that such 'slippages' are most often rendered invisible in classificatory work; the dissonances are here adjusted quite openly.

Furthermore, for the data to be taken as true (stable), the laboratory as a place has to be as close to 'timeless' as possible. Timeless here implies referring or restricted to no particular time – 'neutral'. While there are rhythms, paces and intervals, for the timelessness to be vigorous some activities and temporalities which would prove the laboratory to be situated – that is, a place born and reproduced in a particular context – must either be folded inwards or taken out from the account. Moreover, the timelessness required of the laboratories – which calls for a neutral, clean, controlled environment – and its *de facto* situated-ness seem to work in dissonance with each other.

What stands out as particularly interesting is how these dissonances are not taken as problematic by the technicians.

In a prolongation, the dissonances which I point out here would resonate with a discrepancy commonly encountered between interpretative (qualitative) and exact (quantitative) sciences more generally (Hornborg 2011). The descriptions in this chapter show, however, that there are overlaps and a complementary working-together-relation between quality and quantity. While these dissonances are acknowledged (idiomatically as well as in the practices of measuring) and while the measuring activities depend on moments of symbolised interpretation along the way, they cannot be visible on the resulting document. Dissonances must be detached from the end product of the measuring procedures (the data).

These observations may well be rooted in methodological issues about a common dissonance between what people say they do, what they do and the scope of what they consider themselves to know. A relevant query is whether dissonances such as those discussed above may also be a fruitful heuristic for anthropology when unfolding the borderlands between sustainability and un-sustainability.

In order to pick through my material on the laboratories, in what follows I continue the orienting allegory of 'driving through the fields' used in Chapter Five. Here, my descriptions follow the technicians as they 'walk through' the laboratories and work through their measurements of the wool.

Measuring

On one of my visits to the laboratory I follow Marina as she shows the different tasks performed here. Marina has worked in this place for almost 25 years and her academic background is in agronomic engineering.

> This is what we do", she explains. "We control the fibre samples that are sent here. It is wool from different moments of its life that we handle; sometimes we take the raw wool directly from the individual sheep and measure it out there in the establishment –in the field. We take a suitcase with the equipment with us, set it up on a table and start to measure. The advantage is that the producer gets his measurements directly. But, mostly, samples are sent here to be analysed, and it can be dirty wool –*lana bruta*– or processed wool or woven fabric or even garments.
>
> (Fieldnotes)

This fieldnote introduces the work that is carried out by the technicians in the laboratory as being the service of measuring the quality of dirty,

scoured (washed), combed, sorted or woven wool. The services are oriented towards farmers and companies requesting a determination of the characteristics of their woollen products.

As with the sheep farmers (Chapter Five), the most intense working period of the year is during the shearing season, when tons of dirty wool arrive in boxes and bags to fill up the halls and corridors, waiting for its turn to be measured. Some are more urgent than others. Smaller and medium sized producers (farms holding up to 7.000 sheep) usually order only one set of analyses for their entire batch of wool. Most large farms send an additional and separate set of samples from the very first shearing of their *borregos* (lambs older than one year), since this wool is finer and can justify a higher price. The largest producers send a higher number of samples to define the range of qualities which they produce. One example of this is the Benetton Group, who are clients of the Laboratory, and who send samples showing three classes of fineness among their adult sheep alone.

Traditionally, the measurements undertaken for Merino wool assess fineness, length of strands (*largo de mecha*), resistance and breakpoint (*punto de ruptura*). Furthermore, additional measurements on wear and tear (*rinde*), vegetable matter (*materia vegetal*), and colour may also be commissioned. A typical number for traditional and additional measurements is 60 samples per batch. The cost for such a set of measurements is, as of 2014, about 50 US dollars/batch. The government periodically subsidies the costs of analysis for small scale producers (i.e. producers holding less than 700 heads of animals).

The sampling for measurements may be taken in the field just after the shearing (using a device which penetrates the sac of packed wool, and so cuts out the sample, and transports it into a labelled plastic bag). Alternatively, bigger bags may be sent to the laboratory and the subsampling is done here, by taking handfuls of wool from the sacs, spreading them out on a flat delimited surface, covering them with a perforated board, pulling out smaller sections through the holes, and, finally, bagging these. The latter is spoken of by the technicians as a way of sampling which complies with the norms.

Figure 6.1 Woollen samples in plastic bags.
Woollen samples in the laboratory, ready to be measured. The labels are numbers indicating the samples' origins. In this case, the origin are the Benetton Group's sheep.

The concerns of the technicians, on a day-to-day basis, are the acts of measuring the fibre. Measuring is done in three main steps: sorting, singling out and collecting back into data. For this, the samples move between rooms, hands and tools, while being subject to meticulous and systematic analysis. The work is done in a highly organised manner, where each section or room of the laboratory has a particular purpose. Numbering is crucial in all events, as much for the sorting and ordering of the samples as for the purpose of comparing and correlating different measurements. The data from the different stages of measuring is collected in a computer program which, at the end of the procedure, presents it as a report. This information is sent back in the form of a paper document to the producer, who uses it to negotiate the value of his wool. The laboratory's function, I am told, is to be intermediaries between the producer and the buyer.

Figure 6.2 Colour chart for classification.
The photo shows a chart hanging on the wall of the lab. Its use is for fibre and textile analysis when classifying by colour.

Although different kinds of samples are being measured, the basic indicating parametres for the fibres are always the same: colour, washing yield, combing and traction resistance and breaking point, the percentage of vegetal material it contains and the amount of grease it carries. For less processed samples also length of strands, as well as fibre fineness and volume is defined. When compared, these indicate the fibres' quality.

Crucial for all the acts of measuring to be properly conducted is that the fibres' structure – and therefore quality – remain un-modified. Only then can the data be trusted and taken on as objective. For this, the procedures in the laboratories imitate the processing which the wool undergoes outside – primarily on industrial plants – on a smaller scale.

Figure 6.3 Sample washing.
The laboratory technicians wash the wool samples in preparation for its measuring. The temperature and the movement of the water are strictly controlled, since it can otherwise affect the structure of the fibres.

In one room, which is part of the 'dirty area' of the laboratory, samples of dirty wool are washed in digitally temperature-controlled water which is mechanically stirred and clocked with a timer. Here, controlled movement of the stirring is as important as the temperature of the water and the minutes the samples remains submerged. A soap is used to separate out grease and dirt. The room is lined with many metres of pipes where water is pumped in and out. There is steam in the air and the soft smell of soap.

Once washed, the woollen samples are centrifuged and dried with a heater (*estufa*). A constant undertone stemming from spinning fans and the centrifuge, heating devices and ventilators fills the room and mixes with the flushing sound of the rotating water. The brick walls and tiled floor bounce back sharp echoes which inevitably dull and shorten the reach of the human voices. The technicians have to strain their speech slightly to be heard when conversations need to be held in here.

Whether washed and dried or still dirty, the samples are sorted and further prepared for the upcoming measurements. This implies selecting and singling out smaller amounts of fibre and tucking these into numbered bags or containers. Numbering is crucial for all the moments of the measuring, to keep the process systematic and ordered. *Todo, todo, todo está numerado* – absolutely everything is numbered, Marina says.

The washing described above separates grease and dirt from the wool, but does not take out impurities such as vegetable and inorganic matter which is always, to some extent, entangled in the fibres. The percentage of small branches (*ramitas*), seeds and straws (*pajas*) which the wool carries is an additional and important indicator of its quality. The procedure used for measuring this is to submerge a set selection of wool – usually 40 grams – in a solution of sodium hydroxide – an alkali – which, after a certain amount of time, dissolves the wool. This liquid is then sifted and the vegetal matter is collected, dried, weighed and classified according to a scheme. Fewer impurities indicate better wool.

The wool of the region generally has a low percentage of vegetal matter – usually below 1.2 percent. But there is also the issue of what kind of plants and seeds it carries. Most hard nuclei, like some seeds and small branches, can be easily crushed and pulverised – even between the fingers – and so do not necessarily affect the quality in a negative way. *Abrojos*, (thistle seedpods), however, are extremely difficult to disentangle from the fibres since they have tiny hooks. These kinds of seeds are therefore problematic. If there is a high amount of them in the wool, it clearly complicates its further processing and therefore affects how its quality is defined.

The washing yield is a measurement indicating the relation between the dirty and the washed wool. It is measured in percentages. The washing yield indicates how much lighter the washed wool is, what kinds of plant material the dirty wool contains and how much grease can be extracted from it.

Before getting to the point when the weight of the dirty wool can be compared to its washed counterpart, the percentage and type of 'impurities' need to be established. Such 'impurities' can be small pieces of plastic lodged while the sheep pastured in the fields or skin which has stayed with the fleece during shearing. These materials are 'impurities' because they are 'out of place', that is, they are not to form part of the processing of the dirty wool into yarn. To identify the contaminating matter, samples are inserted into an oven and exposed to heat to the point that it is carbonised and transforms into ashes. Matter then stays untouched can thereafter be classified and weighed. Note that while the purpose with this procedure is to establish the weight of the dirty wool without 'irrelevant matter' (such as plant material, plastic and skin), it also allows for an establishing of a more general understanding of the environment where the wool grows. 'Impure matter' is thus a kind of 'dissonance', which speaks of the

environment where the sheep graze. Having these impurities classified may be a way to trace them and alter the conditions for the grazing.

Heat is also applied to establish how much residual grease has stayed on after the washing. This is done because the ordinary washing can never separate out 100 percent of the grease. The percentage remaining after washing varies from wool to wool, and it needs to be measured.

To extract the residual grease, the samples are subject to a two-and-a-half-hour session of 20 rounds (*cifonadas*) of high temperature washing. The heat spreads in the room and the smell of lanoline is striking. There is the sound of a bell after three minutes and cold water is added to control the boiling. The session ends by evaporating the water in a heat oven and the mass of the remaining grease is determined.

Figure 6.4 High temperature washing.
The photo shows the high temperature washing in the laboratory that is repeated over twenty rounds. This process extracts and determines the amount of grease in each wool sample.

Figure 6.5 Dry area of wool laboratory.
This picture shows the dry area in a laboratory, with its technicians and equipment working. The prepared wool samples are ordered in shelved boxes, here seen at the centre of the room. The technicians wear white or blue coats.

Another part of the laboratory is the *sala acondicionada* (air conditioned room). This is where the "more sophisticated equipment" is installed, as one of my interviewees says. There are tables and working surfaces, shelves, computers and technological devices –and white light. The humidity and temperature of the atmosphere is controlled at 75 percent humidity (allowing a variation of approximately three percent), and a temperature of 20ºC. All samples measured here are kept in this atmosphere. The samples arrive from the "*dry side"* (the technicians use the English expression) meaning that they do not carry any contamination or humidity whatsoever. They have to rest in the room for at least one night to adjust to the atmospheric conditions. "If there is any difference between two samples, we know that this is not caused by any environmental conditions, but that they are there because of the characteristics of the fibre", one of the technicians explains.

Figure 6.6 Washed, combed samples that have been labelled with numbers.
The photo shows some of the washed and combed wool samples when they have been tied, labelled and ordered in boxes. Now they are ready to be measured.

Dissonances

On one occasion Silvia – also a technician – is sitting by her desk and has turned down the volume of the radio so that it won't interfere with our chat. She is holding a strand in place near a ruler taking notes before putting it into a plastic bag. She explains that the numbers on the ruler are worn at one end so she needs to place the strand in the middle to be able to measure. 'But is doesn't affect the result', she assures me. There is a scale next to her. She is in charge of the weighing and the measuring of the length of this particular order from one producer; the longer the fibre, the higher the quality. The common length of wool in the region is 60-80 mm. In an interview with Silvia, she firmly distances herself from any idiosyncratic or subjective measurement, even though she also exemplifies techniques far from the laboratory ideal:

> Annika: Many tools seem to be relying on vision, they activate the human eye.
>
> Silvia: We don't do eye measurement!

Her reply is quick and almost defensive, and she moves the focus to the wool she is measuring.

Silvia: This is wool from a Chilean sheep producer who has bought our services. He has sent samples from each one of his sheep. He will receive his written report. The document has all the information he has asked for about each animal. He can use it when exhibiting his animals, when wanting to sell it, to settle a price by showing this objective data. It can also be used for genetic selection when wanting to improve the wool. The quality of the wool does depend on breed, on the animal's age and on nourishment, but there are also genetics involved that can be looked at, measured, and established here in the laboratory, and then eventually used to enhance the quality.

Annika: Would you be able to look at these samples and know where these sheep come from?

Silvia: No, we cannot know that. We can judge if it is *lana linda* – beautiful wool. And we do make bets sometimes about the diametre of a sample. And many of us are often right. But, *saber saber, no* – we cannot really know. Also, I can tell you that this sample is taken from the right side of this Chilean sheep.

Annika: How can you tell that?

Silvia: That is because sheep sleep on the left side, so the best samples are always taken on the other one.

(Fieldnotes)

Figure 6.7 Measuring the length of the samples.
On this photo the lengths of dirty woollen strands are measured with a ruler. The technician uses a scale to weigh each sample. This is because there is a correlation between length, weight and fineness of the wool in terms of quality.

Such insights, often spoken of as instincts or intuitions, grow from long term interactions and the combination of information, learning and different kinds of stimuli (Malm 2012:129ff). Although here not taken in as part of the knowledge the technicians use nor produce, it can be understood as part of the knowledge building practice and the ecosemiotics of the lab (Hornborg 2001).

In another part of the room technician Hector cuts out samples with an air-flow apparatus. The air-flow sighs heavily as it cuts out diminutive sections of the samples that have been prepared beforehand and put in small plastic bags. From there he inserts them into tiny tubes for further analysis.

There are no major dangers in this job, he says, after me having asked about possible risks. It is a quite controlled and mechanical work. Potential dangers for the technicians are burns, and Repetitive Strain Injuries (RSI) that come from doing the same task over long time.

In the next room the level of traction resistance and combing yield is measured by inserting the samples into a device which rubs the fibres continuously, and the wear is then graded according to a scale expressed in numbers.

Figure 6.8 Air-flow cutter.
Diminutive samples are cut out with an air-flow apparatus and inserted into tiny test tubes

Figure 6.9 Samples of wool in test tubes.
The photo shows tiny samples of wool that have been inserted into test tubes.

The working process is spoken about and described by the technicians as strictly following the normalised standards for measuring wool. In response to many of my questions they frequently return to and make physical gestures towards the up-to-date international standard certificates that hang on the wall. These certificates are the official proof of their credibility and reliability and are updated every 6 months.

Standards and standardisation come as crucial terms for the technicians in the laboratory. Standardisation – sometimes also referred to as "harmonisation" and "homogenisation" – and the implementation of standardised measurements are referred to as advancements allowing the laboratory to emit results which are exact, reliable and constant long term measurements. It is also by now a requirement which is demanded from the clients and the government (Squirrell 2008).

There are a number of documents circulating in the lab. They all have different functions in the process of measuring. An important one is the 'physical outcome' of the measuring: a particular artefact indicating the mean values of the analysed batch of wool, expressed in numbers. In the technicians' own terms, they "receive" the data from the wool, and pass it on to the wool producer through the document. This document is sent out to the buyer of the services, most often the farmer. This is important because the data that is produced in this site, as expressed by Silvia in the fieldnote above, is a fundamental tool for the producer in the moment of negotiating the price of his wool.

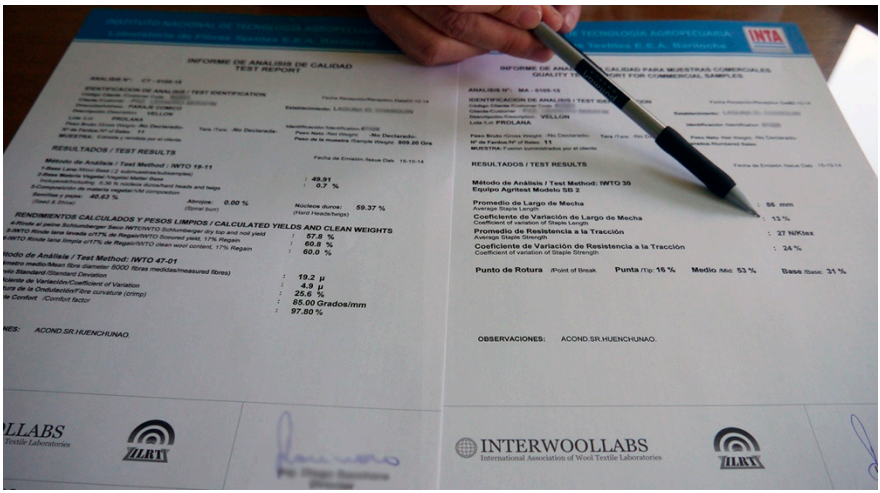

Figure 6.10 A document indicating the mean values of the measurement.
The photo shows an example of a document which sums up the mean values of the measurements carried out in the laboratory, the data. For ethical reasons I keep the details of it less readable. This is the final result of the procedures that are taken on in the laboratory. This particular one indicates the mean quality of one farmer's wool. Others may indicate the mean quality of one sheep, all the sheep of a farm or a selected group of sheep of a farm. What is important with this image is not the specific result that the document shows but it allows us to view a tangeble result of the work that goes on in the lab, which is also actually something that travels back and forth between the environments that I describe in this thesis. From the lab the document is sent to the farmer, and it may travel with the wool from there, as it has been sold and is transported on to be further processed.

The laboratory analysis aims to provide the producers with what is spoken of as the "real dimension" of the quality of their product in the moment of selling their wool. The use of objective information is always a necessary condition when commercialising a batch of wool, be it nationally or internationally.

Facundo affirms that the data received in the laboratories is absolutely reliable. As we walk by some lined up bags of woollen samples, Facundo opens one, grabs some wool, and lets me touch and look closer at its fineness. This is Merino from a Chilean farm, he explains.

> Annika: Can you see that it is Merino or did you know that beforehand?
>
> Facundo: Yes, in this one you can notice. I wouldn't be able to define its fineness or its yield, or… well… I would be able to tell you, but it would be within a broad range. Not exact.

For their work the technicians use various tools, some more technically complicated than others. Most of the devices rely on vison. While this fact suggests that the activities of measuring wool in the laboratory are ocular centric, it would also confirm a hegemony of vision in scientific fact-making, which has been foregrounded by other scholars (Mody 2005; Bruno Latour 2005b). But my descriptions also show that other senses are clearly at work as smells and sounds in the laboratory are intense. Touch, the sense of light, temperatures and humidity all have prerequisite settings for the measuring tasks to be carried out properly.

A clear example of this comes forward in my fieldnotes from the room where the mean value diametre is taken. I sit there with Tamara. Her task is meticulous. She uses tweezers to insert single fibres under a microscope, one by one. She then looks down through the objective, measures the fibre's exact diametre, and makes a note of its number, which corresponds to its measurement in microns, or micrometre (*micronaje*), the µm[48]. She works her way through hundreds of fibres per day. The room is silent, dark and closed. We whisper as we speak in here. It strikes me that she seems to create a necessary distance (objectifying) through proximity (intimacy). The subdued sound in the room conveys an intensified sense of closeness and focus. Why we whisper is otherwise inexplicable. Tamara lets me look through the microscope's objective and explains that coarser fibres are hollow, like hair, but finer ones are compact. Through the microscope objective, I see the structure of the single fibre built up by scales shaped like cones.

48 Microns are the international standard for grading wool. The micron indicates a unit of length equal to one millionth of a metre or one thousandth of a millimetre. The term micron and the symbol µ were officially accepted for use in isolation to denote the micrometre, between 1879 and 1967, but officially revoked by the International System of Units (SI) in 1967. In the SI, the systematic name *micrometre* became the official name of the unit, and µm became the official unit symbol. The micron is a common unit of measurement for wavelengths of infrared radiation as well as sizes of cells and bacteria ("ISO International Organization for Standardization" 2016).

Figure 6.11 Close up comparison between Merino wool fibre and other wool fibre.
Fibre is made of a protein called keratin. The picture shows the scales or cones that together form the strand. It also shows the fineness of the Merino fibre in relation to what is here labelled as standard wool fibre. Standard wool fibre's mean diametre generally between 24 and 35 microns. There are various categories of Merino fibre: strong Merino (24 microns), medium Merino (20-23 microns), fine Merino (18.5-20 microns) and superfine Merino (15-18,5 microns). As a reference, it can be said that Alpaca fibres may have diametres between 12 and 32 microns, Angora rabbit has fibre that measures 10-12 microns and human hair is generally 60-70 microns. Broader fibres, like hair have an empty area –a hole– in the centre of the fibre, while finer fibres are compact. (source:www.playsafe.sk).

Another set of my fieldnotes point in the direction of dissonance between the sense of cleanness and order, and contamination. In some of the closed passages between rooms there are piles of wool –some dirty, some washed but otherwise unprepared. I notice, between my visits, that these piles change shape a little – they grow or diminish slightly – and so realise that they are not the same old piles just sitting around, but are, instead, active parts of the process somehow. I become curious and, on one occasion, I ask the head of department about it. She tells me that this is waste wool, wool that is left behind after the needed samples have been selected out.

I then wonder what they do with it. There must be quite large quantities of waste-wool, when you think of it, considering the amount of samples that pass through the place. Where does it go? She says she doesn't know, and walks on into the room we were heading towards before I stopped her to ask. I follow her, surprised by the answer (and since I feel I may have somehow taken a step in an awkward direction, I choose not to insist for

now). I remain intrigued, though, and keep wondering. I find an opportunity on a later visit to ask again. “What do you do with the waste wool?” This time I get a more detailed yet still half-hearted reply. “It is sold or given away”, the technician says. “If the quality of it doesn’t allow for further processing, it is burnt. But mostly it is sold”. I cannot make complete sense of the two different responses from the same person, and she is not willing to dwell on this issue with me.

At the time, I am more intrigued by the fact that I get two different answers than by thinking about the tons of wool that might possibly be going nowhere. In these conversations, the waste wool is explained away as irrelevant for the quantification process. On a third and a forth occasion, these times over lunch and on a break, the theme of the waste wool enters the conversations and I am finally informed more thoroughly. The waste wool is recycled in various ways. It is sometimes burnt, but mostly reused, either by the technicians who work there and knit themselves or by artisans of the area who come to pick it up. There is also an ongoing project involving the felting of waste wool unfit for spinning and weaving which turns it into artisan products like handbags and hats. I understand that there is a lot going on in the progress of these situations. My presence and my insisting interest may well have affected the development of the responses I get, but more significantly, perhaps, is how the information about the waste wool can only reach me when it is given in a place clearly separated from the measuring activities of the laboratory.

Summary

My descriptions, quotes and fieldnotes in this chapter highlight the implementation of standardised measurement procedures of wool in the laboratories and their importance for a reading of the wool’s qualities. These standardised measurements, in turn, are based on the notion of the undisputable ‘realness’ that exact data about the wool’s quality is said to provide.

The practice of measuring is by the technicians termed as a service. This term suggests that the technicians regard the measuring activities as intermediary, rather than transformative[49]. This is expressed in two separate ways. On the one hand, measuring merely translates the inherent

49 I draw here on Bruno Latour’s distinction between mediators and intermediaries. “An intermediary […] is what transports meaning or force without transformation” whereas “[m]ediators transform, translate, distort, and modify the meaning of the elements they are supposed to carry”(Latour 2005b).

qualities of the wool into data, on the other, it also constitutes an intermediary setting (the data) which facilitates the association between the wool farmers and the industrial buyers.

This intermediary disposition is strengthened by the international standards for measuring. International standardisation norms for measuring are provided by Interwoollabs in compliance with the required criteria established by the IWTO. The international standards give "enhanced credibility" to the measuring of wool and aim to "maximise and enhance the fibre's unique intrinsic characteristics". In this way, the standardisation allows the laboratory to emit results that are "exact, reliable, credible and constant long term measurements" ("Interwoollabs" 2016). These standards are actively, explicitly, and continuously used and referred to during the measuring process and in my conversations with the technicians about their work[50]. Here, vision is crucial, but controlled vision, not everyday "eye measurement". Data are "seen" in a disciplined fashion, and measured as visible.

In accordance with the standardised norms for measuring, and in accordance with the intermediary value given to measuring the wool, the technicians do not present their practice as though they were generating anything that is not already there. Nevertheless, at the same time there is attentiveness to the impact of the data – its mediative force – which the technicians, in fact, generate. Likewise, the power of the environment – the laboratories – that they reproduce is, in fact, acknowledged as highly influential[51].

There is a sense of informed responsibility and an articulated perception that the meticulous activities inside the laboratory stretch beyond their limits, and so actually affect the wool outside it. I return to the quote at the very beginning of this chapter: "The Benetton wool production has affected the genetics of the Merino in Patagonia", which is taken from a transcribed interview with a technician. It speaks of this informed responsibility and of the fluid limits of the activities inside the laboratory. In Cyrus Mody's words this would show that "the boundary between lab

50 For a critical discussion on the impact of standards and standardisations in classificatory practices and the importance of studying them see Bowker and Star (1996, 1998, 1999).

51 Antonia Walford (2013) has specifically studied the transformative aspects of scientific data, when exploring ethnographically how climate data that is collected and given life in the Brazilian Amazona also generate particular versions and claims about the world.

and world always remains somewhat flexible and contestable" (Mody 2005:181; see also Mody 2001)[52].

Or, as John Law and Annmarie Mol put it, "facts are only facts if they are actually treated as facts when they arrive at their destinations". For this, they continue "the configuration of facts and context has to be held stable" (Law and Mol 2001:610). Applied to my material, the international standardisation accreditations and laboratory networks in the region help to ensure that the data generated in the laboratory is credible and that it remains as 'fact' even once it has been sent off to the producer.

This chapter shows that in practice the measuring is a caring, noisy, intimate, multi-sensory (more-than-visual), situated and, at times, messy procedure. At the same time, it is done in a highly professional manner. The fieldnotes demonstrate that, for the acts of measuring to follow the required standards, continuous adjustments appear in response to potentially contaminating dissonances.

These dissonances are particularly telling:

Table 1: Dissonances found in the Laboratory

Left Column	Right Column
Cleanness	Contamination
Control	Mess
Compartmentalization	Entanglement
Bounded	Unbounded
Timeless	Situated
Distance	Intimacy
Vision	Multi-sensory

52 But whereas in Mody's studies, sounds are explicitly regarded as generative contaminations, in the activities I have described, sounds or other sensory perceptions are not taken into account as affecting the result – the facts – that are produced. And, while Mody shows that sound is an often overlooked integral ingredient in laboratory practices, his purpose differs from mine in that he limits his attention so that it involves only scientific knowledge production. In contrast, my efforts are oriented towards following the wool across various different knowledge producing settings, and linking them in order to discern what they add up to.

These dissonances entail that during the processes of measuring the woollen fibre, certain information and other versions of or stories about the wool are by necessity displaced and/or silently folded into the data. For the wool data to be stable, there should ideally be no observable paradoxes, no contamination, no multisensory readings. There is, however, no conflict in this for the technicians. They adjust things so that the left column's concepts are foregrounded and the right columns' concepts are held in the background.

The measuring procedures are not spoken about as though embodied within the technicians. It is instead referred to as related to vision through visual devices (instruments). Yet the laboratory environment strongly engages all the senses[53]. The smells, the heat, the humidity, the hands touching and moving around tools and fibres, the sounds and noises described above, demonstrate that there are haptic and sensuous dispositions that are vital for the measuring to be carried out properly (Michael 2011).

Furthermore, it is clearly situated as a place. The fieldnotes that I have included highlight that the particularities of the wool that is produced in the region and in the sub-regions are never left out of sight for the technicians. These are practices and articulations which indicate that the laboratories form part of generating the particularities of the regional wool production, and the possibilities for it to sustain[54].

As stated, in order to keep the wool unaffected by external factors, the measuring is done in controlled and standardised conditions. Temperatures and humidity are kept stable and double-doors are installed between rooms to isolate the different atmospheres/climates. Surfaces are kept clean, white or blue coats are worn, meticulous attention is paid to the details of each step in the process of sorting and measuring. The logic of repetition and reproducibility rules, and gives the work its validity and credibility. The

53 Mody (2005) points to the ocular centric aspects of scientific practices and of the importance of vision that has been given to it by Science Technology Studies (STS), but he also highlights a corresponding interest in non-visual ways to "picture" scientific knowledge. In line with this research his article focuses on sound in the laboratories and he explores how sounds form part of how and when work is done in the lab (see also Mody 2001). With my analysis I have had the related question of where the lab work is done in mind.

54 John Law and Annemari Mol (2001) write about the laboratory as a scientific object that can be studied as such. They argue that Science holds itself in place through the location of the laboratory which in turn holds its shape either by freezing or shifting relations in its regional networks.

same measurement made by somebody else at any time is expected to produce the same results.

These conditions generate a sense of timeless pace, an impasse where – ideally – no risks or surprises are given room. The work is made in 'real time' when neither past nor future affect the result. In short, the controlled context of the laboratory would convey a sense of "placelessness" and timelessness. Risks, major accidents and individual deviations, are basically eliminated as irrelevant for the process.

The stability of the data depends on 'writing out' human presence from the technicians' account (Gooding and Nersessian 1990:3), folding away the very process behind it.

While complexities and specific dissonances are present during the processes of measuring, for the data to sustain its impartiality and potential impact outside the lab, idiosyncrasies have to be de-located as well as excluded from the final data output. The prescribed international standards for measuring the wool to which the laboratories answer, are equipped to deal with complicated data sets, not with complexity; yet complexity, nevertheless, has a strong presence in the lab. This is how measuring matters.

In the way they talk about their work there is room for a 'double vision' on wool as 'subjectobject', i.e. a simultaneous notion of wool's objective and subjective qualities. It is spoken about as both subject (for instance, it has "a nice and unique personality" and it is "an intelligent fibre") and object (it is a commodity). It is both subject and object at once. While subjective views form part of the technician's narrative, they are removed and aligned into one version of the fibre as an object. In this way it is both subject to interpretation and to the objective measurements. The measurement activities are relational and therefore produce facts and an 'objective' view, and are still a continuation of the human ('subjective') eye.

In the technicians' disposition, the quantitative and the qualitative versions work together and generate each other, and momentarily 'spill over' into each other (Michael 2011). As put by Mary Douglas, matter, when found to be out of place and therefore risk to be contaminating, not due to matter itself but, rather, to its location (Douglas 2005; see also Harvey 2014; Reno 2014). My fieldwork has shown that, when needed, wool adjusts.

My main point here is that for the wool data to be stable and intermediary (quantitative), the measuring in the laboratory has to be multisensory

(more-than-visual) and relational (interpretative). The technicians do explicitly acknowledge these aspects, but only in certain rooms and within certain situations. There is, in this way, an overlapping and mediating dynamic between quantification and qualification within the very practice of measuring. Yet for the result to be taken seriously, this overlap has to be carefully sounded out.

7. Dissociations with spinning the yarn

How does spinning the yarn affect the formation of the grasslands? This chapter explores modes of classification with a focus on the manufacturing of the wool. The chapter begins by affording a sense of the various environments where the manufacturing takes place, and of the activities it entails. This lays the ground for the second part, where I zoom in on three events: (1) a transdisciplinary study that pulls information from ancient wool, and which reveals its historical itinerary: *remembering wool* (2) a field note from an industrial spinning facility: *forgetful wool* and (3) excerpts from an interview in an artisan workshop*: "becoming with" wool*.

My initial descriptions together with the three events give insight into how the practitioners that I have encountered discuss and handle boundaries between remembering and forgetting with regards to the wool. They show how dissociations between remembering and forgetting offer multiple possibilities to render particular qualities[55] to the wool. My interest in such dissociations is a result of the many stories – sometimes paradoxical and complex, in the sense that they do not necessarily overlap or fit neatly together – that have come to the fore with and from the work with wool observed and encountered during fieldwork. This is to remind, that the interest within this chapter in the complex relation between a) remembering, b) forgetting and c) qualities, is as much ethnographically driven as the rest of the study.

The second part of this chapter moves closer to the recent anthropological debate on material agency. Borrowing from Martin Holbraad (Holbraad

55 For clarification, I use 'qualities' rather than 'quality' to signal the multiple and dynamic understanding of the term as it comes with the fieldwork. The following definition is close to the way the terms figures in my analysis: "The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs. Not to be mistaken for "degree of excellence" or "fitness for use" which meet only part of the definition" (Howe 2016; Ayto 1999; Weekley 1921).

2011) who asks "Can the Thing Speak?" a question to frame the final section of this chapter would be "Can the wool speak?. The answer, pulled from my material, is "no but yes". No, the wool does not have vocal and verbal capacities but, yes, the ways that people working with the wool refer to it suggest that, for them, it does not only have agency but it can be "heard". In all the events described in this chapter –and particularly in the three final ones – the work with wool, and the work of wool – its agency, what it makes people and other entities do – is common and central. The agency of wool is taken as something inborn and artless.

The three events could be positioned as strictly dissimilar; as contrasting examples that confirm the wide gaps between paradigms and practices. This is particularly true in terms of approaches, i.e. how the wool is 'heard' in each example. I conclude that such dissociations between modes of 'hearing' the wool, may fruitfully add to each other and, concomitantly, to our understanding of how and what the wool sustains, i.e. how 'fibre formations' are generated concretely and socially.

The principle movements during the spinning – the re-ordering and re-entangling of the fibres in a new way – are the same, no matter which tool is used or what quantity of wool is being processed. Still, the tools vary. Spinning of wool may be done using handheld implements like spindles; larger devices such as spinning wheels; or specialised machinery of various sizes. (Also, in artisan workshops spinning machines are sometimes used.)

The expression 'spinning the yarn' has both material and figurative implications. In material terms, the spinning crafts threads. These threads are crafted so that they will have the material capacity to sustain, i.e. they should not break; they should hold over time. But what is crafted is also the quality of the thread. The logic of quality is here not the same as the logic of quality that we have seen in the laboratory (see Chapter six). Here, it is linked in a direct and haptic manner to the manufacturing of the wool. Qualities are added to the wool; qualities are explicitly generated (whereas in the laboratory qualities are spoken of as intrinsic and inherent to the material). Here, a finer thread is not necessarily an indicator of higher quality, as it is in the Laboratory. Its fineness may instead make it more troublesome to work. There are various techniques and skills to ensure that the material properties of a thread coincide with its upcoming purpose.

One indicator of the quality of a woollen item is, therefore, its fitting well enough with its own material future. One way to ensure this aspect of its quality is to mix different kinds of fibres, for instance coarser with finer

ones, or synthetic with organic ones. Another indicator of the quality of a woollen thread is that it does not strive to return to its previous form, it should dissociate with its previous condition. To ensure this balanced pressure, adjusted tension and the right amount of humidity are added to the wool, whilst twisting the fibres into place.

As the study proceeded, it became more and more clear to me that, along and with its transformative process, the people, who work the material industrial workers and artisans alike, consider wool to form an active part in the telling of certain stories. This is what I will aim to show in this chapter.

In figurative terms, to spin yarn means to tell a story, especially a long-drawn out and fanciful one (Spin a yarn 2016). The analysis of this chapter involves both the material process towards the formation of a thread, and a figurative meaning of the expression, implying the formation of stories, narratives. The examples of this chapter show, nevertheless, that what those stories are about and how they can be heard and re-told – the qualities of those stories, if you will – varies much. This chapter provides three examples of such variations.

It is worth noting that the query regarding the relation between the qualities of woollen fibre and the notions of remembering and forgetting emerged already in the ethnographic portions of this study relating to the grasslands and the Laboratory. Nonetheless, I found that it was in the study of wool manufacturing particularly that the topic surfaced in earnest. The stories that came to the fore during this portion of the research stimulated further inquiries about how the wool connects or disconnects with the past. In turn, these narratives linked to potential futures, for the wool itself and for the communities that are shaped around it.

The proposition of the chapter is not only that qualities are relational but that they are relational activities that are material and figurative at once. Qualities, here in the case of wool and its manufacturing, are enacted though skills and care. While they are part of the material properties *of* wool, they are also part of the relations that happen – the stories that are told – *with* the wool. These variations are subtle and sometimes paradoxical. By thinking through the various ways in which remembering, forgetting and qualities appear with the wool, I suggest that certain dissociation – be it between past and present; subject and object; remembering and forgetting; material and figurative; or human and nonhuman – may sometimes draw together rather than separate. To

remember always involves moments of forgetting. Likewise, dissociations sometimes connect rather than cut. In this logic, some of the dissociations that happen in the activities of generating qualities *around*, *with* and *for* wool actually do the work of making it endure. In what follows I will clarify with examples.

Before spinning

During fieldwork, I spent time in both artisan workshops and in industrial washing, combing, carding and spinning facilities – *lavaderos* and *hilanderías* – all located in the Southern Cone region (see figure 4.1). Most, but not all, of the wool which is manufactured in the places I visited was sourced on the South American grasslands. Some wool is transported here from other places, such as China and Spain, to be processed before being sent on, either back to where it came from or to wherever the buyer is located.

The core activity described in this chapter is the transformation of the wool from freshly sheared dirty fleece into yarn: the spinning. In technical terms, however, before it can be spun into yarn the dirty wool has to be prepared. Some artisans spin it as it comes – dirty – and wash it only once it has become yarn. Most of the practitioners I have spoken to, however, prepare the wool beforehand. In the industrial plants it is always washed and prepared before the spinning takes place.

The carding and the combing are moments when the fibres are separated – detangled – from each other. Worsted-spun yarn is a technique used to create worsted textile. This textile is composed of yarn where the fibres have been combed rather than carded, so that they all run in the same direction and parallel.[56] Worsted fabrics are considered stronger, finer, smoother, and harder than other woollens (which are carded and not combed and mostly used for knitting rather than weaving)

The washing, carding and combing procedures also involve separating out dust and vegetal matter – particles from the grasslands that have got caught on the sheep and stuck in its wool. Preparing the wool includes washing out some, most or all animal grease, the lanolin.

56 The name derives from Worstead, a village in Norfolk, United Kingdom. The name has stayed on since the village formed part of a manufacturing centre for yarn and cloth in the 12th century, when many weavers from Flanders moved to Norfolk (Power 1941).

Figure 7.1 Stacked dirty wool.
Wool that is stacked waiting to be processed in a spinning facility in Uruguay. This lot is labeled '27.5, Normal, China' indicating its mean diametre (27.5 microns) and its destination (China). The classificatory label 'normal' stands for the kind of process it is about to go through. The photo shows an example of classification of wool and how it forms part of larger processes – other fibre formations – where transformations also involve transportations.

Figure 7.2. Dirty wool is weighed.
On the photo, some dirty wool has just been weighed on a floor scale by two men. The photo is taken in a spinning facility in Uruguay. The positions of their bodies show that pushing the weight of the wool carrying wagon requires some serious physical effort. It is now taken along to be stored and, eventually, to be unpacked in a different part of the industrial plant.

Figure 7.3 Dirty wool is sorted.
The photo shows the installations in a spinning facility in Uruguay where bales of dirty wool have been unpacked and a mountain of wool is formed. The man on the photo is sorting and classifying the wool for the upcoming washing, carding, combing and spinning activities. He does this by step by step revising the whole lot, separating better parts from worse and taking out bits that are not apt for using at all. He does this by touching and looking at the wool.

Figure 7.4 Washing the wool.
One of the owners of a washing and spinning facility in Uruguay walks along the machinery of his industrial plant. The wool enters dirty on one end and comes out as clean fleece on the other, passing through all the necessary preparative steps along the way. The machinery, and the whole process, is monitored on computer screens where time, amounts of wool, water and detergent used

are controlled and adjusted. I am told that the amount of detergent used is very small; that this practically an overall 'organic' process. This owner is of Italian decent and he, his uncles and his brothers came here successively during the early and mid-20th century, initially to expand the footwear business they were already engaged in. Cattle, and therefore leather products, a huge and lucrative export enterprise in the region at the time. Later, the brothers got serendipitously caught by the likewise prosperous ovine trade and ended up turning all their inversions onto wool, setting the shoe business aside. "We saw a possibility", he says, "and it went very well for quite a while". Knowing that he can compare over time, I ask him about the processing of the wool from dirty to clean and if it has changed since he began with it. He says that it is the same. "Technological changes, the fact that it is monitored over the screens does not change the process as such", he says. "The time it takes for the wool to pass from dirty to clean is the same no matter what technology you use", he continues. "But sadly many of the original industrial plants are now sleeping –they have had to close down. The know-how is heavy in the region, but crops like soya and rice grow fast and expand as they offer a less vulnerable business," he says.

Figure 7.5 Carded and combed wool.
The photo shows the wool as it comes out of the last machine, after having passed through the process of being washed, carded and combed in an industrial installation. From here it is stacked int tps (see figure 7.6 and 7.7).

Figure 7.6 Tops and the making of tops.
The washed, carded and combed wool is piled into ‘tops’. These tops may either be the end product here, and the wool may from here be transported to the buyer, or it may be further processed before being sold (spun in to yarn and/or woven). The machine on photo to the right is shaking it into place with forceful movements. The man is blurred on the photo because of these movements combined with long camera exposure due to the lack of daylight in the place.

Figure 7.7 Lanolin extraction.
The photo shows a lanolin –the wool wax or grease – extraction apparatus in a washing facility in Uruguay. Artisans leave the lanolin more or less untouched, since it helps the fibres stay entangled while spinning. For industrial purposes, on the other hand, all the lanolin is taken out so that other types of grease can later be added artificially in a controlled manner. Washing out the lanolin is also part of the process of removing the smell of sheep from the wool. For its systematic extraction to yield and be worth it, the quantities have to be large enough. It is an expensive process that requires special machinery. At the end of this part of the washing process, the lanolin is a liquid and can be collected in barrels, as shown in the photo. This is a complicated procedure and not all manufacturing plants can afford to install the apparatus, and make it worthwhile in terms of effort and costs. The lanolin is today used by humans to moisturise skin, for burns and against skin irritation or itches. It is also an ingredient in cosmetics and can be used when making soap.

Spinning the yarn

When I speak to the workers in a *hilandería* – a spinning facility – in Uruguay they tell me about the difficulties affecting the wool. Various *lavenderías* – washing facilities – and *hilanderías* have closed down in recent years; many workers have lost their jobs. The future is uncertain. Also, seemingly contradictory to the highly industrial environment that we stand in as I follow their tasks and interview them the artisan aspect of their job is foregrounded. "The beauty with this job is that we are dealing with organic material", one worker shouts loudly as we walk through the huge, heavy and deafening machinery. "Wool is artisan. It is *artesanía* that we make." They seem to perceive no tension between the environment – which would point to the activities as happening within an industrial noisescape – and the expressed artisan aspect of their work.

Figure 7.8 Industrial spinning machine.
The photo shows a spinning machine in a spinning facility in Uruguay. This machine spins hundreds of threads at once. At the end of the machine at the upper centre of the photo, against the backlight of a window, is the silhouette of the worker half sitting, half leaning against a bench or box. This is the worker who is in charge of the machine and who controls the spinning procedure. After taking this picture I approach him to ask about his job and he is happy to tell me the details of the itinerary and movement of the wool through the machine. The encounter turns out to be a quite frustrating moment. It is impossible for me to hear what he is saying. He speaks very clearly with a strong voice, but it does not gain any force over the engines that are running around him. Neither is it possible to hear through the intense noise on the recording. In spite of this I get a sense of his job through his telling, pointing and gesturing, and I understand that it is quite stressfull and involves a number of mechanical details, for the wool and the machine to cooperate.

Figure 7.9 Detail of industrial spinning machine.
At the top of the metal spool is the thread, barely noticeable on the photo due to its rapid movement when twisting. At the bottom of the spool, the coiled white yarn is collected.

On one occasion I sit with Doña Benedicta in her rural kitchen in southern Chile. I watch her as she works the wool that I know she sheared some weeks ago, off the sheep that now pasture naked behind her house and outside her front door. She has washed, air-dried and carefully carded it. We do not speak many words during the first hours we spend together. After having asked the questions that I have had an initial urge to ask, I hesitate to interrupt again. She is focused, and relaxed. She is not just showing me how she spins her yarn; she is spinning her yarn. With a large bunch of fluffy clean wool resting on her lap, her arms and the fingers of both her hands work fast as they collaborate around the *huso* – the spindle. It is a wooden stick with a piece of what she has told me is archaeological ceramics on one end. It turns like a trompo toy, a whipping top, with its end resting on the floor to one side of her chair and slightly behind her.

The hand that is also in charge of making the spindle turn lightly pulls out and cautiously shakes some fibres to loosen them from each other, moving them in the direction of the twisting stick. Some fibres start to take shape as they are caught by the thread and sucked in, successively subsumed into the already turning yarn. The other hand's fingers squeeze, wobble and shape the thread, while softening and firming it with warm and humid palms. The thread grows longer and twirls itself onto the spindle stick. Silent, intense work. Tiny bits of fuzzy fleece entangle, bit by bit. At times,

she halts the otherwise incessant movement and pulls the yarn, stretches it to remove clots and knots and possible loops. No words are spoken for long whiles at a time. My camera has broken down so I do not take any other image with me than the silence of the growing yarn between her delicate and powerful hands.

Doña Benedicta invites me to return a few days later and one evening I find myself sitting in her warm kitchen again. This time she is no longer spinning alone but surrounded by family: children and grandchildren, some other relatives and a few neighbours. Some of them are also spinning. Some come and go. This time there is a buzz in the air of words spoken, laughter, stories told. At one point somebody says: "Does anyone remember…?" The air of the room seems to halt. This appears to be the phrase that prepares for the story that everybody has been waiting for. It is one of the stories that always returns. It is told slowly almost whisperingly by a young man, and the rest of the room is not silent, but nobody speaks[57].

> An infinity of rains ago, there was only one spirit in the world, who lived in the sky. Only he could make life. He decided to begin his work any day now. One day he was really bored from so much quiet so he decided to form a creature. It should be breezy, vivacious and imaginative, and he called him Son, because he loved him from the very beginning. Very pleased, he threw Son down to earth. He was so enthusiastic when throwing him, that Son hit earth hard. Son's mother, worried he was hurt, wanted to see him and opened up a window in the sky. That window is Kuyén, the moon. Ever since, she watches over dreaming men.
>
> The big spirit also wanted to be able follow the first steps taken by his son. To keep an eye on him he opened a big round hole in the sky. That window is Antú, the sun, and its task is since to warm men and animate life every day. In this way all living beings greet it with love and respect. It is also called Father Sun.
>
> But on earth, the son of the Great Spirit felt terribly lonely. There was nothing there. There was nobody to talk to. More and more sad, he looked

57 The event referred to here was in itself quite eventful. For technical reasons, the recording taken at the time was rough and fragmented with interferences. The story was not recorded as a whole from beginning to end. By pulling together information from the recording, and fieldnotes I took afterwards, with what I recall when revisiting the event in my mind, with published versions of the story (Kössler-Ilg 2000; Fernández 1995) that I found afterwards, I am able to retell it here in a more literary mode. I chose to do this to make sure that the story comes across clearly, since it is relevant for the argument of this chapter.

at the sky and said: “Father, why am I to be alone?” “You really need a partner”, said Ngnechén, the progenitor spirit.

Soon a soft-bodied and gracious woman was sent from the high skies. She fell without hurting herself nearby the first man. She was naked and felt cold. To not freeze to death she started to walk. It so happened that in the trace of each of her steps, grass would grow. And when she sung, insects and butterflies poured from her mouth, and soon the harmonic sounds of the fauna reached the man.

When facing each other, she said: “You are beautiful. How might you be named?” “I am Lituche, the man of the beginning”. “I am Domo, the woman. We will be together, and make life flower loving each other,” she said. “That is the way it should be. We will fill up the emptiness of earth”, said Lituche.

While the first woman and the first man build their dwelling, which they called ruka, the sky filled with new spirits. These were wilful *Cherruves* – whirlwinds – much feared by the tribe.

Lituche soon learnt that the pine seeds from the *Pewén*, the Araucaria tree, had the best nutrition, and with them he made bread, and so could wait winters without worries.

Domo cut the wool of a sheep, and with her two hands, rubbing them against each other; she would form a thick thread. On four poles she would twine the strands and begin to overlap them. Since then, we make our weaves in natural colours, dyed with roots.

When the sons and daughters of Domo and Lituche multiplied, they occupied the territory from sea to mountain range. Then there was a big cataclysm, the waters of the sea would rise, guided by the Kai-Kai serpent.

The mountain range elevated more because there lived Tren-Tren, the earth snake, and from there he defended the men from the rage of Kai-Kai. When the waters calmed, the survivors started to descend from the hills. Since then we are known as the people of the earth, or Mapuche.

Other stories follow this one. Some are about men that travel; they leave the village and always returned by sea. Some are about birds that transform and survive or that save other animals. Others still, are about talking pumas. They are interlaced with chit-chatting, gossip and silences.

On another occasion I interview Hilda and Maria in the workshop that is the administrative and commercial centre of the Mapuche cooperative in Patagonia which the two of them are part of. They are both *artesanas* – artisans that spin, weave and knit.

> Annika: Of all the moments and tasks within the processing of the wool, is there any moment that you like more, that would be more…
>
> Hilda: Pleasant?
>
> Annika: Pleasant, yes, and perhaps difficult?
>
> María: Spinning is the most difficult one.
>
> Hilda: The ugliest task must be the washing of the wool, the cleaning of it to prepare it for the spinning. Because there are two forms of spinning, depending on how it is prepared. Me, for instance, I wash it. The fleece: I wash it. There are artisans that spin it as it comes, dirty. But for me, it makes the spinning easier to wash it, although you have to be careful not to take out all the lanoline when you wash because that is what makes the "*mechas"* – the fibres – stick. That risk is the reason why some artisans spin it dirty. After that it is hard to wash it because when the strands are already entwined, the dirt and all is inside. That also depends on where it comes from. Wool from the steppes brings a lot of *tierra* – dust, soil – because of the wind, and lots of thorns and hard grass. It takes a huge amount of effort to wash and spin it. That's the ugliest part.
>
> María: The most difficult is the spinning, because it takes a very long time. [The time it takes] depends on the thickness, but it takes a lot of time. The most pleasant part is to see the result, and that may be the wool that has been washed or dyed and you see the colours, whether you have dyed it with *pañil*[58], with *radal*[59] or with walnut and you see the result and others come and admire it.

58 Pañil, Latin name *Buddleja globose*, is a small bush with yellow fruits and flowers, native to Chile, Argentina and Peru, also used as medicinal plant.

59 *Lomatia hirsuta*, known as Radal, is a tree native to Chile.

Figure 7.10 Hand-dying of yarn.
The photo shows two women who work in an artisan cooperative on the Uruguayan grasslands. Here, they are twisting and untying Merino yarn that has just been taken out of the very hot dying bath. This is wool that the cooperative has bought spun, in this case from an industrial spinning facility. They now continue the manufacturing by hand, dying it and selling it as hand dyed yarn, or also knitting or weaving it into designed items, be it clothing or blankets. The yarn on the photo has a buyer who has ordered a mlti-coloured yarn. For this, water has been heated over open fire with a green or blue dye diluted into it. The submerged yarn is twisted and knotted to prevent parts of it from being exposed to the green dye. It is then pulled out of the steaming hot water, untwisted and then knotted again, to be re-submerged into hot water with a blue hue. Now the newly uncovered white parts take on the blue colour, while the green parts change the tone. This is repeated with yellow dye. This technique makes the multiple colours form random pattern which, in turn, forms new patterns when the yarn is knitted or woven. Due to the weight of the water, the yarn in the photo is very heavy to lift and work and the steam is burning hot. When untwisting and re-knotting it, the women have to work fast in order not to burn themselves, but also so that the yarn does not chill off too much, since this will make it more difficult to untie which in turn could affect the final quality of the yarn.

Figure 7.11 Hand-dyed yarn is hung to dry in the sun.
Yarn that has been dyed by hand is hung up by one of the artisans who has died it. It hangs here until it has gotten itself dry by the sun and the wind, before being labelled and packed to be sent off to the buyer. This photo shows yarn that has been hand dyed with a tint that is bought as pigment-powder in small plastic bags, and that is diluted and mixed into hot water. The yarn is dyed on commission, i.e. the multicoloured yarn has been ordered specifically by the buyer.

> […] we should resist the temptation to assume that since stories are stories they are, in some sense, unreal or untrue, for this is to suppose that the only real reality, or true truth. is one in which we, as living, experiencing beings, can have no part at all. Telling a story is not like weaving a tapestry to cover up the world, it is rather a way of guiding the attention of listeners or readers into it. A person who can ·tell is one who is perceptually attuned to picking up information in the environment that others, less skilled in the tasks of perception, might miss, and the teller, in rendering his knowledge explicit. conducts the attention of his audience along the same paths as his own (Ingold 1993:153).

A last note will close this section and open up for the next one. It is a story that was mentioned on a few occasions during the fieldwork. “You know about the mothers of Plaza de Mayo”, I am asked. “I do know about them, yes; what makes you think about them now”, I ask back. “Well, I think that their actions are somehow linked to what you are looking at. They were fighting against oblivion. And the story goes that they were knitting their way through.”

Las Madres de la Plaza la de Mayo – the mothers of the Plaza de Mayo – is today an association that runs a newspaper, a radio station, a university, a restaurant and a book shop. It was founded 39 years ago during the military dictatorship in Argentina, more precisely on the 30th of April 1977. This was the time when *los desaparecidos* – the disappeared, the missing – was becoming a well-known group of people, a nationally present category marked by the absence of thousands and thousands of persons. Nobody would say where they were or what had happened to them, and nobody would take open responsibility for their disappearance. They just didn't come home one day. Or they had officially been detained by the authorities but never seen again. Some of the mothers of the disappeared would gather, driven by the urge to claim information about their sons, daughters and, in some cases, their husbands. Plaza de Mayo is the open square in front of the governmental palace of Buenos Aires, the capital of Argentina. Part of the story of its origin goes:

> They had no office, but they had found a spacious place, airy, illuminated and very central. They had no soft armchairs, but there were park benches. There were no desks, but they had their skirts to hold files, expedients, notebooks or whatever was needed. They had no carpets, only tiling and some fluttering pigeons. They had no reception, but they could see one another from afar as they arrived. They had no phones, but they would pass notes with messages, information or future meeting points. They would hide those messages in yarn balls in case the military or the police crossed their paths. They didn't want to be discovered. Since they had the yarn already, they would bring knitting needles and they would knit there, on the square, while exchanging information, inventing what to do, how to search, how to avoid the impotence of not doing anything. Penelope knitted while waiting for her husband to return. Together they would knit ways of looking for their sons and daughters and to denounce what was happening to them (Lavaca 2007).

The mothers of Plaza de Mayo still meet every Thursday to walk the square arm in arm (Hernandez 2012; Schweimler 2011).

In different ways, the above notes all include the material particularities of wool as it is being worked and spun. They tell different stories that foreground relations between remembering and forgetting. They also show how the wool acquires different qualities through the relations that are enacted around it. The wool's qualities are in these stories as much material as relational.

Dissociations

Wool, in its different semblances, is one of the participants in the descriptions; in some of the stories it is even included as an agent. In what follows I will pursue this question of material agency, while zooming in on three additional examples – three events – that I have found pertinent for a deepened analysis. If the wool is an agent, can the material, and not only the people around it, convey particular stories? While continuing the chapter´s already established focus on manufacturing and spinning activities, what follows from here is intended more explicitly as an ethnographic response[60] – given through the findings of my fieldwork – to parts of the recent anthropological debates within "the material turn" or "the rise of the thing" (as discussed in Chapter three).

Remembering wool

Once, during a conversation with a knitting woman, she mentions a recent investigation she has heard about. It has to do with wool and its memory, she says. My curiosity has me browsing for what I thought would be one study. It turns out that what she has heard about is a series of fascinating trans-disciplinary experiments that involved archaeology, history, geography, anthropology and chemistry carried out at Copenhagen University. These studies examined woollen fibre with the aim of establishing its provenance (Frei et al. 2009; Frei 2012). The fibre was analysed through a recently developed method, the strontium isotopic tracing system, which enables a reading of 'trace elements'. These traces are also referred to as the isotopic or geological 'signatures,' or 'fingerprints', of the raw material. The method had so far been used archeologically to determine, for instance, the age of rocks and minerals. In these studies the strontium isotopic tracing system is used to trace textile trade and migration patterns through ancient textiles.

The details of the chemical procedures and the steps taken to reach the results are captivating, yet the reason for bringing these studies up here is their capacity to tell us that woollen fibre may tell us.

Similarly to freshly sheared woollen fibre, manufactured woollen yarn, when carefully washed, lets go of dust, dye and other botanical and zoological remains. These residues reflect the site of the animal's feeding

60 I use the term 'ethnographic response' inspired by Annelise Riles (2006), as a contribution to a debate that does not aspire to give answers or provide solutions.

ground – its so-called geological background. The studies that had been brought to my attention by the knitting woman had examined woollen samples from the Danish Iron Age, 500 BCE to AD 800. Around 1880 in North Eastern Jutland, Denmark, "the Huldremose woman", a female body dated between 350 and 341 BCE was discovered. Some well-preserved textiles were found on and near her body. These 2.000-year-old textiles were woollen clothing that had been found on the local site that and, together with the body, had been recovered. For the undertaken studies, the fibres were carefully analysed using the strontium isotopic method and compared to the geological composition of extracts from a variety of soils.

One of the questions posed by the study was whether the strontium isotopic method, so far used only to determine the age of other materials, could also be used on woollen fibre to also determine place or places of origin. The evidence that was pulled from the investigation showed that the method was indeed applicable to woollen fibre (and likewise to skin and plant fibres, which were analysed for comparison).

The analysis involved a textile technical reading that revealed that the woollen fibre was most probably spun and woven in Denmark. When comparing the reading of the traces in the fibres (the matter that the wool was carrying and which was dissolved when washing it) to the geological structures of different soils, the researchers were also able to conclude that the garments analysed were woven from raw wool of at least three different origins, both Danish and not Danish (most probably sheep that had grazed Northern Scandinavian grasslands). The main and final results suggest that "wool and plant fibres of the time were either traded or brought as raw materials for textiles more commonly and over longer distances than previously assumed"(Frei et al. 2009).

To me, the study is both a mysterious and fascinating way to *hear* woollen fibre. The wool reveals secretive stuff. The method is proven to be useful not only for identifying the source and origin of the wool, but also for tracing migration events in man and sheep by getting at information about what soil the sheep has grazed. It is shown and argued that the fibre carries information – that it keeps with it some reminders of its past – and can potentially provide knowledges about ancient wool production and consumption and thereby about people, about sheep, farming, human subsistence, migration and trade patterns, modes of production and environmental changes. Fibre figures memories.

The method used for the study afforded a means of tracing the origin of yarn and would also potentially enable a definition of the optimal genetic and detailed geographical conditions for controlling the production conditions and the quality of the wool. By extension, it not only furthers knowledges about human-animal relations and migration patterns, it also potentially provides transparency and a means to control the wool's quality and market value.

These Danish studies engage the fibre for its ability to tell a particular variation of otherwise overlooked and forgotten information – for its remembering of its origin. This raises questions about the sense of direction that is predominant in the example. In what direction does memory point? The quick answer is 'backwards' –towards historical origin – and, in this example, simultaneously 'forwards' – towards the innovative progress that the method suggests. But there is also an 'inwardness' here that I find interesting; a staying on in present time, a shared sociality here and now – because that is where the fibre and its traces actually are handled, that is where methods, skills and concepts are engaged – not in the past, nor in the future. It may tell stories about past and origin, and about future possibilities, but it always stays on in the present. I will try to elaborate this point through some insights into the sense of remembering/forgetting in two more examples.

These studies engaged the acts of remembering in terms of the provenance of the fibre. These studies also talk about how 'innovative' methods enhance scientific intentions to establish origins. The event opens up for a question of the sense of direction, asking in what direction these fascinating studies point, and I suggest that they signal an 'inwardness' or 'now-ness', similar to the entangling movement of the spinning. The studies, as well as the ancient woollen fibre samples and the dust and dye examined, stay on in present time.

Forgetful wool

I am in a spinning facility located in a village on the coast of Rio de la Plata, in the middle of the Uruguayan part of the South American Pampas. Victor greets me. He presents himself as 'the quality controller' for this company. Walking through the vast spaces of the spinning facility we pass big machines that take care of the different moments in the processing of the wool – from fibre to yarn, and on to woven or knitted fabric. Victor stops and points towards one of the roaring machines. *"Esto es donde nace*

el hilo – this is where the yarn is born," he states. This is the carding. On its passage through the inside of the machine, the wool is transformed, he says. It is flattened, distributed, separated, opened up, loosened, and then the fibres are disciplined, ordered into more parallel lines. When it comes out on the other end, it has become a kind of felt. What went in as wool fleece has now become fibres.

> "They break apart if you pull...like this...but if you twist it..." He demonstrates with his fingers how the fibre sticks together when twined. The fibres entangle and a thread appears. "*Esto es lo que le da cuerpo al hilo* – this is how it gets its body. And here..." He walks over to another section of the factory... "Here, humidity is sprinkled onto the thread, and the humidity, together with the correct temperature and pressure, helps to remove the fibre's memory". "Its memory?" I ask. "Yes, that is right!" he confirms. "Fibre possesses the particularity of always wanting to return to its previous position." He pulls out a thread from one of the coils and lifts it so that it hangs loose from his hand. It dances in the air, turns and jumps like a worm. Victor laughs and concludes that this particular thread needs to forget more in order to reach the desired quality.
>
> (Fieldnote)

The image of the 'dancing fibre' and Victor's explication serves as a direct means to get a sense of one way in which the fibre engages the notions of remembering and forgetting. The act of spinning could easily comfort an imagery of simple linear thinking, from A (dirty wool) to B (yarn), but turns out to be more complex. The process implies an ordering of the fibre as well as a straightening out into a coherent stream of movements, where the fibre, in Victor's world, 'thinks forward' and 'leaves behind': it leaves behind the vast grasslands, the silent sheep, the fluffy fleece, its smell, the woolliness of its past. According to Victor, the ideal outcome is this 'forgetfulness'. The forgetting of origin entails just 'being here', looking ahead, ready to move on into its future work as woven fabric with a required quality. The way to ensure this is to add balanced pressure, adjusted tension and the right amount of humidity to the wool, while twisting the fibres into place. An indicator of the quality of a woollen thread is that it does not strive to return to its previous form, that it instead should dissociate with its previous conditions; its past.

The active efforts to ensure this 'quality of forgetfulness' in technical and material term are as powerful as their figurative implications. In Victor's

rhetoric, the material has the capacity to enact such a human activity as forgetting. So, forgetting is not an exclusively human quality.

The example of the 'dancing fibre', where Victor refers to the spinning as a 'slowing down', a 'keeping still', and a 'delaying', that is necessary in order to control its quality, and turn it into sustainable yarn. Again the idea of dissociating with its past (forgetting its origin) proves to be an inward movement that implies entangling so that it becomes irreversible and cannot return to its origin, rather than cutting off associations.

'Becoming with' wool

Earlier, I introduced two of the members of an artisan cooperative whom I interviewed in a workshop in a town in the southwest of Patagonia. The two women, Hilda and María, are artisans who work every step of the manufacturing process of the wool. The two of them have asthma. This morning, there has been a fire in the town and the air is contaminated. Their breathing is affected and they cannot spin, because the dirt and dust that comes with the movement would make it even worse. We sit and talk.

The following event shows how wool is an active component when re-building the artisans' identity as Mapuche. The link to remembering, forgetting and qualities leaps out in the interview when the two women talk about how the traditions of spinning and weaving have persevered over time, while other aspects, such as the Mapuche language, including the meanings of the symbols which are knitted or woven in as patterns on the items they produce, are forgotten (or in this case, denied, oppressed). At the same time the tradition of spinning and weaving has been preserved – remembered – over time.

> Annika: Did you grow up [working the wool]?
>
> María: The skill comes with the family for generations. In my home it was tradition. I have my grandmother´s spindle. But in my family, we are six sisters. I am the only one who does it. There is one of my sisters who knows how to spin and weave. For the others, that which is artisan does not draw their attention but I think that is because […] they don´t value it. My daughter is ten years old now and she was born here in the cooperative. She is interested. She wants to learn how to weave.
>
> Annika: And for you?

Hilda: My grandmother spun. Not my daughter. She wouldn't even touch the [spindle]. It's easier to buy, she says.

María: The nice thing about spinning is that it is slow. For me it is therapeutic.

They talk about how other aspects of the work have been forgotten. They take courses to learn both the Mapuche language and to learn the meaning of the symbols that they weave.

Hilda: After 500 years of oppression we have to learn our own language. So we take classes in Mapuche. Next we are planning a training course on the figures because we know the figures but we do not know their meaning. It is as though we have it ancestrally incorporated into our fingers, but we don't know the meaning. So, now we are training ourselves in our own culture. We are learning our own culture.

Annika: Is there an interest in this?

Hilda: Yes, yes, yes. And also a change of perspective. Before, to be Mapuche was shameful. In my home I was not Mapuche. I live, I am in a limbo, because I am neither white nor Mapuche. It was the white people who told me that I was Mapuche – Mapuche descendent – but the Mapuches did not accept me as Mapuche because I am not characteristic of Mapuche. Our generation ended up in a kind of limbo *no somos ni una ni otra* – we are neither this nor that. To be recognised, today we have the courage to say: yes, I am Mapuche. Years ago the Mapuche would never say that she was, because of the shame, the discrimination, the abuse and the impairment of the culture. Today it has changed, those things changed, today people see it as: ah, she is Mapuche!

María: I feel bad because I can greet somebody in English, but I cannot say something in Mapuche. We will encourage our children and grandchildren to learn Mapuche.

Annika: But there are many groups of languages within the Mapuche, right?

María: Within the same culture, the same language, there are nuances. Or as with the drawings, the figures, for instance on a tapestry for us, that is a spider but for a Mapuche who lives closer to the coast it is a crab. So it has to do with nature and with each group.

Hilda: We have to learn.

Annika: How do you go about to learn the significance of the figures? How do you look for the meaning of the drawings? Talking to…

Hilda: Yes, talking, sure. There are the Mapuche who always lived within the community and that have their territory. It is like they were breast fed this, they have it embodied; they know it.

Annika: Can you tell me something about what you have learnt?

María: The Mapuche weave, what it does is that it tells a story. The weave has to tell a story. We, for instance, we make the symbols, but we don't tell stories, because we don't know the meaning. So, now that we are learning the meaning we will be able to make, I don't know, say, a *choique* [Rhea Americana, a small native ostrich], and next to it you have, say, a path, so that what we are making is the 'path of the *choique'*. That is something that we are learning. Because at the same time as my grandparents knew how to speak Mapuche, and I sometimes would hear them tell stories, they didn't teach me because 'you shouldn't be like me, you shouldn't have to live what I lived'. So now it's time to learn everything. Learning everything.

The artisans talk about how their work with wool has been an active part of their opportunities to become Mapuche again. The counterforce to their dissociation with their Mapuche heritage – the 'forgotten' habits and identities – is in this case not to remember, but to activate other means; to learn and to reconnect with other Mapuche groups. The wool plays a part in the sense that it supports and makes this activation both possible and visible. It provides a community and it becomes a physical place, the wool, the weaves and the work shop, where they meet, work, plan and discuss. They become what they become (as a collective) with the wool.

Figure 7.12 Spinner in the cooperative's shop.
The photo shows a spinner sitting in the Mapuche cooperative's shop in Patagonia where their woven and knitted woollens are laid out for sale. In the photo, he has just received a personal text message on his smartphone.

The excepts from the interview in the Mapuche artisan cooperative offered the sense of overcoming boundaries between remembering and forgetting in terms of the hidden or denied Mapuche identities that were actively given shape through spinning and weaving activities. Also the forgotten meanings of Mapuche symbols were examples of dissociations – a forgetting of that which they themselves would regard as original meanings of the symbols did not stop them from using the symbols, and so in a way they still told a legitimate story with their woollens. With this, the event shows how the notions of *quality* and *qualities* are discussed as flexible rather than fixed to the material, and as something that the wool undergoes – albeit slowly – together with the artisans and their community.

Summary

This chapter has shown how dissociations sometimes connect rather than cut. In this logic, dissociations that happen in the activities of generating qualities around, with and for wool may actually be taken as doing the work of enduring (sustaining).

The proposition of this chapter has been that qualities are generated through flexible relational activities among industrial woolworkers and artisans involving skills and care, and which add to the potential properties

of the material. Concomitantly, its ability to sustain is enhanced, both in material and figurative terms. But the material properties of the wool are also shaping field members' activities. By thinking through the dynamics between remembering and forgetting with the wool, I have disclosed that certain boundaries, such as those between past and present; between subject and object; between remembering and forgetting; between absences and presences; between human and nonhuman; may draw together, rather than to separate.

I have shown that to remember is not necessarily to move the present backwards and closer to the past. It may also be to pull varied notions of 'origin' to the fore and into the present. The past may be entangled through different stories but it always remains contemporary. Such modes of remembrance, modes of spinning the yarn, are practices that, in Donna Haraway's words build "worlds and objects in some ways rather than others" (Haraway 1994).

Each story and event that has been included directly reflects several aspects of the recent anthropological debate on material agency. The conclusion of this chapter is that there are ongoing shifts between association and dissociation and between who or what is in charge in each event or story that happens along with the spinning of the yarn. The events and stories describe the dynamics between how people talk about and handle the wool as though possessing human-like qualities and capacities, and how the wool, because of its material qualities, does 'spread light' for itself. The wool, as described in this chapter, interferes by shaping how people and things group together, act and respond in concrete ways.

8. Distortions among artefacts

How are woollen artefacts held into place through classificatory work? In Chapter seven, I examined the processes around manufacturing, in particular the spinning of the woollen yarn, relating these processes to dissociations and storytelling. My efforts to explore what classifications do in the activities that occur around the wool showed that skills and care play important parts in the activities; they affect the ability for the wool to sustain both in material and figurative terms. In this chapter I pull the ideas of the entangled relation between the material and the figurative further and onto a different path. I do this by investigating the wool once it has been made into knitted or woven artefacts. Knitting and weaving are activities that do not rely on the same tools, nor are they based on the exact same movements, or kinds of loops. Still, they have the acts of entangling and overlapping threads with the aim to give form to an artefact in common (Ingold 2000; 2001). The aim is to trace an understanding of what classificatory work these artefacts belong to.

By exploring the relational life of these artefacts I identify the theme of classifications and their interferences in terms of distortions. I use distortions as an overall term for miscommunication and/or "out of shape": ambiguous, twisted, perverted and/or disproportionate events (Ayto 1999; Weekley 1921). During my fieldwork I found such distortions significant for the way the artefacts were held into shape.

Noteworthy already here, is that, in contrast to the modes of classification of the wool that we have seen in the previous chapters, these artefacts tend to carry names instead of (and sometimes as well as) numbers. Woven or knitted items are usually attached to a name, independent of weather they have been manufactured in an industrial, artisan or – as we shall see in this chapter – artistic environment. The transformative steps and the transportations that the wool has already passed through have been many and lengthy. The tools, the species, the entities and the hands that have been in touch with the wool during these processes are, as I have shown in the previous chapters, multiple and, at times, complex. It is therefore

striking yet not at all surprising that the name applied to the woven or knitted item usually corresponds to the person or group who last touched the wool in a way that affected either its location, its value or both. There is also often a mention of the place where it was last handled.

Figure 8.1 Artisan preparing labels for the artefacts.
The photo shows an example of how the wool is classified by naming. It shows an artisan who is preparing labels that are to be tied onto the items that have been produced by the artisan cooperative she works within. The items, in this case industrially processed Merino yarn that has been hand dyed and then knitted by the artisans, have reached the point when they will be sent off to buyers. In the photo, she is preparing the tags by tying a coloured thread to them, and writing her own name plus the location of the workshop, in this case one of the departments of Uruguay.

For this chapter the fieldwork has focused on two artefacts: a (named) Merino wool pullover – the kind that many of us have in our closet – and the specific artwork which, as I explained in the introduction, was the point of entry into my study. The former involves interviews and observations that focused on Merino sweaters that carry the name Benetton[61]. The latter includes interviews and notes from visits in an artist's studio as well as meetings with art collectors in Buenos Aires, Argentina. Mónica Giron, the artist behind the artwork, and the collectors each own an edition of the artwork and hold it as part of their private collections[62].

This part of the fieldwork was determined by the presence of the artefacts and did not primarily focus on the artist and the collectors or on the Benetton Group, its employees or its customers. Neither did it aspire to investigate the material properties of the artefacts or the specificity of any location where they found themselves. Rather, I was interested in the associations that people like the artist, the collectors and the Benetton employees and consumers make with the woollen artefacts. The site of this chapter is, therefore –and even more explicitly than in the previous chapters – on the woollen artefacts themselves.

61 Benetton was repeatedly mentioned during my fieldwork, mostly without my asking. In Chapter five the Benetton Group came in as grassland landowners in Patagonia, as Merino sheep producers, and as an employer for locals in the area. In Chapter six, samples of Benetton wool appeared in the Laboratory, where wool's quality is being measured. In Chapter seven, Benetton's presence in Patagonia is mentioned as influential for the regional wool work and as part of the contemporary Mapuche story. In this chapter I bring in a Benetton pullover as one of the central artifacts.

62 The name that is attached to this particular artifacts – the artist's name – and further associations are added through its title. In the case of belonging to a private collection the name of the collector(s) is also often mentioned especially when lent to an exhibition. When it is exhibited, its label holds its title, the name of the artist, the material or technique used, the year of production, the present owner, or name of art collection, if this is not the artist. This information is added to the theme, topic or concept of the exhibition event, the name of the exhibition space and the curator of the show.

Figure 8.2 Left: a knitted pullover. Right: Ajuar para un conquistador, Mónica Giron,1993, pullover for Charito (young Rhea americana), Merino wool and buttons.
The image to the left shows a knitted pullover. It is but one example of a common pattern and kind that can be found on the contemporary market. The photo to the right is one piece of the artwork, Ajuar. The information that is normally displayed together with the artwork when it is exhibited or reproduced in a catalogue is what we can see in the picureheading above. (Photo Mónica Giron)

A woollen pullover, whether machine or hand knitted, next to a knitted work of art provokes a particular kind of comparison. My aspiration is not to establish definite similarities and differences between the two, but to discuss how they may mutually shed some light on each other.

In this chapter, both the artefacts are taken on as "whole". As such, they provide a ready-made ground for the descriptions and the analysis of this chapter and, therefore, I do not here include the accounts of the processes within which they were made into 'pullover' and/or 'artwork' – this has already been done in Chapter six, seven and eight. Instead, I aim to follow the work that they do as artefacts. I do this by looking at what associations they activate (Bolt 2010; Riles 2010). This further implies that the categorically different associations present during the processes that lead to their becoming (such as, for instance, the multinational retail industry or Art History) are undeniable, yet not lone parts of their relational weaves; of their 'fibre formations'.

This analytical move is informed by the recent methodological approaches that I discussed in the introduction and in chapter three. I particularly draw on Bower and Star, who suggest that taking on contexts or categories – or

even artefacts – as predefined wholes may block our vision (Bowker and Star 1999).

The ambition of this chapter is to describe the relational work of the two selected artefacts without letting predefined wholes or categories block the vision. This requires an analytical somersault which, at the same time as it aspires to unlock the two artefacts from fixed static categories, does not ignore the fact that the artefacts are what they are – and do what they do – *because* they are subject to contextual classifications. My response to this challenge is an effort to describe them and some significant events and encounters carefully. I start, therefore, not from the larger network of which they form part in order to work inwards or downwards but, as an alternative, I take them on as proper entities, and trace them.[63] The query of the chapter is, as a result, quite simply: *what different associations do the practitioners make among these artefacts?*

In what follows I am attempting to describe dissimilarities between both these artefacts without opting for a distinction between them where one is "real" and the other "representation"; one is "mundane", the other is "symbolic"; one is "ordinary" and the other is "remarkable"; or one is "fact" and the other is "fiction" (Latour 2005)[64]. This second premise is an aspect of the first: both artefacts (as literally "networks") are *all* of the above at once, and I argue that such binaries do not add any refreshing understanding of them[65].

Instead, the chapter points to two main kinds of distinctions that I have pulled from my fieldwork material. These distinctions take shape in my fieldnotes as distortions between *unique* and *ubiquitous*, on the one hand, between *presence* and *absence*, on the other. The latter are twists that emerged as to what entities are considered to be holding a position with and within these artefacts. In other words, who and what is regarded as

63 This move is informed by recent ethnographies, such as Annelies Riles' on the document (Riles 2006) and Antonia Walford's on scientific data (Walford 2013) who take the artifacts they study as entities per se and as methodological devices which they use to trace the relations and communities emerging around them (Lury and Wakeford 2012).

64 This take is inspired by Donna Haraway's question "what if the study and crafting of fiction and fact happened explicitly, instead of covertly, in the same room, and in all the rooms?" (Haraway 1997).

65 Tim Ingold contests the binary between art and technology by pointing to the terms' etymological significance as the same, an by making an historical account which shows that it is only for the past century that the two have been regarded as categorically separate (Ingold 2001).

being absent and present. The former distortions are, for instance, observable by looking at when, where and how these artefacts appear as unique and when, where and how they appear as ubiquitous.[66]

The chapter ends on a discussion of the significance of these distortions for the holding together – keeping the shape – of the artefacts as part of the acts of classification at work.

Figure 8.3 Detail of knitted artefact.
The photo shows a close-up of a hand knitted weave. The pattern of the weave reveals traces of the movements of the yarn in the knitting activities. Traces of other moves and movements (such as the transportations and transformations that we have seen in the previous chapters) are not obvious. Examples of entities that we by now know have been crucial for the formation of these artefacts are the sheep, the grass and the grasslands; the Australian market and the historical travel of the sheep; the foxes, boars, horses and farming dogs; the hands, persons and gazes; the measuring tools, documents, spindles and humidity; the machines and vehicles. Yet, when spoken of as somewhat and sometimes present, to what extent are they actually present while invisible to the eye? Are they instead quasi-absent, or perhaps absent and present at once?

Distortions

To begin to explore the relational work of the artefacts, I will draw partial maps of their whereabouts as they appeared in my fieldwork. These maps are partial in the sense that no attempts have been made, neither by my informants nor by myself, to make the maps complete. Mapping is

66 Unique is here used referring to being the only one of its kind, unlike anything else. Ubiquitous indicates present, appearing or found everywhere at the same time, universal, omnipresent, global, constantly encountered or widespread (Ayto 1999; Weekley 1921

important, however, since it depicts the artefacts as itinerant and flexible rather than fixed and stuck in any one (material or figurative) place.

In the upcoming passages, the two kinds of artefacts that I have introduced, appear. The aim is to see them differently and not simply to re-tell the story they tell (cf Watts 2012). As in the previous chapters, the notes and quotes are taken from my fieldwork records. While the people, places and processes in this chapter are explicitly 'public' and rather would have preferred me to include their names, I have opted for a balance between using names, coding and anonymizing, so that the result is a basically nameless narrative. The purpose is to allow the focus to remain with the artefacts as sites *per se*.

"The art of knitwear"

Perhaps the quote "the art of knitwear – a new way of thinking and making knitwear" might at first be associated to artwork, but it is, in fact, one of the Benetton Group's current slogans (2016). The catchphrase has become a trademark for the company. It is aimed to draw attention to the Benetton Group's collection of colourful knitwear, such as the artefact in focus in this chapter. "Everything started with a particular yellow used for worsted wool pullovers. The rainbow coloured heritage grew from there" ("Benettongroup.com" 2016).

The Benetton Group, (also known as the United Colors of Benetton) is an 'innovative' fashion company, established in 1965 by three brothers and a sister carrying the family name of Benetton[67]. Today, the company states worldwide presence, totalling approximately 5.000 shops across 120 countries. According to the company's webpage, the Group's complete number of employees is 85.500 people. The holding company of the

67 One example of Benetton's innovative dispositions is the automated sorting system. The aim is to "completely integrate the entire production cycle [into the business], from client orders to packing and delivery" and the logistics operation at their plant in Italy is based on electromagnetic fields. The sorting system handles orders for the 5.000 Benetton shops all over the world. Folded and hanging garments are automatically sorted, packed into boxes and sent through a one-kilometre tunnel to the Automated Distribution Centre. The Automated Distribution Centre has a capacity of a total of 800.000 boxes and can handle 80.000 boxes daily by only 28 employees ("Benettongroup.com" 2016). Through such descriptions of company policy, we can see how the definition of "production cycle" focuses on the finished garments, their packaging and transportation, but does not include the procedures before reaching this point, such as the production of the raw material and the weaving of the artifacts.

Benetton family, Edizione, operates in the retail sector, in the sector of infrastructure and services for mobility. The company is also present in the real estate, agriculture and hotel sectors. Edizione reported revenues of 12.4 billion Euros in 2012 (Benetton Group 2016) [68].

The company's webpage reads that "Benetton Group is focused on the future. Its story is built on innovation and seeing where others fail to see. The Group has always been at the cutting edge: with colour, with its revolutionary approach to point of sale, with an absolutely *unique* production and commercial network and with a *universal* form of communication, which created both a phenomenon and cultural debate. Benetton was global before globalisation, but in its own way" (Benetton for Bangladesh 2016, my italics). The quote pictures the company and its products as *unique because universal*.

The Group's advertising policy has, since the early 1990s, not been to focus on the products but, rather, on the message. Products are never displayed in the ads. Instead, the messages are about "civil, social and political issues". The idea is to use "a single, universal message that is valid for all consumers, wherever they live, whatever the colour of their skin and whichever language they speak". This is motivated on their webpage as follows: "Benetton is a responsible Group, receptive to the needs and problems of the present time and attentive to the environment, to human dignity and to the transformation of society. It creates value and aims at growth, not as an end in itself, but as a means for contributing to progress". Some of their main projects include "The Unhate foundation"[69], "The Women Empowerment Program" (including a campaign called "We are glad it's a girl"), "Sustainability"[70] and "Engagement in Bangladesh" (*Benettongroup.com* 2016).

68 For an ethnographic study on Benetton from a management perspective see (Camuffo, Romano, and Vinelli 2001).

69 Launched in 2011, the Unhate Foundation encourages social engagement through projects that "find their inspiration in the social role of art and in self-expression as a means to educate people to be tolerant, and involve young people in "at risk" areas of the world, from Brazil to India all the way to New York's Puerto Rican neighbourhoods" ("Benetton Group Corporate Website" 2017).

70 "Social commitment, concern for the environment and ethical behaviour are core values of Benetton Group, a company always conscious of the importance and significance of a responsibility that goes beyond its commercial objectives. The main objectives of Benetton Group's corporate social responsibility strategy are the safety and quality of products and the transparency of information delivered to our consumers". In 2013 the Benetton Group's commitment to protecting the environment and product safety were recognised by Greenpeace ("Benettongroup.com" 2016).

Again, we see that ubiquitous makes unique when "a single, universal message aims to be valid for all consumers, wherever they live". When following the artefact during my fieldwork, I reached out to the Benetton headquarters in Italy over the phone, hoping for further contacts and interviews in Scandinavia or northern Europe – where I was based at the time. From the call centre, I was passed on to a contact that – I was made to understand – was in charge of public relations, media and press communication, but whose name I never got. The event resulted in the following fieldnote:

> She is in a meeting when I call and asks me to call back. Later the same day, I try again. She answers her phone and I present my purpose as a researcher, wondering if she would be so kind to put me in touch with someone in southern Scandinavia where I am located at the moment. She answers that there is nobody that I can contact in Scandinavia since the global view is from Italy and can only be given from there. I then ask if she herself or anybody in Italy could possibly give me a brief interview over the phone. She informs me that a new collection is to be launched over the coming months, during June and July, and that everybody will be far too busy. I ask if there is a chance to get through to them after that, say in September, and she responds that she cannot foresee the future. She says: 'What is the problem? Everything you need is on our webpage'. I agree that yes, I have found a lot of information on their webpage, but explain that an interview is always different and that it is often used in the kind of research I conduct. Again, she asks what the problem is, repeats that everybody is too busy and that I should look at their webpage. She is twisting away from an interview – almost before I even ask for it – for reasons that I do not have access to. I give up trying to explain to her, let alone insisting, since it is obvious that she has no intention to put me through to an interview anywhere or anytime.
>
> (Fieldnotes)

The situation, I am sure, is familiar to most ethnographers. Encounters are not always smooth. The Benetton representative acts as a gatekeeper that shows no interest in opening up for this researcher. I am not surprised or frustrated, and I eventually do get to interview several people about the Benetton Merino artefacts that they handle. Interest in including the incident here is the distortion it conveys. The public policy of the company to never have their ads focus on the products is morphed by the PR representative's fixed focus on the products. She concentrates on the collection that is to be launched rather than on the message that she or any

of her colleagues could communicate to an anthropologist. Her attitude distorts the Benetton Group's policy to "cover new grounds, look ahead, experiment and anticipate the time" (*Benettongroup.com* 2016). Her saying that "the global view" can only be given by a select few (and from Italy) is obviously not referring to anything other than the Benetton Group's management, yet, if we think twice, it is a problematic –and rather pretentious – statement to make, regardless of the speaker and the circumstance. It states that the sole and single "correct" panoptic panoramic view of the Benetton Group and of their ubiquitous artefacts is held from a unique position in Italy, Europe.

This outlook is slightly distorted, however, by Karen, whom I interview in her office in the back of a local Benetton store in Scandinavia. Along with others I spoke to, she does confirm that the Headquarters has a unique overview of the company, but she associates the uniqueness of the artefact that are sold in her store not only with the company's Headquarters, nor merely with the company's policy and the production process of the artefact, but with its relation to the clientele. I let the following fieldnotes from the interview demonstrate:

> Karen is the head of the store and has worked here for about four years. I have asked her to pick a pullover and to tell me about it. She has picked a red-violet Merino pullover with buttons, and placed it on the table between us without unfolding it. "This is a bestseller", she says. "It is an important one. This is the pullover that is Benetton. It has been here from the beginning. We have always had it", she says. "I haven't been with Benetton that many years, but this pullover has. It is a pullover that is important to us, and we always get it in many colours. The basic colours don't change but the colour-colours vary depending on the time of year. It comes with deeper, darker colours for winter and happier colours for spring and summer. The design of the model has only changed a little over the years; it is basically the same but it is now made a little shorter.
>
> Karen has selected a pullover that she considers to be the symbol for the uniqueness of the Benetton Group. She identifies the model with Benetton, since it has lasted over time and changed only a little over the years. These long-lasting aspects of the model make it unique, but she also stresses the ubiquitous factor of the model, as part of its uniqueness: it attracts a wide clientele.
>
> "What is interesting about this pullover", she says, "is its scope. It is very broad. There are the young girls, 20 years old, who buy it to wear it a little tighter, with a skirt. Then there is the mother, 30-35 years old, who comes

to buy baby clothes and who finds this and is very happy about this pullover for herself. And then there are the little old ladies. They are often very, very happy about wool, especially the Merino[71]. And they love the colours. So this pullover has a broad group of buyers.

Figure 8.4 Folded knitted Merino pullovers, ordered by colour.
This photo shows Merino pullovers in a Benetton store in southern Scandinavia. The model is a classic, I am informed, and has practically been the same since it was launched during the 1960's.

The pullover is described by the Benetton employees I have spoken with as special because it is a symbol for stability and continuity. We can trust that it will be there to be purchased next year, and the next after that. It is sold everywhere, in every Benetton store all over the world, and its target group – its buyer – is "anybody". The model is ubiquitous and familiar to us. We also recognise the material, Merino wool, even if the fibre that is used today is slightly different, as I am told. The wool is finer now than it was in the beginning.

71 Since 2010, the patron of Benetton's campaign for wool is HRH Prince of Wales, linking to his initiative to enhance the global awareness of the natural advantages of wool amongst consumers. He and the Royal Family have appeared wearing woollen suits and pullovers in multiple weekly magazines as part of the campaign ("Woolmark.com" 2016).

> "But I have heard", Karen continues, "that they are going to return to the kind of wool that they used before, which was a little thicker. I don't know why they will go back to that; perhaps it is because it is more sustainable, that it resists better, but this is something I have heard and not information that I have gotten [confirmed from the Headquarters].

Here, Karen associates sustainability with material resistance and longevity.

> "How long would you say that this particular pullover's life lasts?" I ask, and she answers: "It is 100 percent natural so the pills [tiny balls from felting] that always appear after some time can be removed. One of the girls who has worked here for over ten years still has some of the pullovers she bought when she started working here. If you take care of it properly, and follow the instructions, you can keep it for many years.
>
> (Fieldnotes)

The material – the Merino wool – is a theme in itself for the people that I have interviewed about their association to the Benetton pullover. Benetton is, to a certain extent, Merino. Apart from one employee that I interviewed who didn't at all associate the pullover's *Merino* label with "wool" (I said, "this is wool" and she said, "no, it's Merino") there was a general sensibility to wool as a significant topic. Karen says:

> I know that there has been a lot of talking about where the wool comes from. I know that there are different methods [to get the wool]. From the beginning we cooperated with Australia but then it surfaced that they were using techniques that aren't animal friendly. When Benetton was informed about this, they adapted. Now they are more careful with where the wool comes from. Because it is very important to them that there is equality, for the animals and for the people who produce their products. If there is anything that goes against their policy, they make changes. And that's what happened with the wool. Now, the client can know for sure that the wool is from animals that have not been treated like that[72].
>
> (Fieldnotes)

72 The technique she refers to is mulesing and is practically cutting off the sheep's tail to prevent parasites and infection ("Peta.org" 2016; "Outsideonline.com" 2016).

Association between the unique and ubiquitous aspects of the artefact emerges slightly differently than when expressed through the Benetton's official policy. This time it has to do with an ambiguous sense of origin and place:

> Annika: Can you tell me where the wool of this particular pullover comes from?
>
> Karen: Not by touching it. What I know is where the pullover was sown, in Croatia. But I can't know from where the wool comes.
>
> Annika: If I ask you to, can you find out?
>
> Karen: Yes, of course. There is a woman at the [Regional] Headquarters that is there to answer that kind of question. Mind you, there is a lot of information on Benetton's official homepage. I read somewhere some time ago that they moved from Australia to Argentina. But if that is the case today, I don't know. I will try to find out.
>
> We agree that I shall call back in a few days for the information. I call back several times after our meeting to learn about the origin of the wool. Every time Karen is still waiting for the answer from the Headquarters. They are very busy, she explains. She promises to get back to me once she has the information about the origin of the wool. Yet the information remains apparently folded into the pullover that laid there between us on the table. It is not certain if the wool that we are looking at grew in Patagonia.
>
> (Fieldnotes)

It so happens that the Benetton siblings, next to a number of other foreign investors, bought land in Patagonia (both in Argentina and Chile) during the 1990s and that the Benetton Group officially uses the land for Merino sheep farming. Carlo Benetton, one of the brothers, expressed his amazement with Patagonia after having bought out the British-owned Compañía Tierras del Sur Argentina S.A. and thereby assuming ownership of 16.000 hectares of Argentinean territory. He said to the press: "Patagonia gives me an amazing sense of freedom" (Popham 2004).

Today Benetton is one of the largest landholders in Argentina. As a gesture of respect for the land that has been inhabited by *Mapuches* for 13.000 years, Benetton constructed the Leleque museum, located in front of the

Benetton estate, to "narrate the history and culture of a mythical land" (Popham 2004). In 2006 the textile company donated 7.500 hectares of land to 'Indian communities'. At the time, a legal controversy for occupying each other's land between families of the Mapuche community and Benetton grew powerful (Garrigues 2007). The conflict included public exposure, where the Benetton Group's ethical policy was called into question and the protests and manifestations against the company were massive. Critical voices used slogans that played on Benetton's own colourful catchphrases based on universal values, posting "Invisible pueblos of Benetton" and stating that "Mapuche land is not for sale", and twisting their presence into "the United Colors of Land Grab". Today some 280.000 Benetton sheep are still pasturing on the disputed lands, producing 6.000 tons of wool annually (Hacher 2004; Sánchez 2006; Staff 2014).

> Karen points to the uniqueness of the artefact as having to do with its material: Merino wool. Merino stands out next to other kinds of wool. The fineness of the Merino makes it easier to handle and to wear. Yet, it is not for everyone:
>
> "The idea behind this design (she points to the pullover in front of us) is that it is warm but does not take up a lot of space at all, like other kinds of woollen sweaters would". "A disadvantage would be that actually not everybody can wear it. It itches. I cannot wear it myself", she says. "I touch it like this, and it feels so very, very soft, and I want to wear it because everybody else does. But then I put it on, and it itches. But there are other kinds of wool, that is not Merino, that are worse. They itch even more. I don't know why. So not everybody can actually wear this".
>
> (Fieldnotes)

Her way of speaking about the pullover shows that she perceives the pullover to be unique because it is quasi-ubiquitous; it is for almost everybody, everywhere.

My purpose with including these fieldnotes is that they highlight the associations that points to the uniqueness of the Benetton pullover. The numerous motivations for the uniqueness of the pullover are, for the Benetton employees I have spoken with, linked to the fact that it is not-quite-ubiquitous. The associations with the Benetton sweater I have described here, show that ubiquitous makes unique but unique is not necessarily entirely ubiquitous. The connection between unique, ubiquitous and the artwork is dissimilar. To further explore this relation, I

will continue by drawing another partial world map that I have been able to pull from my fieldnotes. This time, I will be bringing in the artwork.

Knitwork as artwear

Figure 8.5 Ajuar para un conquistador 1993, pullover para Cigüeña Americana by Mónica Giron.
Merino wool and buttons (Photo Mónica Giron).

Ajuar para un conquistador (Trousseau for a Conqueror) [73] is a group of apparels that are knitted from Merino wool for Patagonian birds, all of which are, to some degree, deemed in danger of extinction. The clothing echoes the shape and colours of the birds[74].

Figure 8.6 The artwork when exhibited (La Habana, Cuba).

73 On the artist's request, I keep the title in Spanish throughout the chapter, referring to it as *Ajuar para un conquistador,* or *Ajuar* in short.

74 The work includes: pullovers and sometimes stockings for Condor, American Stork, Young Rhea Americana, Black Patagonian Woodpecker, Tero (Southern Lapwing), Small Patagonian Woodpecker, Roundheaded Stork, Dominican Gull, Greyheaded Albatross, Martín Pescador (Kingfisher), Redheaded Hummingbird, Buff-necked Ibis, Patagonian Tyrant, Purple Heron, Redtailed Accipitridae, Rhea Americana, Blacknecked Swan, Patagonian Yellow Finch, Chimango, Southern Pied Oystercatcher, Andean Flamingo, Chilean Flamingo, King Penguin, Yellow Penacho Penguin, Orange Penacho Penguin, Magellanic Penguin, Petrel Ballena picocorto, Andean Gaucho (White-tailed Shrike-tyrant), Parasitic Skua, Roundheaded Antartica Dove, Pilgrim Hawk, Chucao Tapaculo, Streakbellied Woodpecker, Patagonian Canastero, Crested Caracara (Carancho Caracara), Patagonian Owl.

Figure 8.7 The artwork when exhibited (Buenos Aires).
These photos are from two different shows that exhibited an installed edition of *Ajuar para un conquistador.* Figure 8.6 is from 1994 and the photo is taken at the Centro Wilfredo Lam, V Bienal de la Habana, La Habana, Cuba. Figure 8.7 is from the exhibition "Del arte no político a la metáfora de los huevos del Tero" in *Centro Cultural España,* Buenos Aires CCEBA, 2007 (Photos by Mónica Giron).

Figure 8.8 The artwork when exhibited (Oxford, UK).
Ajuar para un conquistador (1993) when exhibited in Oxford, United Kingdom. Exhibition Art from Argentina 1920-1994, Museum of modern art, Oxford, United Kingdom 1994 (Photo by Mónica Giron).

Together with Mónica Giron, I traced *Ajuar para un conquistador* in an attempt to map out how it had been distributed, and where it had been displayed. Mónica draws up a map of their whereabouts in one of my personal exchanges with her:

> Three groups of these sweaters were exhibited at the same time or within a minor time span, in different places. There are several sweaters made for the same type of bird and they were present at different exhibitions. Each piece was made in a particular way, and hence is distinct from the others. The work was exhibited several times between 1994 and 1997, and later in 2002 and 2007. The first group of three sweaters went directly to a collection in Arizona in 1993. The second group of 16 sweaters went to Havana in 1994, to Aachen in Germany and then to Berlin in 1995. It remained almost in its entirety in [a collection in] Aachen. That collection appears in an art exhibition in Norway in 2002. Part of that edition, four sweaters, went to a collection in Venezuela. Another edition went to Oxford, Stuttgart, London, Lisbon, Buenos Aires and Borås in Sweden. After that, it stayed on almost complete in Buenos Aires, except for two pieces that stayed [in Sweden]. One of the groups from a private collection in Buenos Aires was presented [in public] in 2007. Another group went to General Roca in Patagonia, then to Kansas and after that it was dispersed in diverse collections in the United States of America and in Europe. Four sweaters went to New York to an exhibition and then one went to Borås and the rest stayed in collections in New York.
>
> (Fieldnote)

Figure 8.9 Map of the artwork Ajuar para un conquistador's itinerary (Map: Bruno Capelán Köhler).
Map indicating the travel of the *Ajuar para un conquistador*, according to the artist Mónica Giron's telling. She says that my curiosity about the artefact has woken up her own tracing – and mapping – of it, and that this has also started to activate other people's attention. There is, at the time of writing this, an ongoing project that involves reconstructing and reassembling a whole edition of the work, in the best possible condition, with all the original pieces, and to publish a book about it.Moreover, three pieces are exhibited at the moment, in Sao Paolo (March 2017).

Sandra Rodriguez, curator of the Kemper Museum of Contemporary Art and Design in Kansas City, USA, where an edition of the work was exhibited in 1996, writes in the curatorial text for the show, that

> Mónica Giron creates protective clothing for a number of birds found in Patagonia. Life-size sweaters, leggings, mittens, and gloves make up her installation Trousseau for a Conqueror. The word "trousseau" in the context of her work goes beyond its common definition: the clothing that a bride assembles for her marriage. Giron's knitted garments are presented as a gift from or to either party: animal or conqueror. Imposed new life; the birds were wedded to a new situation that arose when sheep ranchers seized the land (Rodriguez 1996:1).

Rodriguez quotes the artist when she says that the knitted clothing are "devices that permit the survival of bodies not prepared for cold temperatures, or devices that, because of their foreign quality, could eventually destroy the birds". Rodriguez concludes that, "the garments allude to multiple dimensions of protection: that which protects to sustain

a species' existence; and that which overprotects to result in its destruction"(Rodriguez 1996) .

Mónica Giron herself articulates some additional dimensions to the work. She explains how it was conceived after a reflection on the *Museo de la Patagonia*, built in San Carlos de Bariloche around 1940. This is her location – the region where she was born and raised. She tells me about the impression that the museum made on her as it "commemorated the definite military conquest over the Patagonian inhabitants. It exhibited in hierarchical scale Argentinean military apparel and depictions of the battles; embalmed local animals and birds, fragments of stones, trees, and earth samples, and remains of the exterminated native cultures" (Rodriguez 1996, also personal conversations with Giron 2008 and 2010).

These quotes exemplify how the *Ajuar* has drawn attention to some dilemmas, including some features of wool production, and to some long-term effects of the various presences on the region's grasslands (Basualdo 1997; Pacheco 1997; Pérez-Ratton 2007; Rodriguez 1996). These are some of the presences that are in turn folded into the Benetton pullover, invisibly held within.

"My little penguins"

I visit an art collection in Buenos Aires. Through the artist I have found out beforehand that this collection includes some versions of *Ajuar para un conquistador*. I have contacted the collector couple with an expressed interest in this particular work, and we set up a meeting at the address where they keep their collection. The *Ajuar* is currently not on display. Veronica has brought the edition of the artwork that they possess with her, in a specially made suitcase that was provided by the artist when they purchased the *Ajuar*. After she has invited with coffee and wine, she unpacks them and spreads them out carefully and she says:

> The Penguins' by Mónica Giron is one of my early works of art, one of the first ones in our collection. Actually my husband bought them one day and they appeared at home. He hung them up with small pins on a wall in a central hallway upstairs where all the bedrooms are. They were something special. It was like having children. They were like children. We passed them every day, many times. In a way we coexisted with them, we lived together with them", she says. "And they hung just there, and not somewhere else, because to me this work has to do with intimacy. With shelter, with protection, with nurturing the penguins. Mainly because penguins are birds that can be found only here, or in very few places of the

world, normally on the southern hemisphere, and so there is something very specific and local with this work". She tells me that the work made her learn about penguins and their presence in the region. For her, it is a work that calls for attention and that nobody could pass by without noticing.

Figure 8.10 Ajuar para un conquistador in the hands of an art collector.
An art collector is unpacking the pieces of the *Ajuar para un conquistador* that form part of her and her husband's collection. She has given a group tour of the collection space, and told us about each work in their collection. She has invited with coffee and wine before she starts to take the pieces out and I can interview her. While unpacking, she speaks about the little black suitcase as an important part of the work. It is soft and simple, she says; it somewhat adapts, takes on the shape of the content. It is sensual, she says, and she likes to unpack and repack the work of art in it.

Figure 8.11 Ajuar para un conquistador displayed in an art collector's collection space. The collection of *El Ajuar para un conquistador* has been displayed by the art collector on the bar surface in the collection space. She and her husband own an edition of six pieces. They are (from left ot right): a pullover for a *Misto patagónico* (Patagonian finch), pullover and mittens for *Pingüino real* (King penguin), pullover and mittens for *Biguá común* (Common cormorant), pullover and stockings for *Cigüeña americana* (Stork americana), pullover for *Albatros cabecigrís* (Greyheaded albatross) and (laying above, to the right) pullover for *Parasitic jaeguer* (Parasitic skua).

She continues: "It caused something maternal in me, the little clothing and at the same time there is this story in it, like a fairy tale or even another kind of story. It has magic. It is tenderness and at the same time there is something provocative. "How is that?" I ask. "Well, it is playful, but playful in a way that takes the game somewhat beyond what is permitted. This idea of both having the penguins and, at the same, time they are not there, gives a sense of vulnerability – a lack of dwelling. It gives a bit of an awkward feeling – there is this bird but there is nothing – as though it was the peel (*la cáscara*) of an animal. It's hollow: 'like having been here but left'. Containing. It contains the bird which is not there, its content is the emptiness".

(Fieldnotes)

Figure 8.12 An art collector is holding Ajuar para un conquistador.
An art collector is holding one of her pieces of *Ajuar para un conquistador* and, when posing for my photo, she decides to cuddle it. She wants to show how she cares for it, she says. Between us on the table is the little black suitcase that she has used to transport the work to our interview.

This art collector expresses an awkwardness of presence that seems to be enacted by absence, at least partial absence. The artefact is treated as if in need of particular care, of nurture and proximity. The distorted generalization of the very different kinds of birds into "penguins" is summed up with the playful provocation of the simple fact that birds do not wear woollen sweaters[75].

Cuts in the network

Another event proved significant for the understanding of how distortions may be necessary the holding together the artefact; keeping it in shape. Another art collector, David, has agreed to see me to talk about the version of *Ajuar* that he holds in his collection.

> We are standing in his office and David takes out a paper bag. From it he pulls up what, at a glance, would look like inconspicuous knitted sweaters. These are three pieces of the *Ajuar* that form part of his private art collection. He bought the work in the mid 1990's. I have contacted him now with an interest in his association with it.
>
> I sit down in front of him, chatting along before beginning to ask questions. The *Ajuar* is at the centre of his attention, while I spend a moment browsing the place. I make eye contact with the secretary who greeted me some moments ago when I arrived. She is now working on the computer and attending the phone at her desk just outside the open office door. The walls surrounding David are covered with wooden shelves and cabinets that carry documents and books. There are also a couple of computers and a scanner in the room. Some desks and tables with cleared surfaces fill up the middle of the room. This place is an archive for regional art and David is the

75 One curious exception to this common sense circumstance (that penguins do not wear woollen sweaters) can be found in a project run by the Penguin Foundation of Phillip Island Natural Park, Australia. A colony of 32.000 Little Penguins is found only in New Zeeland and in Southern Australia. The project, entitled 'Knits for Nature' was a call to people to knit jumpers for the Little Penguins. Thousands of knitted pullovers where collected, "from all over the world". They were donated in order to protect the Little Penguins when having been exposed to toxic fuel floating on the sea surface after oil spills near the land. The project descriptions tell us that "Jumpers are placed, temporarily, on oiled little penguins after they are collected and prior to washing, primarily to reduce the amount of oil that penguins ingest". The pullovers had to be made with 100 percent wool because the properties of the material allow the bird to breath while it also sucks up some of the oil. The jumpers are not reused. After the last major oil spill near the Phillip Island in 2001, 438 Little Penguins were affected. The Penguin Foundation states that 96 percent of the oiled penguins that were received at the Nature Parks' Wildlife Clinic were released back into the wild, thanks to the care of the staff and to the jumpers. The news spread about this project thought the sensational fact that one participant, Alfie Date, was 109 years old and Australia's oldest man. Alfie had been knitting since 1932 and now saw a new purpose in his artefacts (McNab 2015; Penguin Foundation 2016).

founder as well as the president. Behind me there is a window and, although I cannot see it from where I sit, I sense the vibrant city traffic two floors down: Buenos Aires.

David spreads out the woollen pieces one by one over the long conference table. He fiddles with them incessantly as our conversation spins on: he gently adjusts one of them into a different angle in relation to the others, straightens a hem that is folded, clutches the knitted texture between his fingers or simply moves one piece slightly up the table and then slowly back again.

Figure 8.13 Ajuar para un conquistador on display in an art collectors office.

An art collector in Buenos Aires spreads out one of his *Ajuar para un conquistador* on a desk in his office. It is a pullover and stockings for a *Ñandú* (Rhea americana, a South American ostrich or emu). He has offered to spread it out on the table so that I can see it properly and, should I want to, take photos. When taking a step back he says laughing that it looks like a corpse on display.

He tells me that when I called and asked for a meeting with a particular interest in these works, he decided to take them down from the wall where they were hanging, in his home. He cut them down and tucked them carefully into the paper bag and carried them under his arm to his office.

I express my gratefulness at the fact that he has made the effort to bring the works of art. I comment the paper bag, knowing that the artist provided other collectors who bought this work with a specially made little black suitcase for transportation. He says that he has it somewhere but couldn't find it this morning. I imagine a commonplace, hectic morning when what you are looking for is not where you thought it was and there is no time to search. This everyday situation and the paper bag solution may seem to jar with the market value of the work. When I ask he estimates it to some 12.000 US dollars. That is more or less what he once invested in it. Yet, he trusts a paper bag to provide sufficient protection during the transport, and his care and engagement in these works is noticeable not only in the way he moves and touches them but also in how he speaks about them:

"It's funny" he reflects "the wear and tear of a work of art. This one must have been one of the first ones that I bought when I started to collect contemporary [art]", he says making a gesture with his head toward the pieces. I came from another kind of collecting – of old classical paintings – and a catalogue from Oxford where this work appeared reproduced "*cayó en mis manos* – fell into my hands. I talked to the chief curator of the Museum for Latin American Art who knows a lot. I talked to him about different artists that would be interesting for my project of assembling a new collection. He recommended the work of Mónica Giron, and the *Ajuar para un conquistador* was a work of hers that caught my eye. I liked the work itself and also the idea of the conqueror which it carries with it".

He lifts up one of the pieces in front of us.

"Look here", he says. "We have these buttons. And we have the wool, the colours, the bird – well, the shape of the bird… but these things, these thing of course also talk about the sheep – the Merino sheep and their farmers – and about people who spin the wool, who dye and who knit, people with few resources, who hang their clothes up to dry in the open, on the grasslands of the region, in Patagonia or somewhere else."

When I ask about what it was that made him purchase this particular work, he answers:

> "I was attracted to its ideas of conquest, of the conqueror and of the conquered. If the conqueror's logic includes taking what you want and leaving behind what is not useful, what seems to have been left here is the 'skin' of the bird. Its protective suit is left hanging. Yet the 'skin' only evokes the idea of the bird. It signals its presence but it is not physically present; it is through the form, the shape, the colour and the material – the wool – that we know and are given some access to the bird, and to its ecological situation". For the collector, then, the artefact evokes the idea of Patagonia and its species, a place that, for him and in his words, is defined through passages between absences and presences, between conquest and protection.

Our conversation is abruptly interrupted when David discovers a sharp cut in the knitted weave just across and under the small wing of one of the pieces.

> He clicks his tongue and sighs. "Ahhh… the fibres have been cut! This must have happened when I took it down from the wall at home to bring it here, and then, *clack!* The strands where also cut", he reckons. "Hum… what to do now? I will have to talk to somebody about repairing the strands… take it to somebody, to Mónica [the artist] or to somebody who knows how to knit, a knitting-woman, to have it mended. Speaking of the wear and tear of the artwork!", he says while shaking his head.
>
> (Fieldnotes)

In these notes, David communicates his own sense of serendipity around how this work came into his collection. Aware of the potential transience and the material delicacy of the artwork – its "wear and tear" – he handles it with care and talks about it with affection, not separating its material aspects from what it means to him in more affective terms. We are reminded of the ideas also expressed above by the curator and by the artist, who interpret the artefact as holding together – weaving in – a number of entities, situations, issues or concerns connected to particular situations that belong to the place from which its material has been taken: the Patagonian grasslands. But for them, it also speaks beyond that place. Without diminishing the uniqueness of the artwork they all trace ubiquitous relations in it. These relations tell of how different species (sheep, birds, humans) may live together, need care and nurturing, and,

eventually, complicate their coexistence. It seems to be unproblematic to them to accept that the absence of the bird makes it present.

We have seen that this particular artefact is understood as a dwelling for the artist's personal experiences and concerns. Once it has gained proper life in the hands of others, it prompts interpretations that may distort the initial intentions of the artist as well as her understanding of the addressed topics. These distortions add associations and relations, weaving in versions with the versions already there. While the work is understood as a comment on the unsustainable situation of birds in danger of extinction, of the presence of sheep, and of wool production on the Patagonian grasslands, to the collectors, it points to a universal need for any species of protection and clothing. This need is often thought of as a concern that is relevant only to human beings. What we see here, however, is that the artwork activates this as a need that concerns more species, such as birds.

Barbara Bolt argues for a distinction between "the artwork" and "the work of art" (Bolt 2010). The latter is the result of the process, in this case the artefact. The former is the effect that artistic practices may (or may not) have. Donna Haraway suggests similarly that a material-semiotic actor is not a passive object but that it takes part of and acts upon its own becoming (Haraway 2004). Celia Lowe reminds us that the idea of "becoming transforms types into events, objects into actions" (Kirksey and Helmreich 2010). In this way of viewing, both artefacts at the centre of this chapter are both artworks and works of art. They are material-semiotic actors as well as acts, gestures, skilful deeds and doings. The work artefacts do is, for instance, to give meaning to the bodies that they wrap (Dransart 2007). In the case of the artwork, though, the bodies are not there. For the collectors, the artwork signals power relations between the conqueror and the conquered. The discovered cut in the artefact shows that the artefact is unmade: it actually did not resist – did not sustain – 'the wear and tear' of its own life.

Mending

> We are in the artist's studio that is also her home. I am sitting with her at her kitchen table and she is holding a piece of *Ajuar para un conquistador*, one of the knitted bird sweaters, in her hands. The work was sent from the collector's office and the artist's studio in a paper bag, and delivered by a courier.

> *Poff!* A ball of yarn rolls down onto the floor; it bounces and moves under the chair where Mónica is sitting. She looks at me, her eyes saying "it doesn't matter, I'll pick it up later" and keeps telling me about this phone call she had the other day from her great aunt. While speaking, her hands work the knitted texture that she is holding. "My mother", she says, "was a skilled knitter – I used to sit next to her and be so impressed that she could knit without looking and tell the greatest stories while doing it".

Mónica tells me that with her knitting, her mother would bridge the gap between the private sphere of the home and the public sphere of the *pueblo*. She would knit sweaters and she would make designs. She would also design other things, like the remodelling of the house and the reformulating of recipes.

> "And so" Mónica says, "she made sweaters for [me and my sisters], and designed them, and then she would make designs for sweater competitions in Bariloche. Because Bariloche organised these sweater festivals and she would participate. She even won prices for her designs." Mónica concludes that her mother linked the private act of knitting at home with the general and public need to keep warm and to produce local designs.

Now, here, while we speak, Mónica is not knitting. Some strands were cut in the handling of a work of art when the owner of it, the art collector, took it down from the wall where it had been hanging for years. He took it down and spread it out on a table to show it to me, and there, he saw the cut. "The wear and tear of the work of art", I heard him sigh when he discovered the wound in the weave. "The wear and tear", Mónica, the artist, now confirms when she has received it to mend it. The gaps of the incisions contract when she carefully draws the fibres closer together, using a similar Merino yarn as the one from which the weave was knitted initially. "The pullovers came here inside out. It seems that they have been hanging inside out. Who knows how and when that happened," she reflects.

> "So", she goes, "my old auntie called and when we spoke she told me a bit of a family secret, something I never knew. Something apparently forgotten or untold. She said that my great grandfather came here; he came to Argentina from Switzerland carrying wool. He came because of the wool. He was in the wool business. That's when he fell in love with my grandmother. So the wool figures there in my family history, as in many other families, around the 1920's", she concludes as she pulls together the last strands.

> Some patches are left – not very obvious, but clearly visible in the texture, like scars. While Mónica is at it, she washes, carefully washes, the sweater. Dust and dye dissolve from the knitted work of art into the lukewarm water. She spreads it out on a flat surface to dry before sending it back to the art collector.
>
> (Fieldnotes)

Here the work of art becomes a knitted item that needs to be cared for. Dust and dye are washed off in water. These traces do not make the work less 'contemporary', in John Berger's sense when he reminds us that "original paintings are silent still in a sense that information never is. Even a reproduction hung on a wall is not comparable in this respect for in the original, for in the silence and the stillness, permeates the actual material, the paint, in which one follows the traces of the painter's immediate gestures. This has the effect of closing the distance in time between the painting of the picture and one's own act of looking at it. In this special sense all paintings are contemporary" (Berger 1972:116).

In the case described here, the contracting distances and time is the knitted yarn, the knots and the loops. The scar is a 'storyteller' left in the weave as a reminder of the incident. Still, it turns out that the scar does not affect the value of the work of art once it is sent back into its position as work of art in the private art collection.

Figure 8.14 Mónica Giron's studio.
I took this photo in Mónica Giron's studio and home in Buenos Aires in 2010, while my fieldwork was focused on following the *Ajuar para un conquistador*. This is where she is mending the knitted

weave in the event described above. During one of my visits, she received a family of art collectors. Apart from serving as her studio where she produces and stores works, and receives people that are interested in her work, the place is also her home and where she gives regular workshops to art students. On the photo, Mónica herself is standing by the window surrounded by the collectors. She is showing them some of her work and related publications at a table. The person nearer the camera is contemplating some of her other works. The event is an example of another situation where a private-public dichotomy are not at odds.

Summary

Instead of paying attention to how the wool and its qualities are transformed to be able to move along into the next step of the process, my efforts in this chapter have been to focus on what the wool already is. It turns out that its "being", that is, for it to stay within its category and maintain its quality as the kind of artefact it has become, includes moments of distortion that help reinforce its position. These distortions are relational. Borrowing from Donna Haraway, the artefacts are "becoming with". She writes, "if we appreciate the foolishness of human exceptionalism, then we know that becoming is always becoming with – in a contact zone where the outcome, where who is in the world, is at stake" (Haraway 2008).

My material in this chapter shows that the being and the "becoming with" of the artefacts also include a "becoming with without". What I mean by this is that the artefacts become what they are with the associations and relations they engage, and those associations also include *absent* entities, for instance, the birds, that are suggested through the shape of the art works, and the Patagonian sheep that are left out from the Benetton pullover. These entities are suggested as present, but they are not physically there. These absences thus reinforce the presences so that the artefacts 'become with' and, also, 'become without'.

The wool that is worked and processed in the different environments described in the previous chapters is, along the way, also transformed in terms of material properties and qualities. Regardless of form and at any stage of its life (including when it is physically attached to the sheep), the practitioners see the wool as a commodity – an object of trade – but also handle and speak about it as a subject, with a personality and a certain agency.

This is true within any moment of the process, no matter the amount of work it has gone through. An artefact is 'something that is made with skill', etymologically stemming from Latin *ars*, meaning "skill, craft, craftsmanship" and factum, meaning "something done, a deed, act or

gesture" (Ayto 1999; Weekley 1921; Ingold 2001). All along the wool's transformative itinerary, it is treated as an artefact according to this original definition of the term.

An artefact, in the framework of this study, is a result but not an endpoint. With this I mean that a woollen artefact (say, yarn) that is a result of the work in one setting may (or may not) travel on to become a different or modified artefact, ready to be used or processed by somebody else (say, a knitted sweater). It is still woollen but classified in another way; inserting itself into a different category. What was part of the sheep has become wool has become yarn. What was yarn has become "a sweater" or a piece of "art". But, perhaps more interestingly, what was sheep is now wool and yarn and what was yarn is now yarn and a sweater.

If I allow myself to play with words for illustrative purposes, I can go on like this: the sweater is a sweater, is yarn, is wool, and is fibre. And more: "Benetton" and "Art" is a sweater is yarn is wool is fibre is "Benetton" and "Art". If seen this way, the sweater is a collection of *several* artefacts (skilfully made deeds) in one. In this way of viewing, rather than excluding each other the categories and the activities behind them intertwine and add up.

This suggests two things. The limits between categories that field members employ around the wool are not always sharp. In Chapter eight we saw, for instance, that wool may be industrially processed yet still held as artisan. Woollen yarn may be labelled as 'natural' yet intensely shaped by human interferences, be it crossbreeding, more or less heavy tools or hands. In this chapter I show similarly vibrant distinctions – which I refer to as distortions – between, on the one hand, unique and ubiquitous aspects of woollen artefacts, and, on the other, between what entities and associations figure as presences and absences with the artefacts.

It also suggests that wool categories, in order to stay on as "wholes", may momentarily be ambiguous and distorted, and "spill into" each other. This, in turn, gives a hint that the woollen artefacts are not static impasses stuck in inertia, but dynamic and ephemeral entities, at once perishable and factual, subtle and solid. When sustained as wholes they are at once stable, fluid and ephemeral. This chapter proposes that, as relational entities, the artefacts demonstrate some noteworthy qualities. Moments of distortions that happen with them bring the way that the artist and the art collectors spend time dealing not with uncertain interpretations but with what – for them – are vital facts to the surface.

The artwork is interesting exactly because its ambiguity lies in that it is neither a sweater not a bird – yet it is spoken of as both. The very absence of the bird makes the sweater become a bird. It 'becomes without'. It is also both an artwork and an artisan artefact. The Benetton sweater is interesting in the sense that it is 'only' a sweater, still it is more than a sweater in its Benetton-ness, which also makes it unique. We have seen in Chapters five, six and seven that for their becoming, these artefacts have had to travel and live through quite a lot. Both hold a number of more or less hidden relations within themselves.

The artwork is a unique expression of the artist's experiences and concerns that speaks about some ubiquitous aspect of Merino wool. The Benetton sweater, according to the people who handle it, points to the uniqueness of wool. While the artwork is unique in the sense that it is produced as a limited edition, the sweater is ubiquitous as it is reproduced by a multinational company according to a standardised design. Benetton's message is moreover unlimited in scope, being addressed to 'everybody' and 'everywhere'. Yet, "the global view" is unique and limited; only to be had when in Italy, as I was told in my initial field contacts.

The artwork is defined as a whole that explicitly has to be mended in order for its meaning to be kept stable – that is, for it to be maintained as the kind of artefact that it was. This implies that context is reproduced through relations, and that network building is not merely a case of accumulating associations, as some scholars suggest, but of maintaining some balance between associations. For the artwork to maintain its position within the category "art" the artefact as a whole is made and unmade and made again. That which does not fit, needs to be adjusted (Bowker and Star 1999).

Origin and place are folded into the artefact. Benetton, as one of the largest landholders in Argentina, officially uses the land for Merino sheep farming. Yet, transparency does not happen, since the process by which the pullover ended up folded on the Benetton shelves also stays folded. Croatia is mentioned, but the South American grasslands remain hidden within.

The life of the artefacts and events described in this chapter raise questions regarding the more general query of context. As I discussed in Chapter three, context is a topic within recent anthropological considerations that is often straightforwardly linked to material agency, and which I have also addressed in the other analytical chapters. Whether to assume or refuse context and whether to adopt networks or "meshworks" (Ingold 2000a; 2008b), as our heuristic is perhaps not the issue here. My descriptions of

this chapter show that the artefacts in focus seem to overcome such distinctions as a contradiction. Along the way, the contradiction between absence and presence has also collapsed through the artwork's absent-but-present birds.

Important for the artefacts and the associations made and included in this chapter is then not so much whether context or network is used by anthropologists to approach the activities that they study, but what is foregrounded in the meeting point between the field, my fieldnotes and the analysis. The artefacts in focus in this chapter are, in both cases, entities that are in a sense 'the perfect networks': they are accumulations of associations; they have material and figurative values. They would be "global assemblages" as good as they come (Collier and Ong 2005). Placing the two artefacts alongside each other distorts the idea that what is present is only that which is visible. The analysis also adds a new kind of association: the delicate balance between the unique and the ubiquitous.

Part III.
CONCLUSION

9. Fibre Formations Revisited

"The problem is […] that we always ask 'where do we go from here?', rather than saying 'how did we get here in the first place?'"

Robert Fisk[76]

The Mapuche myth of origin (retold in chapter seven) was brought to my attention for the first time when I, during fieldwork, was driving across the Patagonian grasslands between farmers and woolworkers, tracing the various locations of wool. On one occasion I was accompanied by Emilio, a veterinary, who worked with the sheep farmers of a Mapuche cooperative. He had said that wool is part of this landscape in multiple, complex and deeper ways that I would imagine. Consider the Mapuche myth of origin, he says. Domo, the 'woman of the beginning', cut the wool of a sheep and formed a thick thread by rubbing the pieces against each other with her hands, twining the strands to then overlap them into a weave. She was weaving the landscape, Emilio says, as we drive through it.

Several times, our car crossed an old railway. It was a trail that had been part of a project which began in 1908, and which would construct a network of railroads to connect vast region. Two mainlines and several branches would link the Andes with the sea ports of the Atlantic, the southern parts with the capital in the north. The project ran out of steam with governmental changes and during the World Wars. Only one section, which runs along the foothills of the Andes, continued to be in service for transportation of goods, and, during the 50s, for passengers travelling to Buenos Aires. The bends and curves of the line along the mountains and the slow speed would allow passengers to walk alongside the train on certain sections. This is *la Trochita*, or the Old Patagonian Express. It has been written about for its 'timeless appeal' and was discovered by

76 (SVR 2015) Quote from interview with Robert Fisk on Swedish radio, 14 November 2014.

backpackers and tourists during the 80s and 90s (Theroux 1997). Today it is a tourist attraction run with steam locomotives.

As I am concluding this thesis, news arrive that violent conflicts have been retaken between Benetton landowners, Mapuche communities and local authorities in Patagonia. Since March 2015 Mapuche communities have taken action again and in protest occupy land in the province of Chubut. As of January 2017 violent confrontations keep occurring (Cué 2017). The clashes go years back and were activated as members of Mapuche communities asked to be informed when *la Trochita*, today used only occasionally for tourism, is to cross what they claim are their lands, but that the Benetton Group has bought and uses for sheep farming. Since negotiations around the passage of the train were ineffective and no agreement could be reached, the Mapuche decided to block the railroad. During one of the incidents this January, nine members of the Mapuche community where shot, ten where arrested, and five armed policemen were injured by stones thrown at them (Barreiro and Centenera 2017).

I am in touch with an informant about the incidents, and he tells that when the police moved in on the second day of the protests, to "take care" of the situation, they jumped out of their van shouting: "we're leaving with a dead body today". The police fired their weapons towards the protesters, and ended up beating them and keeping them hooded in isolation.

Figure 9.1 Railroad trail cutting across the Patagonian landscape.
The railway of the photo was part of a governmental project at the beginning of the 20th century that, through two main lines and a number of branches, would connect all parts of the region, from east to west, from south to north. Today only some parts are used, for tourism.

Although distant in genre and focus, these described events (including the news about the violent conflict, the Mapuche myth, and my anthropological tracing) are 'stories' told as moments of world-making where wool plays a part. They serve as metaphors for the importance and impact of storytelling – how stories matter alongside actions – and as a way in to the final passage, the conclusion, of my thesis.

Throughout this thesis I have made such connections with the aim of showing how wool forms part of various stories, of different activities, of many overlapping rhythms and paces, and of numerous, at times contradictory, worlds. I have described how fibre generates, and contributes to generating, activities and relations, and how these root people in stories, linking them to histories (Haraway 2004:1). They also work the other way around: people generate versions of fibre in a way that shows a need, much like Robert Fisk suggests, to find a response to "how we got here", rather than "where to go from here".

To explore these complex, more or less conflicting and troublesome, worlds, I have used two main moves. First, I have engaged in the methodological move that I term fibre formations. I have used the term to signal a way of perceiving, relating and ordering, explained it as a way of doing fieldwork as well as a method for analysis. I have suggested that formations are *both* the material transformations that the woollen fibre undergoes, and the impact it has upon its surroundings, i.e. the clusters of relations with which it engages and which it forms part of. I have argued that such impact is not necessarily measurable in terms of desertification and alterations in ecosystems, but that it is about how lives – that is, human and nonhuman, as well as their interplay – *take place and are given form* along the wool's travel across different settings. Formations, I have tried to show, in this sense is both figurative and concrete. I have demonstrated how fibre formations are generated and how they also generate relations as part of something larger than themselves. A most concrete example is perhaps the work that goes on in laboratory and which classifies through measuring the quality of individual fibres according to internationally established standards. Nevertheless, the dynamics of the fibre formations permeate other experiences as well. The case of Mónica Giron's artwork which links the idiosyncrasies of the Patagonian Merino woolwork with the idiosyncrasies of an 'international art scene', including its particular mode of defining taste, quality and value.

Secondly, through the analytical chapters, and based on Haraway's *interferences that form patterns* (Haraway 1997), I describe some particular kinds of interferences: *displacements*, *dissonances, dissociations and distortions*. Although I bring out a central one for each chapter, all four kinds are present all through. The multiple, complex patterns – the fibre formations – that I have described in each chapter include many kinds of interferences. I have in this way offered a multifaceted version of how the landscape continues to be shaped and touched.

Consider, for instance how in Chapter five (5) I asked *how sheep farming forms part of the grasslands' composition.* By describing the various modes of *displacements* that have happened on the grasslands, the common view of them as 'magic', and full of freedom falls flat. What Merino wool is today, depends on a number of conquers, conflicts, and interfering displacements. I showed how sheep farming engages human as well as nonhuman activities that are formative for the ongoing landscape-making. The intimate associations between sheep, farmer and land, are thus also affected by more remote entities such as travelling shearing machines and the fluctuation of the prices of wool on the global market.

There is, I have also tried to show, in the farming activities no division between an external versus an internal landscape, just as much as there is no strict separation between natural and social time. Instead, my descriptions suggest various dynamic shifts within the relations, together with various intervals, rhythms and paces that generate a complexity of overlapping temporal cycles. My descriptions around wool are 'pregnant' with slowness, due partly to huge distances, and partly to the various more or less predictable intervals between activities. Temporal cycles that run how the landscape is being reproduced involve geological sediments, volcano eruptions, annual precipitation, and the time it takes for the wool to grow back on the sheep after having been sheared. These are formations that confirm the grasslands and the activities around sheep as simultaneously marginal and centric, but also ephemeral and yet enduring.

In turn, the required timelessness and the situated-ness of the laboratory, described in Chapter six (6) seems to work in dissonance with each other. In that chapter I discussed how this dissonance, along with others, were not taken as problematic to the technicians, while aiming to answer my question: *how does laboratory measuring matter for the making of the wool?* It was part of the technicians' jobs to adjust dissonances, cut them out from the final result of the measuring (the data). This was done quite

openly. The analysis pointed to a complimentary relation between quality and quantity. Not only was the technicians task to quantify the qualities of the wool, but while they saw their job as an intermediary service, they also spoke about the direct impact it has on the wool, its quality, and its production in more general terms. This double view was clear to the technicians and, again, not necessarily problematic. Instead, while such *dissonances* were acknowledged (idiomatically as well as in the practices of measuring), and the measuring activities openly *do* depend on moments of symbolized interpretation along the way, they cannot be visible on the resulting document. They must be separated out from the end product of the measuring procedures (the data).

How does spinning the yarn affect the formation of the grasslands? My analysis in Chapter seven (7) involved the spinning as the material process towards the formation of a thread, and a figurative meaning of the expression, implying the formation of stories: narratives along the woolwork. The wool is considered to *actually form an active part of the telling of certain stories* by the people who work with it. By asking in what direction 'material memory' points I suggests an 'inwardness'; a staying on in present time, because that is where the fibre and its traces actually are handled, that is where methods, skills and concepts are engaged – not in the past, nor in the future. The wool may tell stories about pasts and origins, and about future possibilities but it always stays in the present. A most striking example is when weavers who belong to a Mapuche cooperative tell how they weave their symbols into their artefacts, yet hold that there is a collective forgetting, and a need for relearning the meaning of the patterns.

How are woollen artefacts held into place through classificatory work? In Chapter eight (8) we saw that particular artefacts are understood as dwelling experiences and concerns. I explored an artwork and a Benetton sweater and how they are seen as conveying significance that is not fixed. Once they gain proper life in the hands of others, they prompt interpretations that may distort the initial intentions of the producers, be it the artist or the manufacturers. These *distortions* add associations and relations, weaving in versions with the versions already there. These two very different artefacts illuminate tensions between absences and presences, and between ubiquity and uniqueness. While the artefacts can be understood as associated the un-sustainable situation of birds in danger of extinction, of the presence of sheep, and of wool production on the Patagonian grasslands, in the case of the artwork, for the art collectors

interviewed it points to a universal need for any species of protection and for clothing. This need is often thought of as a concern that is relevant only to human beings. What we see here, however, is that the artwork activates this as a ubiquitous need that concerns also other species, such as birds and sheep. This in turn, I argue, shed some light on issues that are folded into the Benetton sweater.

Back to un-sustainability

This thesis sprang *from within* a concern expressed through a work of art. The artist's concern echoed some aspects of the current sustainability debate: the effects of the presence of sheep on the South American grasslands. I have along the preceding pages aimed to 'anthropologize' this concern, using the method of fieldwork, following the material of the artwork, i.e. the Merino wool, and I have brought in a number of anthropological scholars to build up my analysis.

All the analytical chapters show how adjustments are made to find balance between un-sustainable and sustainable conditions. By tracing the wool and the work that goes on around it, my thesis is an anthropological response to the issue of un-sustainability. It strives to describe *how* wool – a basically sustainable fibre – sustains, and *what* the wool sustains; what formations it brings forth, and, furthermore, how woollen fibre forms part of larger wholes. Un-sustainability is a concern that has been part of the *motivation* for the study – it is not an analytical term, nor is the aim to define or re-define it, and it does not in any way drive the fieldnotes or the thesis as a whole.

Instead, by loosening up sustainability as a standardised category, the study builds on the premise that standardised categories are not necessarily always helpful when striving to understand and act upon un-sustainable patterns. In this thesis I have demonstrated that categories such as 'nature', 'social' and 'future', so central for the sustainability debate, are far from being the sole organizational terms when wanting to understand how the wool is worked to sustain. I have attempted to unravel the standardized category of sustainability, without aiming for solutions. At the core of the foregoing analyses has been an attempt to show that what we think of as a 'sustainable quality' of the wool is enacted or generated into being, within collectives and classification practices that include multiple ways of ordering, as well as of 'othering'. Its 'sustainable qualities' embrace un-sustainable moments and aspects.

I have stated the wool as being the site of this study. It is the 'thing' – the stable point – which appears in all the settings and circumstances described. I have followed the wool as it is being transformed, and by doing that I have also 'sited' my study as a response to recent anthropological debates on how we may think of the 'site' as 'one' when it is always 'many', and also how we site (delimit and make singular) a seemingly seamless, ever multiple, complex, and unbounded world.

Tim Ingold reminds that "[t]o practice participant observation […] is to join in correspondence with those with whom we learn or among whom we study", and that this is done, "in a movement that goes forward rather than back in time". Herein, he suggests, "lies the educational purpose, dynamic and potential of anthropology (Ingold 2014a:389)". The purpose to investigate what dimensions of category work may become visible through 'fibre formations', relations and acts of classification that surround wool, has concomitantly suggested a renewed way of thinking (and re-acting) the anthropological site, and the methodological task of 'siting'.

I have handled woollen fibre in this thesis as a *node* or a *clot,* in itself so 'pregnant' with topics to explore that it has been enough to trace and unravel how it is being reproduced and what it reproduces as a site in itself. I have therefore explored the wool with a curiosity on how, as Marilyn Strathern proposes, "[a] 'small' thing can […] be made to say as much as a 'big' thing" (Strathern 2004:xix). Wool as an anthropological site shows how variations of temporalities and categorizations, morph and add to more normative categories, and also to linear notions of time. This, in turn, I have proposed as contribution to recent reflections on the capacity of anthropological research to destabilize dominant norms and distinctions by adding insights and knowledge to the world.

One of the central insight of this thesis is that even within the impact of powerful categories, acts of classification are always multiple, and at times unstable. In the preceding chapters I have shown how dynamic, shifting, and even conflicting classifications are made to 'hang together' on the grasslands. I have made a series of interconnected arguments and conclusions, both substantive, and conceptual but also aimed to be methodological. The questions I have asked have all begun with 'how' or 'what', rather than 'why'.

I opened this thesis as an invitation to trace an answer to the question: what do I touch when I touch my Merino sweater? My thesis is a variation of a complex response to the question. My woollen sweater is an ongoing result

of a large number of acts, skills and practices. It indicates a meshwork of activities, of accounts, of interpretations, relations and classifications, many of which are easily taken for granted and overlooked. While some may be more obvious, some are more hidden than others. The work of art that triggered my study, does the work of pointing in the direction of some of these hidden activities. I argue with this thesis that such hidden work may be further unfolded anthropologically through fieldwork and analysis of the fieldwork material.

My hope is that this may eventually be transferred to other areas, other concerns, and modes of classifying, so that my study of wool may shed some light on new modes for thinking, ordering and acting towards other similar phenomena – other formations – be they fibrous or not.

Epilogue

Like when closing a circle, to close this thesis, I pull its beginning back in. I wrote in the Preface: "To understand art we seem to need to consider everything *but* art".

The probe of artistic activities and their potential impact in more general terms has not been central to my analysis; I have used the subject matter behind one specific artwork as a springboard for my inquiry. The artwork was taken on as a formation – as one of the various fibre formations included in this thesis – and I showed that, like any formation, it does not exist in isolation, but is enacted as part of something larger than itself.

In the Preface, I suggested some perceived overlapping between artistic practices and anthropological modes of doing research, which I referred to as needs to "figure things out". The purpose has not been to define, compare, or unfold the totality of such potential contact zones. Instead, in a way, I have turned the artwork inside out and brought it onto an anthropological path. In the preceding pages, I have laid out a version of how the subject matter expressed though an artwork, may be entangled through anthropological methodologies – observations, descriptions and critical reflection – and by reproducing it as an artefact shaped as an academic thesis. I have done this without aspiring to be representing the artwork, but by adding to it in an exploratory and ethnographic manner. Seen this way, this thesis is at best an anthropological 'fibre formation'; in its composition it keeps woollen fibre at its centre, while weaving

classifications, interferences, temporalities, and relations. It could be thought of as a kind of 'fibre formations' – a variation of sorts of a knitted Merino wool sweater – be it sheep shaped, bird shaped or human shaped.

Fieldnotes have been an important part of the locomotive of this thesis, and as a final echo to the initial note, I choose to close with another quote. This one is taken from a conversation with an artisan weaver in Patagonia. "Art is like pain", she says, and continues: "it is *nothing* unless attached to *something*". In this thesis, I have taken on an artefact that at once points towards and forms part of the global, local, regional, individual and collective processes of Merino wool. Next time I – or somebody else – may take on art as at once pointing towards and forming part of some other process, some other subject matter, some other worlds, some other substance. But it tends to slip away, become invisible – or a blind spot – when we try to see it in isolation.

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